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Here is an example of a formal fallacy that occurs in a hypothetical syllogism:

If apes are intelligent, then apes can solve puzzles.
Apes can solve puzzles.
Therefore, apes are intelligent.

This argument has the following form:

If A then B.
B.
A.

In this case, if A and B are interchanged in the first premise, the form becomes valid, and the original argument, with the same change, also becomes valid. This fallacy and the one that precedes it will be discussed in later chapters.

In distinguishing formal from informal fallacies, remember that formal fallacies occur only in deductive arguments. Thus, if a given argument is inductive, it cannot contain a formal fallacy. Also, keep an eye out for standard deductive argument forms such as categorical syllogisms and hypothetical syllogisms. If such an argument is invalid because of an improper arrangement of terms or statements, it commits a formal fallacy. Section 1.5 investigated some of these forms and gave instruction on distinguishing the form from the content of an argument. All of the exercises at the end of that section commit formal fallacies.

→ **Informal fallacies** are those that can be detected only by examining the content of the argument. Consider the following example:

The Brooklyn Bridge is made of atoms.
Atoms are invisible.
Therefore, the Brooklyn Bridge is invisible.

To detect this fallacy one must know something about bridges—namely, that they are large visible objects, and even though their atomic components are invisible, this does not mean that the bridges themselves are invisible.

Or consider this example:

A chess player is a person.
Therefore, a bad chess player is a bad person.

To detect this fallacy one must know that the meaning of the word “bad” depends on what it modifies, and that being a bad chess player is quite different from being a bad person.

The various informal fallacies accomplish their purpose in so many different ways that no single umbrella theory covers them all. Some fallacies work by getting the reader or listener to feel various emotions, such as fear, pity, or camaraderie, and then attaching a certain conclusion to those emotions. Others attempt to discredit an opposing argument by associating it with certain pejorative features of its author. And then there are those that appeal to various dispositions on the part of the reader or listener, such as superstition or mental laziness, to get him or her to accept a conclusion. By studying the typical ways in which arguers apply these techniques, one is less likely to be fooled by the fallacious arguments posed by others or to stumble blindly into fallacies when constructing arguments for one's own use.

Since the time of Aristotle, logicians have attempted to classify the various informal fallacies. Aristotle himself identified thirteen and separated them into two groups. The work of subsequent logicians has produced dozens more, rendering the task of classifying them even more difficult. The presentation that follows divides twenty-two informal fallacies into five groups: fallacies of relevance, fallacies of weak induction, fallacies of presumption, fallacies of ambiguity, and fallacies of grammatical analogy. The final section of the chapter considers the related topics of detecting and avoiding fallacies in the context of ordinary language.

EXERCISE 3.1

iLrn Determine whether the fallacies committed by the following arguments are formal fallacies or informal fallacies.

- ★1. If Rasputin was really mad, then he deceived Czar Nicholas II. Rasputin was not really mad. Therefore, he did not deceive Czar Nicholas II.
2. Everything that runs has feet. The Columbia River runs very swiftly. Therefore, the Columbia River has feet.
3. All persons who believe we create our own reality are persons who lack social responsibility. All persons governed by selfish motives are persons who lack social responsibility. Therefore, all persons who believe we create our own reality are persons governed by selfish motives.
- ★4. The ship of state is like a ship at sea. No sailor is ever allowed to protest orders from the captain. For the same reason, no citizen should ever be allowed to protest presidential policies.
5. Renowned violinist Pinchas Zukerman has said, "When it comes to vodka, Smirnoff plays second fiddle to none." We must therefore conclude that Smirnoff is the best vodka available.
6. If the Chinese government systematically kills its unwanted orphans, then the Chinese government is immoral. The Chinese government is indeed immoral. Therefore, the Chinese government systematically kills its unwanted orphans.
- ★7. Sarah Jessica Parker, Ben Affleck, and Julia Roberts are Democrats. Therefore, it must be the case that all Hollywood stars are Democrats.
8. House Majority Leader Tom DeLay argues that stem-cell research is immoral. But DeLay is an ultra-right-wing lunatic who is incapable of thinking objectively about anything. Obviously his argument is nonsense.
9. If plastic guns are sold to the public, then terrorists will carry them aboard airliners undetected. If plastic guns are sold to the public, then airline hijackings will increase. Therefore, if terrorists carry plastic guns aboard airliners undetected, then airline hijackings will increase.
- ★10. Some corporate mergers are arrangements that produce layoffs. Some arrangements that produce layoffs are occasions of economic unrest. Therefore, some corporate mergers are occasions of economic unrest.

relationship to the crowd. The indirect approach includes such specific forms as the bandwagon argument, the appeal to vanity, and the appeal to snobbery. All are standard techniques of the advertising industry.

Here is an example of the **bandwagon argument**:

Of course you want to buy Zing toothpaste. Why, 90 percent of America brushes with Zing. The idea is that you will be left behind or left out of the group if you do not use the product.

The **appeal to vanity** often associates the product with someone who is admired, pursued, or imitated, the idea being that you, too, will be admired and pursued if you use it. The current television and billboard ads for the U.S. Marine Corps provide an example. The ads show a strong, handsome man in uniform holding a gleaming sword, and the caption reads:

The Few, the Proud, the Marines.

The message is that if you join the Marines, then you, too, will be admired and respected, just like the handsome man in the uniform.

The **appeal to snobbery** depends on a similar kind of association.

A Rolls-Royce is not for everyone. If you qualify as one of the select few, this distinguished classic may be seen and driven at British Motor Cars, Ltd.
(By appointment only, please.)

Needless to say, the indirect approach is used by others besides advertisers:

Mother to child: You want to grow up and be just like Wonder Woman, don't you? Then eat your liver and carrots.

These examples illustrate how the indirect version of the appeal to the people can overlap the false cause fallacy, which is presented in Section 3.3. Thus, the previous example might be interpreted to suggest that eating liver and carrots will *cause* one to become just like Wonder Woman. If so, the fallacy could be identified as false cause.

Both the direct and indirect approaches of the *ad populum* fallacy have the same basic structure:

You want to be accepted/included-in-the-group/loved/esteemed.... Therefore, you should accept XYZ as true.

In the direct approach the arousal of a mob mentality produces an immediate feeling of belonging for each person in the crowd. Each person feels united with the crowd, which evokes a sense of strength and security. When the crowd roars its approval of the conclusions that are then offered, anyone who does not accept them automatically cuts himself or herself off from the crowd and risks the loss of his or her security, strength, and acceptance. The same thing happens in the indirect approach, but the context and technique are somewhat subtler.

4. Argument Against the Person (*Argumentum ad Hominem*)

This fallacy always involves two arguers. One of them advances (either directly or implicitly) a certain argument, and the other then responds by directing his or her atten-

tion not to the first person's argument but to the first person *himself*. When this occurs, the second person is said to commit an **argument against the person**.

The argument against the person occurs in three forms: the *ad hominem* abusive, the *ad hominem* circumstantial, and the *tu quoque*. In the *ad hominem* abusive, the second person responds to the first person's argument by verbally abusing the first person. Example:

Before he died, poet Allen Ginsberg argued in favor of legalizing pornography. But Ginsberg's arguments are nothing but trash. Ginsberg was a marijuana-smoking homosexual and a thoroughgoing advocate of the drug culture.

Because Ginsberg's being a marijuana-smoking homosexual and advocate of the drug culture is irrelevant to whether the premises of his argument support the conclusion, this argument is fallacious.

Not all cases of the *ad hominem* abusive are as blunt as this one, but they are just as fallacious. Example:

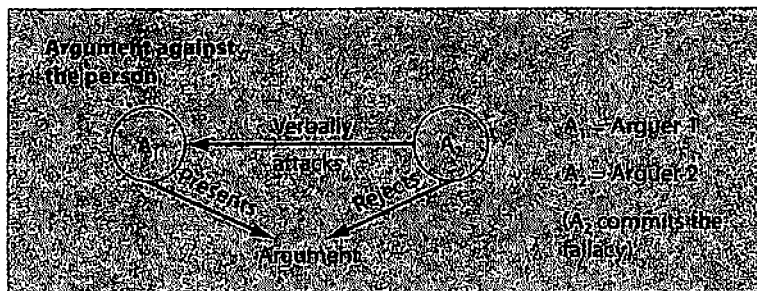
William Buckley has argued in favor of legalizing drugs such as cocaine and heroin. But Buckley is just another one of those upper-crust intellectuals who is out of touch with real America. No sensible person should listen to his pseudo-solutions.

Again, whether Buckley is an upper-crust intellectual has nothing to do with whether his premises support his conclusion.

The *ad hominem* circumstantial begins the same way as the *ad hominem* abusive, but instead of heaping verbal abuse on his or her opponent, the respondent attempts to discredit the opponent's argument by alluding to certain circumstances that affect the opponent. By doing so the respondent hopes to show that the opponent is predisposed to argue the way he or she does and should therefore not be taken seriously. Here is an example:

The Dalai Lama argues that China has no business in Tibet and that the West should do something about it. But the Dalai Lama just wants the Chinese to leave so he can return as leader. Naturally he argues this way. Therefore, we should reject his arguments.

The author of this argument ignores the substance of the Dalai Lama's argument and attempts to discredit it by calling attention to certain circumstances that affect the Dalai Lama—namely, that he wants to return to Tibet as its leader. But the fact that the Dalai Lama happens to be affected by these circumstances is irrelevant to whether



his premises support a conclusion. The *ad hominem* circumstantial is easy to recognize because it always takes this form: "Of course Mr. X argues this way; just look at the circumstances that affect him."

The *tu quoque* ("you too") fallacy begins the same way as the other two varieties of the *ad hominem* argument, except that the second arguer attempts to make the first appear to be hypocritical or arguing in bad faith. The second arguer usually accomplishes this by citing features in the life or behavior of the first arguer that conflict with the latter's conclusion. In effect, the second arguer says, "How dare you argue that I should stop doing X; why, you do (or have done) X yourself." Example:

Child to parent: Your argument that I should stop stealing candy from the corner store is no good. You told me yourself just a week ago that you, too, stole candy when you were a kid.

Obviously, whether the parent stole candy is irrelevant to whether the parent's premises support the conclusion that the child should not steal candy.

It is important to keep in mind that the purpose of an *ad hominem* argument is to discredit another person's argument by placing its author in a bad light. Thus, for the fallacy to be committed, there must always be two arguers (at least implicitly). If it should turn out that the person being attacked is not an arguer, then the personal comments made by the attacker may well be relevant to the conclusion that is drawn. In general, personal observations are relevant to conclusions about what kind of person someone is (good, bad, stingy, trustworthy, and so forth) and whether a person has done something. Example:

International terrorist Osama bin Laden planned the destruction of the World Trade Center, killing thousands of innocent people, and he supports terrorist causes all over the world. Bin Laden is therefore a wicked and irresponsible person.

The conclusion is not that Bin Laden's argument is bad but that Bin Laden himself is bad. Because the premises give relevant support to this conclusion, the argument commits no fallacy. Another example:

Shakespeare cannot possibly have written the thirty-six plays attributed to him, because the real Shakespeare was a two-bit country businessman who barely finished the fourth grade in school and who never left the confines of his native England.

The conclusion is not that some argument of Shakespeare's is bad but that Shakespeare did not write certain plays. Again, since the premises are relevant to this conclusion, the argument commits no *ad hominem* fallacy.

Determining what kind of person someone is includes determining whether that person is trustworthy. Thus personal comments are often relevant in evaluating whether a person's proclamations or statements, unsupported by evidence, warrant our belief. Examples of such statements include promises to do something, testimony given by a witness, and testimonials in support of a product or service. Here is an example of an argument that discredits a witness:

Mickey has testified that he saw Freddy set fire to the building. But Mickey was recently convicted on ten counts of perjury, and he hates Freddy with a passion and would love to see him sent to jail. Therefore, you should not believe Mickey's testimony.

This argument commits no fallacy. The conclusion is not that you should reject Mickey's argument but rather that you should reject his testimony. Testimony is not argument, and the fact that the witness is a known liar and has a motive to lie now is relevant to whether we should believe him. Furthermore, note that the conclusion is not that Mickey's statement is literally false but rather that we should not *believe* the statement. It is quite possible that Mickey really did see Freddy set fire to the building and that Mickey's statement to that effect is true. But if our only reason for believing this statement is the mere fact that Mickey has made it, then given the circumstances, we are not justified in that belief. Personal factors are never relevant to truth and falsity as such, but they are relevant to believability.

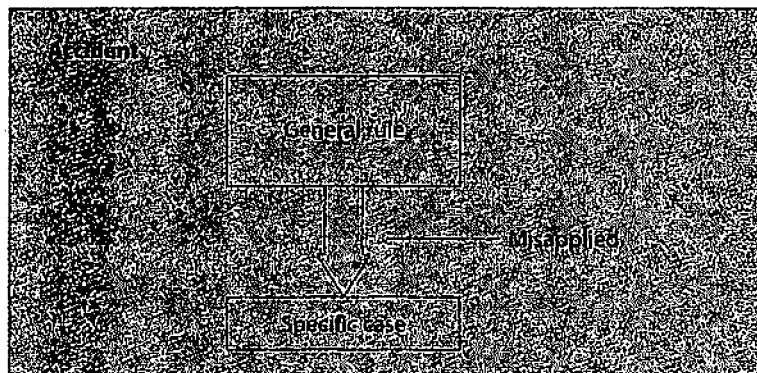
Yet there is often a close connection between truth and believability, and this provides one of the reasons why *ad hominem* arguments are often effective. In evaluating any argument there are always two issues to be considered: the quality of the reasoning and the truth of the premises. As we have noted, both are irrelevant to the personal characteristics of the arguer. But whether we *accept* the premises as true may depend on the credibility of the arguer. Knowing that the arguer is biased or has a motive to lie may provide good grounds for distrusting the premises. Another reason why *ad hominem* arguments are effective is that they engage the emotions of readers and listeners and thereby motivate them to transfer their negative feelings about the arguer onto the argument.

5. Accident

The fallacy of accident is committed when a general rule is applied to a specific case it was not intended to cover. Typically, the general rule is cited (either directly or implicitly) in the premises and then wrongly applied to the specific case mentioned in the conclusion. Two examples:

Freedom of speech is a constitutionally guaranteed right. Therefore, John Q. Radical should not be arrested for his speech that incited the riot last week.

Property should be returned to its rightful owner. That drunken sailor who is starting a fight with his opponents at the pool table lent you his .45-caliber pistol, and now he wants it back. Therefore, you should return it to him now.



In the first example, the general rule is that freedom of speech is normally guaranteed, and the specific case is the speech made by John Q. Radical. Because the speech incited a riot, the rule does not apply. In the second example, the general rule is that property should be returned to its rightful owner, and the specific case is the sailor who wants his gun returned. The rule does not apply because the return of the property might result in serious injury or death.

The fallacy of accident gets its name from the fact that one or more accidental features of the specific case make it an exception to the rule. In the first example the accidental feature is that the speech incited a riot; in the second example, the accidental features are that the sailor is drunk, that he is starting a fight, and that the property in question is dangerous.

6. Straw Man

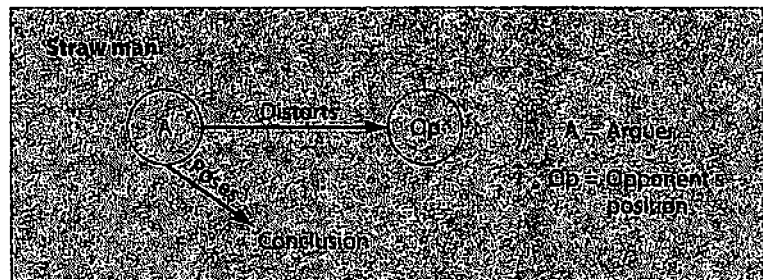
The straw man fallacy is committed when an arguer distorts an opponent's argument for the purpose of more easily attacking it, demolishes the distorted argument, and then concludes that the opponent's real argument has been demolished. By so doing, the arguer is said to have set up a straw man and knocked it down, only to conclude that the real man (opposing argument) has been knocked down as well. Example:

Mr. Goldberg has argued against prayer in the public schools. Obviously Mr. Goldberg advocates atheism. But atheism is what they used to have in Russia. Atheism leads to the suppression of all religions and the replacement of God by an omnipotent state. Is that what we want for this country? I hardly think so. Clearly Mr. Goldberg's argument is nonsense.

Like the argument against the person fallacy, the straw man fallacy involves two arguers. Mr. Goldberg, who is the first arguer, has presented an argument against prayer in the public schools. The second arguer then attacks Goldberg's argument by equating it with an argument for atheism. He then attacks atheism and concludes that Goldberg's argument is nonsense. Since Goldberg's argument had nothing to do with atheism, the second argument commits the straw man fallacy.

As this example illustrates, the kind of distortion the second arguer resorts to is often an attempt to exaggerate the first person's argument or make it look more extreme than it really is. Here are two more examples:

The garment workers have signed a petition arguing for better ventilation on the work premises. Unfortunately, air conditioning is expensive. Air ducts would have to be run throughout the factory, and a massive heat exchange unit installed on the roof. Also,



the cost of operating such a system during the summer would be astronomical. In view of these considerations the petition must be rejected.

The student status committee has presented us with an argument favoring alcohol privileges on campus. What do the students want? Is it their intention to stay boozed up from the day they enter as freshmen till the day they graduate? Do they expect us to open a bar for them? Or maybe a chain of bars all over campus? Such a proposal is ridiculous!

In the first argument, the petition is merely for better ventilation in the factory—maybe a fan in the window during the summer. The arguer exaggerates this request to mean an elaborate air conditioning system installed throughout the building. He then points out that this is too expensive and concludes by rejecting the petition. A similar strategy is used in the second argument. The arguer distorts the request for alcohol privileges to mean a chain of bars all over campus. Such an idea is so patently outlandish that no further argument is necessary.

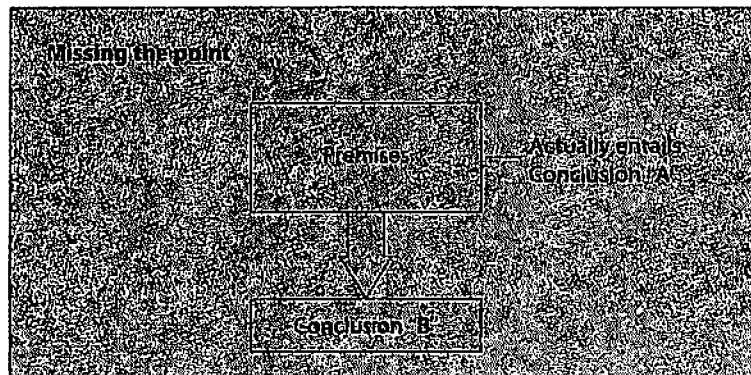
7. Missing the Point (*Ignoratio Elenchi*)

All the fallacies we have discussed thus far have been instances of cases where the premises of an argument are irrelevant to the conclusion. **Missing the point** illustrates a special form of irrelevance. This fallacy occurs when the premises of an argument support one particular conclusion, but then a different conclusion, often vaguely related to the correct conclusion, is drawn. Whenever one suspects that such a fallacy is being committed, he or she should be able to identify the *correct* conclusion, the conclusion that the premises *logically imply*. This conclusion must be significantly different from the conclusion that is actually drawn. Examples:

Crimes of theft and robbery have been increasing at an alarming rate lately. The conclusion is obvious: we must reinstate the death penalty immediately.

Abuse of the welfare system is rampant nowadays. Our only alternative is to abolish the system altogether.

At least two correct conclusions are implied by the premise of the first argument: either “We should provide increased police protection in vulnerable neighborhoods” or “We should initiate programs to eliminate the causes of the crimes.” Reinstating the death penalty is not a logical conclusion at all. Among other things, theft and robbery are not



capital crimes. In the second argument the premises logically suggest some systematic effort to eliminate the cheaters rather than eliminating the system altogether.

Ignoratio elenchi means "ignorance of the proof." The arguer is ignorant of the logical implications of his or her own premises and, as a result, draws a conclusion that misses the point entirely. The fallacy has a distinct structure all its own, but in some ways it serves as a catchall for arguments that are not clear instances of one or more of the other fallacies. An argument should not be identified as a case of missing the point, however, if one of the other fallacies fits.

8. Red Herring

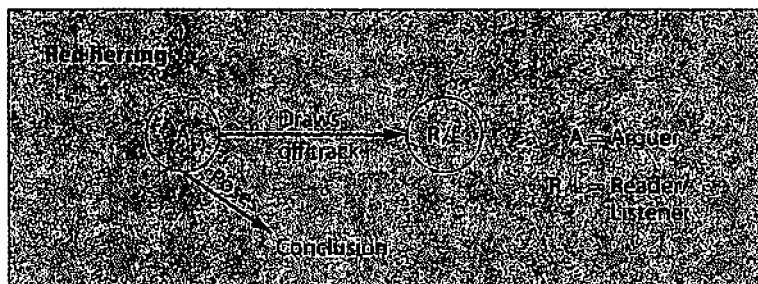
This fallacy is closely associated with missing the point (*ignoratio elenchi*). The red herring fallacy is committed when the arguer diverts the attention of the reader or listener by changing the subject to a different but sometimes subtly related one. He or she then finishes by either drawing a conclusion about this different issue or by merely presuming that some conclusion has been established. By so doing, the arguer purports to have won the argument. The fallacy gets its name from a procedure used to train hunting dogs to follow a scent. A red herring (or bag of them) is dragged across the trail with the aim of leading the dogs astray. Since red herrings have an especially potent scent (caused in part by the smoking process used to preserve them), only the best dogs will follow the original scent.

To use the red herring fallacy effectively, the arguer must change the original subject of the argument without the reader or listener noticing it. One way of doing this is to change the subject to one that is subtly related to the original subject. Here are two examples of this technique:

Environmentalists are continually harping about the dangers of nuclear power. Unfortunately, electricity is dangerous no matter where it comes from. Every year hundreds of people are electrocuted by accident. Since most of these accidents are caused by carelessness, they could be avoided if people would just exercise greater caution.

There is a good deal of talk these days about the need to eliminate pesticides from our fruits and vegetables. But many of these foods are essential to our health. Carrots are an excellent source of vitamin A, broccoli is rich in iron, and oranges and grapefruits have lots of vitamin C.

Both arguments commit the red herring fallacy. In the first, the original issue is whether nuclear power is dangerous. The arguer changes this subject to the danger of



electrocution and proceeds to draw a conclusion about that. The new subject is clearly different from the possibility of nuclear explosion or meltdown, but the fact that both are related to electricity facilitates the arguer's goal of leading someone off the track. In the second argument, the original issue is pesticides, and the arguer changes it to the value of fruits and vegetables in one's diet. Again, the fact that the second topic is related to the first assists the arguer in committing the fallacy. In neither case does the arguer draw a conclusion about the original topic, but by merely diverting the attention of the reader or listener, the arguer creates the presumption of having won the argument.

A second way of using the red herring effectively is to change the subject to some flashy, eye-catching topic that is virtually guaranteed to distract the listener's attention. Topics of this sort include sex, crime, scandal, immorality, death, and any other topic that might serve as the subject of gossip. Here is an example of this technique:

Professor Conway complains of inadequate parking on our campus. But did you know that last year Conway carried on a torrid love affair with a member of the English Department? The two used to meet every day for clandestine sex in the copier room. Apparently they didn't realize how much you can see through that fogged glass window. Even the students got an eyeful. Enough said about Conway.

The red herring fallacy can be confused with the straw man fallacy because both have the effect of drawing the reader/listener off the track. This confusion can usually be avoided by remembering the unique ways in which they accomplish this purpose. In the straw man, the arguer begins by distorting an opponent's argument and concludes by knocking down the distorted argument. In the red herring, on the other hand, the arguer ignores the opponent's argument (if there is one) and subtly changes the subject. Thus, to distinguish the two fallacies, one should attempt to determine whether the arguer has knocked down a distorted argument or simply changed the subject. Also keep in mind that straw man always involves two arguers, at least implicitly, whereas a red herring often does not.

Both the red herring and straw man fallacies are susceptible of being confused with missing the point, because all three involve a similar kind of irrelevancy. To avoid this confusion, one should note that both red herring and straw man proceed by generating a new set of premises, whereas missing the point does not. Straw man draws a conclusion from new premises that are obtained by distorting an earlier argument, and red herring, if it draws any conclusion at all, draws one from new premises obtained by changing the subject. Missing the point, however, draws a conclusion from the original premises. Also, in the red herring and straw man, the conclusion, if there is one, is *relevant* to the premises from which it is drawn; but in missing the point, the conclusion is *irrelevant* to the premises from which it is drawn. Finally, remember that missing the point serves in part as a kind of catchall fallacy, and a fallacious argument should not be identified as a case of missing the point if one of the other fallacies clearly fits.

EXERCISE 3.2

- ilrn** I. Identify the fallacies of relevance committed by the following arguments, giving a brief explanation for your answer. If no fallacy is committed, write "no fallacy."

"Well, I don't exactly know," Jodie hesitates. "I'll have to think about that."

"Aha! I knew it!" exclaims Frank, triumphantly. "You can't define it, which means you don't even know if it exists! If you weren't such a radical feminist, you would see that all these claims of sexual harassment are hokey."

"Me, radical?" Jodie explodes. "The truth is you're a radical sexist. What you're saying is, women are only chattel, like they were 200 years ago, and men can use or abuse them any way they please. Liz, that's what he's saying, isn't it?"

"Absolutely," Liz affirms.

"What a crazy argument," says Frank scornfully. "What you're saying is, we should abolish all distinctions between men and women and create a unisex society in which everyone acts like a bunch of robots. Isn't that right, Liz?"

"No, not at all," insists Liz. "She's trying to—"

"You're completely insane, Frank," Jodie interrupts, rising determinedly from her chair, "and your arguments are wacko!" She then throws the remains of her coffee at Frank. The other students who have been listening to the heated argument rise up shouting, "Right on, Jodie!" Some begin chanting, "End sex harassment! End sex harassment!" As more students join the demonstration, they surround Frank, gesturing crudely. Angry and humiliated, he breaks away and dashes out the door.

3.3

Fallacies of Weak Induction

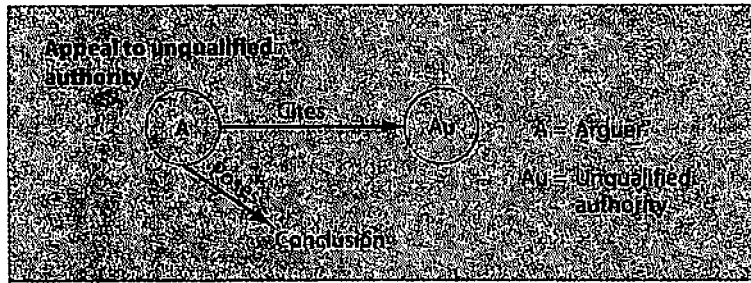
The fallacies of weak induction occur not because the premises are logically irrelevant to the conclusion, as is the case with the eight fallacies of relevance, but because the connection between premises and conclusion is not strong enough to support the conclusion. In each of the following fallacies, the premises provide at least a shred of evidence in support of the conclusion, but the evidence is not nearly good enough to cause a reasonable person to believe the conclusion. Like the fallacies of relevance, however, the fallacies of weak induction often involve emotional grounds for believing the conclusion.

9. Appeal to Unqualified Authority (*Argumentum ad Verecundiam*)

We saw in Chapter 1 that an argument from authority is an inductive argument in which an arguer cites the authority or testimony of another person in support of some conclusion. The appeal to unqualified authority fallacy is a variety of the argument from authority and occurs when the cited authority or witness lacks credibility. There are several reasons why an authority or witness might lack credibility. The person might lack the requisite expertise, might be biased or prejudiced, might have a motive to lie or disseminate "misinformation," or might lack the requisite ability to perceive or recall. The following examples illustrate these reasons:

Dr. Bradshaw, our family physician, has stated that the creation of muonic atoms of deuterium and tritium hold the key to producing a sustained nuclear fusion reaction at room temperature. In view of Dr. Bradshaw's expertise as a physician, we must conclude that this is indeed true.

This conclusion deals with nuclear physics, and the authority is a family physician. Because it is unlikely that a physician would be an expert in nuclear physics, the argument commits an appeal to unqualified authority.



David Duke, former Grand Wizard of the Ku Klux Klan, has stated, "Jews are not good Americans. They have no understanding of what America is." On the basis of Duke's authority, we must therefore conclude that the Jews in this country are un-American.

As an authority, David Duke is clearly biased, so his statements cannot be trusted.

James W. Johnston, Chairman of R. J. Reynolds Tobacco Company, testified before Congress that tobacco is not an addictive substance and that smoking cigarettes does not produce any addiction. Therefore, we should believe him and conclude that smoking does not in fact lead to any addiction.

If Mr. Johnston had admitted that tobacco is addictive, it would have opened the door to government regulation, which could put his company out of business. Thus, because Johnston had a clear motive to lie, we should not believe his statements.

Old Mrs. Furguson (who is practically blind) has testified that she saw the defendant stab the victim with a bayonet while she was standing in the twilight shadows 100 yards from the incident. Therefore, members of the jury, you must find the defendant guilty.

Here the witness lacks the ability to perceive what she has testified to, so her testimony is untrustworthy.

Of course if an authority is credible, the resulting argument will contain no fallacy. Example:

The county tax collector issued a press release stating that property tax revenues are higher this year than last. Therefore, we conclude that these revenues are indeed higher this year.

Normally a county tax collector would be considered a qualified expert in the area of tax revenues, so assuming the tax collector has no reason to lie, this argument is inductively strong.

In deciding whether a person is a qualified authority, one should keep two important points in mind. First, the person might be an authority in more than one field. For example, a chemist might also be an authority in biology, or an economist might also be an authority in law. The second point is that there are some areas in which practically no one can be considered an authority. Such areas include politics, morals, and religion. For example, if someone were to argue that abortion is immoral because a certain philosopher or religious leader has said so, the argument would be weak regardless of the authority's qualifications. Many questions in these areas are so hotly contested that there is no conventional wisdom an authority can depend on.

10. Appeal to Ignorance (*Argumentum ad Ignorantiam*)

When the premises of an argument state that nothing has been proved one way or the other about something, and the conclusion then makes a definite assertion about that thing, the argument commits an **appeal to ignorance**. The issue usually involves something that is incapable of being proved or something that has not yet been proved.

Example:

People have been trying for centuries to provide conclusive evidence for the claims of astrology, and no one has ever succeeded. Therefore, we must conclude that astrology is a lot of nonsense.

Conversely, the following argument commits the same fallacy.

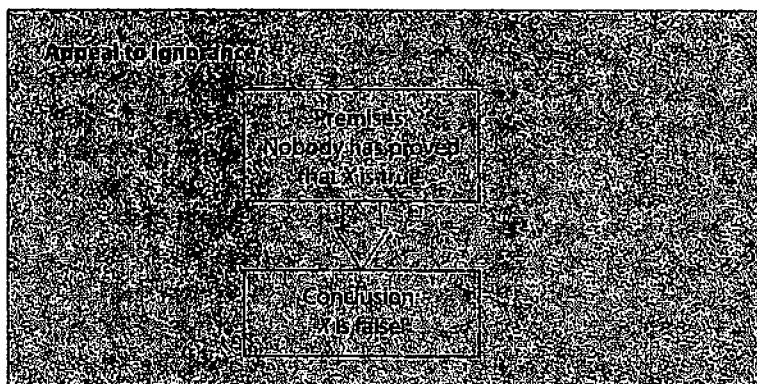
People have been trying for centuries to disprove the claims of astrology, and no one has ever succeeded. Therefore, we must conclude that the claims of astrology are true.

The premises of an argument are supposed to provide positive evidence for the conclusion. The premises of these arguments, however, tell us nothing about astrology; rather, they tell us about what certain unnamed and unidentified people have tried unsuccessfully to do. This evidence may provide some slight reason for believing the conclusion, but certainly not sufficient reason.

These examples do, however, lead us to the first of two important exceptions to the appeal to ignorance. The first stems from the fact that if qualified researchers investigate a certain phenomenon within their range of expertise and fail to turn up any evidence that the phenomenon exists, this fruitless search by itself constitutes positive evidence about the question. Consider, for example, the following argument:

Teams of scientists attempted over a number of decades to detect the existence of the luminiferous aether, and all failed to do so. Therefore, the luminiferous aether does not exist.

The premises of this argument are true. Given the circumstances, it is likely that the scientists in question would have detected the aether if in fact it did exist. Since they



did not detect it, it probably does not exist. Thus, we can say that the above argument is inductively strong (but not deductively valid).

As for the two arguments about astrology, if the attempts to prove or disprove the astrological claims had been done in a systematic way by qualified experts, it is more likely that the arguments would be good. Exactly what is required to qualify someone to investigate astrological claims is, of course, difficult to say. But as these arguments stand, the premises state nothing about the qualifications of the investigators, and so the arguments remain fallacious.

It is not *always* necessary, however, that the investigators have *special* qualifications. The kinds of qualifications needed depend on the situation. Sometimes the mere ability to see and report what one sees is sufficient. Example:

No one has ever seen Mr. Andrews drink a glass of wine, beer, or any other alcoholic beverage. Probably Mr. Andrews is a nondrinker.

Because it is highly probable that if Mr. Andrews were a drinker, somebody would have seen him drinking, this argument is inductively strong. No special qualifications are needed to be able to see someone take a drink.

The second exception to the appeal to ignorance relates to courtroom procedure. In the United States and Canada, among other countries, a person is presumed innocent until proven guilty. If the prosecutor in a criminal trial fails to prove the guilt of the defendant beyond reasonable doubt, counsel for the defense may justifiably argue that his or her client is not guilty. Example:

Members of the jury, you have heard the prosecution present its case against the defendant. Nothing, however, has been proved beyond a reasonable doubt. Therefore, under the law, the defendant is not guilty.

This argument commits no fallacy because "not guilty" means, in the legal sense, that guilt beyond a reasonable doubt has not been proved. The defendant may indeed have committed the crime of which he or she is accused, but if the prosecutor fails to prove guilt beyond a reasonable doubt, the defendant is considered "not guilty."

11. Hasty Generalization (Converse Accident)

Hasty generalization is a fallacy that affects inductive generalizations. In Chapter 1 we saw that an inductive generalization is an argument that draws a conclusion about all members of a group from evidence that pertains to a selected sample. The fallacy occurs when there is a reasonable likelihood that the sample is not representative of the group. Such a likelihood may arise if the sample is either too small or not randomly selected. Here are two examples:

After only one year the alternator went out in Mr. O'Grady's new Chevrolet. Mrs. Dodson's Oldsmobile developed a transmission problem after six months. The obvious conclusion is that cars made by General Motors are just a pile of junk these days.

Ten Arab fundamentalists hijacked planes and crashed them into the World Trade Center in New York City. The message is clear: Arabs are nothing but a pack of religious fanatics prone to violence.

For the gambler's fallacy to be committed, it is essential that the events be independent or nearly independent. Such events include rolls of a pair of fair (unloaded) dice, spins of a fair roulette wheel, and selections of lottery winning numbers. Events are not completely independent whenever the skill of the gambler affects the outcome. Thus, poker, blackjack, and horse-race betting provide less-than-perfect candidates for the gambler's fallacy.

The false cause fallacy is often convincing because it is often difficult to determine whether two phenomena are causally related. A lengthy time lapse between the operation of the cause and the occurrence of the effect can exacerbate the problem. For example, the thirty-year interval between exposure to asbestos and the onset of asbestosis impeded the recognition of a causal connection. Also, when two events are causally related, it may be hard to determine the degree of relatedness. Thus, there may be some connection between the electromagnetic field produced by high voltage transmission lines and leukemia, but the connection may be extremely slight. Finally, when a causal connection is recognized, it may be difficult to determine which is the cause and which is the effect. For example, an allergic reaction may be connected with an episode of anxiety, but it may be hard to tell if the allergy causes the anxiety or if the anxiety causes the allergy.

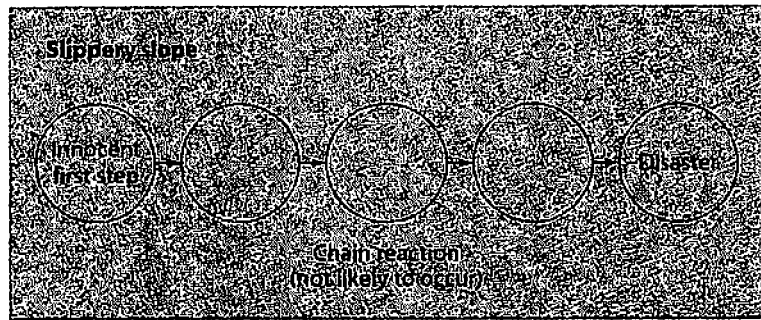
The realm of human action constitutes another area in which causal connections are notoriously difficult to establish. For example, the attorneys for accused murderer Dan White argued that Twinkies, Coke, and potato chips caused him to kill San Francisco Mayor George Moscone. Other attorneys have blamed their clients' crimes on PMS, rap music, childhood abuse, mental retardation, and hallucinations. The complex nature of human motivation renders all such causal claims difficult to evaluate. The situation may become even worse when a whole nation of people are involved. Thus, the recent drop in crime rates has been attributed to "three strikes" laws, but it is difficult to say whether this or some other factor is really responsible.

One point that should be kept in mind when establishing causal connections is that statistical correlations by themselves often reveal little about what is actually going on. For example, if all that we knew about smoking and lung cancer was that the two frequently occur together, we might conclude any number of things. We might conclude that both have a common cause, such as a genetic predisposition, or we might conclude that lung cancer is a disease contracted early in life and that it manifests itself in its early stages by a strong desire for tobacco. Fortunately, in the case of smoking and lung cancer there is more evidence than a mere statistical correlation. This additional evidence inclines us to believe that the smoking is a cause of the cancer.

13. Slippery Slope

The fallacy of **slippery slope** is a variety of the false cause fallacy. It occurs when the conclusion of an argument rests upon an alleged chain reaction and there is not sufficient reason to think that the chain reaction will actually take place. Here is an example:

Immediate steps should be taken to outlaw pornography once and for all. The continued manufacture and sale of pornographic material will almost certainly lead to an increase in sex-related crimes such as rape and incest. This in turn will gradually erode the moral fabric of society and result in an increase in crimes of all sorts. Eventually a



complete disintegration of law and order will occur, leading in the end to the total collapse of civilization.

Because there is no good reason to think that the mere failure to outlaw pornography will result in all these dire consequences, this argument is fallacious. An equally fallacious counterargument is as follows:

Attempts to outlaw pornography threaten basic civil rights and should be summarily abandoned. If pornography is outlawed, censorship of newspapers and news magazines is only a short step away. After that there will be censorship of textbooks, political speeches, and the content of lectures delivered by university professors. Complete mind control by the central government will be the inevitable result.

Both arguments attempt to persuade the reader or listener that the welfare of society rests on a "slippery slope" and that a single step in the wrong direction will result in an inevitable slide all the way to the bottom.

The slippery slope fallacy can involve various kinds of causality. For example, someone might argue that removing a single brick from a building would set off a chain reaction leading to the destruction of the building, or that chopping down a tall tree would set off a cascade of falling trees leading to the destruction of the forest. These arguments depend on pure physical causality. On the other hand, someone might argue that starting a rumor about the health of the economy would set off a chain reaction leading to the collapse of the stock market. Such an argument would depend on the kind of causality found in interpersonal communications. Or someone might argue that planting a seed of doubt in a person's mind about the faithfulness of his or her spouse would gnaw away at that person, leading to the breakup of the marriage. Such an argument would depend on the kind of causality that links mental states.

Deciding whether a slippery slope fallacy has been committed can be difficult when there is uncertainty whether the alleged chain reaction will or will not occur. This question is discussed in Section 3.5. But many slippery slopes rest on a mere emotional conviction on the part of the arguer that a certain action or policy is bad, and the arguer attempts to trump up support for his or her position by citing all sorts of dire consequences that will result if the action is taken or the policy followed. In such cases there is usually little problem in identifying the argument as a slippery slope.

14 Weak Analogy

This fallacy affects inductive arguments from analogy. As we saw in Chapter 1, an argument from analogy is an argument in which the conclusion depends on the existence of an analogy, or similarity, between two things or situations. The fallacy of **weak analogy** is committed when the analogy is not strong enough to support the conclusion that is drawn. Example:

Harper's new car is bright blue, has leather upholstery, and gets excellent gas mileage.

Crowley's new car is also bright blue and has leather upholstery. Therefore, it probably gets excellent gas mileage, too.

Because the color of a car and the choice of upholstery have nothing to do with gasoline consumption, this argument is fallacious.

The basic structure of an argument from analogy is as follows:

Entity A has attributes *a*, *b*, *c*, and *z*.

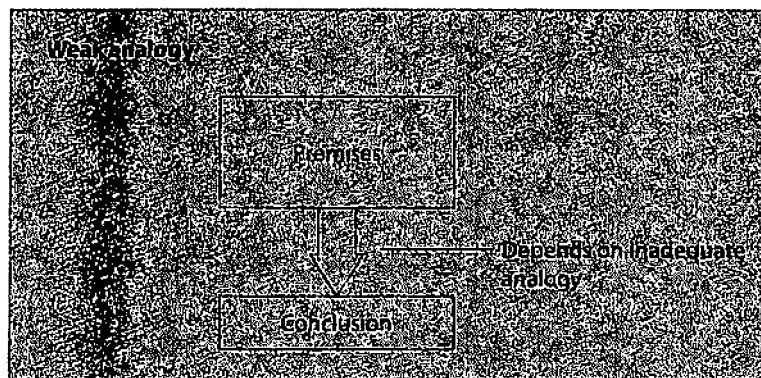
Entity B has attributes *a*, *b*, *c*.

Therefore, entity B probably has attribute *z* also.

Evaluating an argument having this form requires a two-step procedure: (1) Identify the attributes *a*, *b*, *c*, . . . that the two entities A and B share in common, and (2) determine how the attribute *z*, mentioned in the conclusion, relates to the attributes *a*, *b*, *c*, . . . If some causal or systematic relation exists between *z* and *a*, *b*, or *c*, the argument is strong; otherwise it is weak. In the argument above, the two entities share the attributes of being cars; the attributes entailed by being a car, such as having four wheels; and the attributes of color and upholstery material. Because none of these attributes is systematically or causally related to good gas mileage, the argument is fallacious.

As an illustration of when the requisite systematic or causal relation does and does not exist, consider the following arguments:

The flow of electricity through a wire is similar to the flow of water through a pipe. Obviously a large-diameter pipe will carry a greater flow of water than a pipe of small diameter. Therefore, a large-diameter wire should carry a greater flow of electricity than a small-diameter wire.



The flow of electricity through a wire is similar to the flow of water through a pipe. When water runs downhill through a pipe, the pressure at the bottom of the hill is greater than it is at the top. Thus, when electricity flows downhill through a wire, the voltage should be greater at the bottom of the hill than at the top.

The first argument is good and the second is fallacious. Both arguments depend on the similarity between water molecules flowing through a pipe and electrons flowing through a wire. In both cases there is a systematic relation between the diameter of the pipe/wire and the amount of flow. In the first argument this systematic relation provides a strong link between premises and conclusion, and so the argument is a good one. But in the second argument a causal connection exists between difference in elevation and increase in pressure that holds for water but not for electricity. Water molecules flowing through a pipe are significantly affected by gravity, but electrons flowing through a wire are not. Thus, the second argument is fallacious.

The theory and evaluation of arguments from analogy is one of the most complex and elusive subjects in all of logic. Additional material on arguments from analogy appears in Sections 3.5 and 9.1 of this text.

EXERCISE 3.3

ilrn I. Identify the fallacies of weak induction committed by the following arguments, giving a brief explanation for your answer. If no fallacy is committed, write "no fallacy."

1. The *Daily News* carried an article this morning about three local teenagers who were arrested on charges of drug possession. Teenagers these days are nothing but a bunch of junkies.
2. If a car breaks down on the freeway, a passing mechanic is not obligated to render emergency road service. For similar reasons, if a person suffers a heart attack on the street, a passing physician is not obligated to render emergency medical assistance.
3. There must be something to psychical research. Three famous physicists—Oliver Lodge, James Jeans, and Arthur Stanley Eddington—took it seriously.
- ★4. The secretaries have asked us to provide lounge areas where they can spend their coffee breaks. This request will have to be refused. If we give them lounge areas, next they'll be asking for spas and swimming pools. Then it will be racquetball courts, tennis courts, and fitness centers. Expenditures for these facilities will drive us into bankruptcy.
5. The accumulation of pressure in a society is similar to the build-up of pressure in a boiler. If the pressure in a boiler increases beyond a critical point, the boiler will explode. Accordingly, if a government represses its people beyond a certain point, the people will rise up in revolt.
6. A few minutes after Governor Harrison finished his speech on television, a devastating earthquake struck southern Alaska. For the safety of the people up there, it is imperative that Governor Harrison make no more speeches.
- ★7. No one has ever been able to prove the existence of extrasensory perception. We must therefore conclude that extrasensory perception is a myth.

or on the wrong interpretation of an ambiguous statement, the argument commits a fallacy of ambiguity.

The fallacies of grammatical analogy include *composition* and *division*. Arguments that commit these fallacies are grammatically analogous to other arguments that are good in every respect. Because of this similarity in linguistic structure, such fallacious arguments may appear good yet be bad.

15. Begging the Question (*Petitio Principii*)

The fallacy of begging the question is committed whenever the arguer creates the illusion that inadequate premises provide adequate support for the conclusion by leaving out a possibly false (shaky) key premise, by restating a possibly false premise as the conclusion, or by reasoning in a circle. The latin name for this fallacy, *petitio principii*, means "request for the source." The actual source of support for the conclusion is not apparent, and so the argument is said to beg the question. After reading or hearing the argument, the observer is inclined to ask, "But how do you know X?" where X is the needed support.

The first, and most common, way of committing this fallacy is by leaving a possibly false key premise out of the argument while creating the illusion that nothing more is needed to establish the conclusion. Examples:

Murder is morally wrong. This being the case, it follows that abortion is morally wrong.

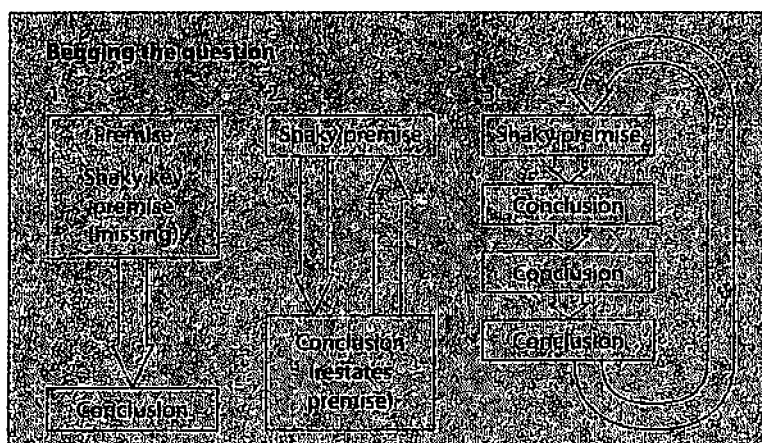
Of course humans and apes evolved from common ancestors. Just look how similar they are.

It's obvious that the poor in this country should be given handouts from the government.

After all, these people earn less than the average citizen.

Clearly, terminally ill patients have a right to doctor-assisted suicide. After all, many of these people are unable to commit suicide by themselves.

The first of these arguments begs the question "How do you know that abortion is a form of murder?" The second begs the question "Does the mere fact that humans and apes look similar imply that they evolved from common ancestors?" And the third



and fourth beg the questions “Just because the poor earn less than the average citizen, does this imply that the government should give them handouts?” and “Just because terminally ill patients cannot commit suicide by themselves, does it follow that they have a right to a doctor’s assistance?”

These questions indicate that something has been left out of the original arguments. Thus, the first argument is missing the premise, “Abortion is a form of murder”; the second is missing the premise, “If humans and apes look similar, then they have common ancestors”; and so on. These premises are crucial for the soundness of the arguments. If the arguer is unable to establish the truth of these premises, then the arguments prove nothing. However, in most cases of begging the question, this is precisely the reason why such premises are left unstated. The arguer is *not* able to establish their truth, and by employing rhetorical phraseology such as “of course,” “clearly,” “this being the case,” and “after all,” the arguer hopes to create the illusion that the stated premise, by itself, provides adequate support for the conclusion when in fact it does not.

The same form of begging the question often appears in arguments concerning religious topics to justify conclusions about the existence of God, the immortality of the soul, and so on. Example:

The world in which we live displays an amazing degree of organization. Obviously this world was created by an intelligent God.

This argument begs the question, “How do you know that the organization in the world could only have come from an intelligent creator?” Of course the claim that it did come from an intelligent creator may well be true, but the burden is on the arguer to prove it. Without supporting reasons or evidence, the argument proves nothing. Yet most people who are predisposed to believe the conclusion are likely to accept the argument as a good one. The same can be said of most arguments that beg the question, and this fact suggests another reason why arguers resort to this fallacy: Such arguments tend to reinforce preexisting inclinations and beliefs.

The second form of *petitio principii* occurs when the conclusion of an argument merely restates a possibly false premise in slightly different language. In such an argument, the premise supports the conclusion, and the conclusion tends to reinforce the premise. Examples:

Capital punishment is justified for the crimes of murder and kidnapping because it is quite legitimate and appropriate that someone be put to death for having committed such hateful and inhuman acts.

Anyone who preaches revolution has a vision of the future for the simple reason that if a person has no vision of the future he could not possibly preach revolution.

In the first argument, saying that capital punishment is “justified” means the same thing as saying that it is “legitimate and appropriate,” and in the second argument the premise and the conclusion say exactly the same thing. However, by repeating the same thing in slightly different language, the arguer creates the illusion that independent evidence is being presented in support of the conclusion, when in fact it is not. Both arguments contain rhetorical phraseology (“hateful and inhuman,” “*simple* reason,” and “could not possibly”) that help effect the illusion. The first argument begs the ques-

tion, "How do you know that capital punishment really is legitimate and appropriate?" and the second begs the question, "How do you know that people who preach revolution really do have a vision of the future?"

The third form of *petitio principii* involves circular reasoning in a chain of inferences having a first premise that is possibly false. Here is an example:

Ford Motor Company clearly produces the finest cars in the United States. We know they produce the finest cars because they have the best design engineers. This is true because they can afford to pay them more than other manufacturers. Obviously they can afford to pay them more because they produce the finest cars in the United States.

Upon encountering this argument, the attentive reader is inclined to ask, "Where does this reasoning begin? What is its source?" Since the argument goes in a circle, it has no beginning or source, and as a result it proves nothing. Of course, in this example the circularity is rather apparent, so the argument is not likely to convince anyone. Cases in which circular reasoning may convince involve long and complex arguments having premises that depend on one another in subtle ways and a possibly false key premise that depends on the conclusion.

In all cases of begging the question, the arguer uses some linguistic device to create the illusion that inadequate premises provide adequate support for a conclusion. Without such an illusion, the fallacy is not committed. Thus, the following arguments commit no fallacy:

No dogs are cats.
Therefore, no cats are dogs.

London is in England and Paris is in France.
Therefore, Paris is in France and London is in England.

In both of these examples, the premise amounts to little more than a restatement of the conclusion. Yet both arguments are sound because they are valid and have true premises. No fallacy is committed because no illusion is created to make inadequate premises appear as adequate. We will study arguments of this sort in Chapters 4 and 7.

Here is another example:

Rome is in Germany or Rome is in Germany.
Therefore, Rome is in Germany.

This argument is valid, but it is unsound because it has a false premise. However, it commits no fallacy because, again, no illusion is created to cover anything up. Arguments having this form also appear in Chapter 7.

As with these examples, arguments that beg the question are normally valid. This is easy to see. Any argument that includes the conclusion as one of the premises is clearly valid, and those forms of the fallacy that leave a key premise out of the argument become valid when that key premise is introduced. The problem with arguments that beg the question is that they are usually unsound, or at least not clearly sound, because the premise needed to provide adequate support for the conclusion is, at best, of uncertain truth value. Because such arguments presume the truth of this premise, begging the question is called a fallacy of presumption.