Reason and Argument

Richard Feldman
Second Edition

Pearson New International Edition

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Glossary

accidental correlation   A correlation that results from coincidental or accidental factors rather than from a causal connection between the correlated factors.

accuracy premise   In statistical arguments, a premise saying that the measured property accurately measures the target property. More precisely, a premise saying that the percentage of members of the population having the target property is (approximately) the same as the percentage of the same population having the measured property.

ambiguous   Having more than one meaning.

antecedent   The "if" clause of a conditional.

argument   A sequence of propositions intended to establish the truth of one of the propositions. The components of an argument are its premises and conclusion.

argument analysis   The process of interpreting (reconstructing) and evaluating an argument.

argument evaluation   The process of determining whether an argument is a good argument.

argument reconstruction   The process of rewriting in standard form an argument expressed in ordinary prose.

argument stopper   A response to an argument that has the effect of cutting off discussion and preventing careful argument analysis.

argumentative writing   Writing in which an author defends a point of view by means of arguments. Contrast with *descriptive writing* and *rhetorical writing.*

belief   A psychological attitude of acceptance toward a statement. To believe a statement is to think that it is a true statement.

benefit   Good or desirable consequence or feature of an action. Benefits are features of an action that count in favoring of performing it. Contrast with *harm*.

borderline case   Example in which the application of a vague term is indefinite.

causal chain   A sequence of causally related events.

causal factors reversed   See *factors reversed*.

causation   The process by which one event or group of events brings about another event.

cheap validity   In argument reconstruction, converting an invalid argument to a valid one simply by adding a premise saying that if the other premises are true, then the conclusion is true. Often, resorting to cheap validity is a way to avoid stating the underlying idea of the argument.

cogent argument   An argument that is not valid, but that follows a pattern such that all arguments following that pattern have a conclusion that is probably true if the premises are true; informally, an argument whose premises are good but not conclusive reasons for its conclusion.

common cause   One factor that causes each of two effects, which are not causes of one another. Two factors are said to have a common cause when neither is a cause of the other, but they are both the result of one causal factor.

comparative causal statement   A statement saying that one factor is a stronger or weaker cause of an effect within a population.

competing arguments   Arguments whose conclusions deny each other.

complete cause   The combination of all the factors causally responsible for an effect. Contrast with *partial cause*.

compound argument   An argument with one or more intermediate conclusions, which are then used to support a final conclusion.

compound sentence   Sentence formed by combining two or more simpler sentences.

conclusion   What an argument is intended to establish; the point of an argument; the proposition an argument is supposed to support.

conclusion indicator   Word that indicates the presence of a conclusion, such as "therefore" or "hence."

conclusive evidence   Evidence for a proposition that is so strong that it guarantees that the proposition is true.

conditional   Compound sentence formed by connecting two simpler sentences with the words "If . . . , then . . ." The part following "if" is the antecedent and the part following "then" is the consequent.

conjunction   Compound sentence formed by connecting two simpler sentences with the word "and" or its equivalent.

consequent   The "then" clause of a conditional.

context   The situation or circumstances in which a sentence is uttered, including the person who is speaking, the time, the place, and so on.

control group   In experiments, a group from which some suspected causal factor is withheld in order to see if its members show the effect under study anyway. Contrast with *experimental group*.

correlation statement   A statement comparing the rate at which a property turns up in two populations. Such statements can always be expressed by a sentence of the form: "*A* is (positively/negatively) correlated with *B* in population *P*." There is positive correlation when, within population *P*, the percentage of *A*s who are *B* is greater than the percentage of non-*A*s who are *B*. There is a negative correlation when the percentage of *A*s who are *B* is less than the percentage of non-*A*s who are *B*.

counterexample (to a generalization)   Actual or hypothetical example showing that a generalization is false.

declarative sentence   A sentence that is used to express a proposition. Contrast with *imperative sentence* and *interrogative sentence*.

deductively sound argument   A valid argument with true premises.

deductively strong argument   A valid argument with premises that are reasonable for a person to believe. The deductive strength of an argument can vary from one person to another, depending on the person's evidence concerning the premises.

defeated argument   Cogent argument with reasonable premises whose conclusion is made unreasonable for a person by the person's background evidence. Whether an argument is defeated for a person depends on that person's evidence.

descriptive writing   Writing in which an author merely describes some event or situation, without attempting to present arguments. Contrast with *argumentative* and *descriptive writing*.

direct justification of a conclusion   A premise directly justifies a conclusion when it properly appears in the list of steps justifying the conclusion. No intermediate steps are needed.

disbelief   A psychological attitude of rejection toward a statement. To disbelieve a statement is to think that it is a false statement.

disjunction   Compound statement formed by connecting two simpler statements with the word "or" or its equivalent.

distant cause   An event that causes another event with many intervening or intermediate causes.

evaluating an argument   The process of determining whether an argument is a good argument.

evidence Information indicating the truth or falsity of a proposition.

experimental group In experiments, a group that is exposed to a suspected causal factor. Contrast with *control group*.

explicit premise or conclusion Premise or conclusion of an argument that is directly stated in a piece of argumentative writing. Contrast with *implicit premise or conclusion*.

explicitly causal statement A statement describing a causal connection using some form of the word "cause." Contrast with *implicitly causal statement*.

factors reversed (in correlation statements) A correlation statement of the form "A is positively correlated with B in P" for which it is true that B causes A in P rather than that A causes B in P.

fallibilism The doctrine that a rational belief can be false; the idea that it can be reasonable to believe something on the basis of evidence that is not entirely conclusive.

falsity A property of a proposition that does not describe things as they actually are. A false statement does not correspond to the facts.

fine-tuning a reconstruction Improving on an initial reconstruction of an argument by making it clearer, more precise, and the best possible version of the argument under consideration.

general causal statement A causal statement reporting connection between kinds of events. In standard form; "C is a causal factor for E in population P." Contrast with *singular causal statement*.

general moral principle A generalization about moral matters; typically, a statement saying that all (or most) actions of a particular kind are right or wrong.

generalization Sentence expressing a proposition about a group of things rather than about individual things; also used to refer to the proposition expressed by such a sentence.

harm Bad or undesirable consequence or feature of an action. Harms are features of an action that count against performing it. Contrast with *benefit*.

ill-formed argument An argument that is neither valid nor cogent.

immediate cause An event which causes another event without any intervening or intermediate causes.

imperative sentence A sentence that is used to issue a command. Contrast with *declarative sentence* and *interrogative sentence*.

implicit premise or conclusion Premise or conclusion of an argument that is omitted from a piece of argumentative writing. Contrast with *explicit premise or conclusion*.

implicitly causal statement A statement describing a causal connection without using any form of the word "cause." Contrast with an *explicitly causal statement*.

implicitly relative sentence Sentence intended to express a relation or comparison but with one of the terms of the relation or comparison omitted.

incomplete argument   An argument with a premise or the conclusion omitted; especially, an ill-formed argument that can be made well-formed by the addition of an obvious premise.

incomplete sentence   Sentence with an element omitted, such as a quantifier.

indirect justification of a conclusion   A premise indirectly justifies the conclusion when it justifies some other premise that directly justifies the conclusion.

inductively cogent argument   See *cogent argument*.

inductively strong argument   A cogent argument with reasonable premises that is not defeated by one's background evidence. (The inductive strength of an argument can vary from one person to another, depending on the person's evidence concerning the premises.)

insubstantial criticism   Weak or flimsy criticism of an argument, often by means of argument stoppers.

intermediate conclusion   In a compound argument, a conclusion drawn from one or more premises which is then used to support the final conclusion.

interrogative sentence   A sentence that is used to ask a question. Contrast with a *declarative sentence* and *imperative sentence*.

invalid argument   An argument that is not valid.

literary merit   The quality of a piece of writing determined primarily by whether it is well-written, original, well-organized, and interesting. Contrast with *rational strength* and *rhetorical power.*

margin of error   In surveys, the maximum difference there is likely to be, resulting from purely statistical factors, between the rate at which a property is found in a sample and the actual rate in the target population; usually expressed by saying, "The margin of error is plus or minus x percent."

measured correlation   In correlation arguments, a correlation between two measured factors in a population.

measured property   In statistical arguments, a property that is directly observed or measured in the sample population. The measured property is generally taken to be an indication of the presence of the property that one is interested in learning about (the target property).

misevaluation of evidence   Mistaken views about what conclusion a body of evidence supports. This can lead to irrational beliefs.

missing quantifier   A sentence is missing a quantifier when it has the form of a generalization but does not contain a quantifier (i.e., a term saying how many of the *A*s are *B*s).

moral argument   An argument for a moral statement.

moral code   The set of moral generalizations stating the ways people in a society believe its members should behave.

moral generalization   See *general moral principle*.

moral inconsistency argument   An argument showing that a person or group does not have a consistent set of views.

moral proposition   A statement saying that some thing or action is right or wrong, good or bad, or should or should not be done.

motivational error   Irrational belief resulting from motivational factors (such as strong desires). These factors can prevent proper assessments of evidence.

narrow generalization   A generalization that applies to a limited number of things.

necessary condition   A condition that must be present for something to occur. *A* is a necessary condition for *B* just in case, if *B* is true, then *A* must be true as well.

negation   A sentence formed by preceding a sentence with the word "not."

negative correlation   See *correlation statement*.

nonrandomized experiment   An experiment in which subjects are assigned to an experimental group or a control group by a non-random processes, such as their own choice or the choice of the experimenter. Contrast with *randomized experiment.*

nonuniversal generalization   Any generalization other than a universal generalization.

overall value   The value or merit of an action obtained by combining its harms and benefits.

overall value principle   A principle, used in some moral arguments, comparing the overall value of the harms and benefits of alternative actions: Person (or group) *S* should do action *A* if and only if the overall value of the harms and benefits of action *A* is greater than the overall value of the harms and benefits of any alternative to *A* that is available to *S*.

partial cause   One among other causes of an effect. Contrast with *complete cause.*

past-to-future argument   An argument making a prediction about an unobserved thing or event (often but not always in the future) and using as premises propositions about similar things or events in the past.

pattern of argument   The logical structure or form of an argument. Many arguments conform to one of the common patterns of argument displayed in Appendix B.

positive correlation   See *correlation statement*.

predicate logic   Logical system in which sentences are broken down in subunits such as subjects and predicates.

premise   A part of an argument that is supposed to help establish the argument's conclusion.

premise indicator   Word or phrase indicating the presence of a premise, such as "My reason is . . ."

proposition   What is asserted or expressed by a declarative sentence; a statement.

quantifier Word indicating quantity, such as "all," "most," and "some," in a generalization.

random sample In surveys, a sample selected in such a way that every member of the target population has an equally good chance of being selected for the sample population.

randomized experiment An experiment in which subjects are placed in the experimental group or the control group as a result of some randomizing process. Contrast with *nonrandomized experiment.*

rational strength The degree to which something (typically an argument) provides good reason to believe something. Contrast with *literary merit* and *rhetorical power.*

rational thinker A person who forms beliefs on the basis of available evidence and who is able to evaluate arguments carefully and accurately; a person who does not misevaluate evidence and is not subject to motivational errors.

rationality Reasonableness. A rational belief is a sensible or reasonable belief, that is, one that it is appropriate to have given the evidence the believer has.

reconstructing an argument The process of identifying the premises and conclusions in a piece of argumentative writing.

reference class A group or collection to which something is compared. Often omitted from implicitly relative sentences.

relative morality The idea that what is moral behavior in one society or for one person may not be moral behavior in another society or for another person. Also, the idea that a statement about morality may be true for, or relative to, one person or society but false for another person or society.

representativeness premise In statistical arguments, a premise saying that the sample population is similar to, or representative of, the target population; more precisely, a premise saying that the percentage of members of the target population having the target property is (approximately) the same as the percentage of the sample population having the target property.

rhetorical power The power to persuade or convince. Arguments, as well as people, can have rhetorical power. Contrast with *rational strength* and *literary merit.*

rhetorical writing Writing in which an author forcefully expresses a point of view but does not defend that point of view by means of arguments.

sample population A group of individuals who are studied in an effort determine statistical information about a larger group of individuals (the target population); also called "sample."

sentence A grammatically complete pattern of words that expresses a thought, asks a question, or issues a command.

sentential logic A system of logic that deals with the logical relations among complete sentences. It does not take into account features of units smaller than whole sentences.

simple moral argument   An argument for the conclusion that some action should (or should not) be done simply because it has some property. Such arguments often appeal to allegedly unoverridable moral factors.

simple statistical statement   A statement reporting the rate at which a property turns up in some population. Such statements can always be expressed by a sentence of the form "*X percent* of a certain *population* has a certain *property*."

singular causal statement   A statement reporting a causal connection among individual events. Contrast with *general causal statement.*

slanted question   In a survey, a question that misleads people and induces them to give a particular answer.

specific statement   Statement attributing a property to a particular object. Contrast with a *generalization*.

standard form for statements   Standard patterns for expressing generalizations, statistical statements, and causal statements.

standard form of an argument   Argument written out as consecutively numbered premises and a conclusion, with justifications for each line in the argument stated.

standard patterns of argument   Common ways to reconstruct testimonial, statistical, causal, and moral arguments.

statement   What is asserted or expressed by a declarative sentence; a proposition.

stating a justification   In argument reconstruction, the process of stating whether a line in an argument is an implicit or an explicit premise or which previous steps of the argument follows from.

statistical statement   Statement describing a statistical matter, typically the percentage of some group having some property.

strong argument   A well-formed argument whose premises are reasonable and, in the case of cogent arguments, which is not defeated by one's background evidence. The strength of an argument can vary from one person to another, depending on the person's evidence.

stronger cause   A causal factor that is more effective than another causal factor in bringing about the same effect.

sufficient condition   A condition that is enough to guarantee the occurrence of something else. *A* is a sufficient condition for *B* provided, if *A* is true, then *B* must be true as well.

survey argument   A statistical argument based on a survey or questionnaire.

suspension of judgment   A psychological attitude toward a proposition in which one has no opinion about the truth value of the proposition. To suspend judgment about a proposition is to fail to think that it is true and to fail to think that it is false.

target correlation   In correlation arguments, a correlation believed to obtain in a target population based on the fact that a measured correlation has been found in

a sample. The correlated factors in the target correlation are usually not directly measured.

target population   In statistical arguments, the group of individuals about whom a statistical conclusion is drawn based on statistical information about a sample.

target property   In statistical arguments, the property one is primarily interested in learning about.

testimonial argument   An argument using as a premise the fact that someone has testified, or said, that a statement is true and concluding that the statement is true.

testimony   A statement to the effect that some other proposition is true.

token   A specific instance or example of a type.

total evidence   The totality of one's evidence. Contrast with *partial evidence*.

truth   A property of a proposition that describes things as they actually are; correspondence with the facts.

truth value   Truth or falsity. Vague statements are sometimes said to have an indefinite or intermediate truth value.

type   A kind or sort of thing; a category of things. Instances of a type are tokens of that type.

undefeated argument   A cogent argument with reasonable premises that is not undermined by one's background evidence.

universal generalization   Generalization properly expressed using the quantifier "all."

unnecessary premise   A premise appearing in a reconstruction of an argument that plays no role in supporting the conclusion.

unresolvable dispute   Disagreement that cannot be settled by means of rational discussion.

vague   Having a meaning that is indefinite or imprecise, especially as result of containing terms that have borderline cases of application.

valid argument   An argument following a pattern such that it is impossible for an argument having that pattern to have true premises and a false conclusion.

weak argument   An argument that is not strong because it is ill-formed, has an unreasonable premise, or is defeated.

well-formed argument   An argument whose conclusion does follow from its premises. Well-formed arguments can be (deductively) valid or (inductively) cogent.

wide generalization   Generalization that applies to many things. In a statement of the form "All *A*s are *B*s," the more *A*s there are, the wider the generalization is; the fewer *A*s there are, the narrower the generalization.

Introduction

I. ARGUMENTS

This text presents a method for understanding and evaluating arguments. We encounter arguments frequently–when we read, when we talk, and when we are thinking to ourselves. Some topics are the focus of intense, often passionate argument. Sometimes a hotly debated topic is prominent for only a short time, and quickly followed by the next issue that grabs public attention. As I write this section, a tragic mass suicide by a group of people belonging to a religious group has generated widespread discussion. People are arguing about the factors that lead individuals to join such groups and to believe things that seem incredible to most of us. A few weeks earlier the first successful efforts to clone mammals were reported. This announcement was followed by widespread debate about the morality of such activity and about whether cloning of humans is possible and whether research into it should be permitted. Some subjects are the focus of public argument for much longer periods of time. There are ongoing debates, for example, about the morality of abortion and the effectiveness of capital punishment. And some more abstract issues, such as whether people really do have free will or whether morality is objective, are the subject matter of endless, and fascinating, argument among philosophers and others.

One place where we find arguments is on the editorial page of a newspaper, either in the editorials themselves or in the opinion columns and letters to the editor. Here is a fairly typical example:

Example 1

Where Were You Then?

I have a few questions for those who have raised their voices against the recent Supreme Court decision to preserve our constitutional right to engage in symbolic acts of protest, including the burning of the American flag:

Are you as outraged when our Constitution is assaulted?

Did you protest when the constitutional rights of black citizens were denied? Did you work for their rights to vote, to equal education, to fair housing?

Have you spoken out against the assault on our Constitution by the illegal maneuverings of the boys in the White House during the Iran-Contra affair?

. . . In short, can you honestly say that you love your flag when you have been silent in protecting all that it stands for?[1]

Example 1 is an excerpt from a letter to the editor about a 1989 Supreme Court decision on flag burning and the First Amendment to the Constitution. The First Amendment says that "Congress shall make no law . . . abridging freedom of speech." Speech has long been taken to include symbolic actions in addition to ordinary speaking and writing. The issue in this case was whether flag burning is a kind of speech covered by this amendment. The Court ruled that it was. This evoked considerable protest from those who thought flag burning should be illegal. The author of Example 1 is responding to critics of the Supreme Court's decision.

On first reading it may seem that the author of the letter makes a good point against those who oppose the Supreme Court's decision. Clearly, she supports the Court's decision permitting flag burning as a protest, and she disapproves of those who have condemned the decision. This is made plain by her first sentence, stating that she has "a few questions" for opponents of the Court's decision. Before we decide whether this letter makes a good point, however, we should look more carefully at just what the letter says.

Instead of discussing the merits of the decision, the author attacks critics of the decision by suggesting that they have not done all they should to defend the Constitution in other cases. Notice that the author doesn't directly say that the critics haven't defended the Constitution in other cases. Rather, by asking whether they have, she suggests that they haven't. These critics may or may not have defended constitutional rights in these other cases. The author's point, however, does not address

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1. Vicki Lewin, Letter to the editor, *Rochester Times-Union*, July 12, 1989, p. 7A.

the merits of the Court's decision in this case, nor does it address the arguments of the opponents of the decision. There is nothing in the letter that shows that the decision was a good one, either because it conforms to the provisions of the Constitution or because the country benefits from permitting flag burning. This letter is typical of many discussions of controversial issues in that it sheds more heat than light on the issues. It attacks people who take an opposing view, but it says nothing about the merits of the view itself.

Contrast Example 1 with the following excerpt from an editorial opposing the death penalty:

Example 2

No to the Death Penalty

It's unfair, it's costly and it's not as tough on crime as you think . . . .

Are death penalty laws fair? Is it in our interest to pass them?

The answer to both questions is no. Some criminals may not deserve to live, but that doesn't mean the death penalty is a good idea.

Let's start with fairness.

The bill before the Legislature is carefully drawn. It would kill only the worst killers—those who do it for hire, who torture, who have more than one victim, who kill while committing other crimes, who kill a police officer.

What's more, the bill lists many mitigating circumstances: emotional disturbance, the influence of alcohol or drugs, impaired mental capacity, no significant history of violent crime.

Yet other states have careful laws and good intentions too—and even so, studies show that the death penalty, as it is applied, discriminates by race.

"Those who kill whites are between three and four times more likely to be sentenced to death than those who kill blacks," University of Florida expert Michael Radelet told us.

Clearly, juries tend to be more outraged when a victim is white— which makes a mockery of fairness.

Now for self-interest.

You may think it's cheaper to kill a criminal than to keep him locked up for 40 years. Guess again.

There are at least 11 costly, time-consuming stages built into the process of legal review for death sentences.

Can't we cut through all that? Not if we care about fairness . . . .

Imagine what would be spent in New York so that "expert counsel" can file motion after motion, year after year, with exquisite regard for every conceivable right of their clients—while the families of victims wait bitterly for justice.

It's just not worth it.

Why waste millions of our tax dollars every year, clog the already crowded courts, fatten the wallets of lawyers, and still be no safer?

Why not spend the money instead on sure, swift law enforcement?

> Why not, in fact, put the worst criminals in prison for good?
> Life without parole—that's the governor's alternative to the death penalty, and it makes sense . . . .
> Better to say no to the death penalty. It's not fair; it's not worth the cost. Good riddance.[2]

In this editorial the writers argue that we should not adopt the death penalty because it is unfair and too costly. The reason that it is unfair, they say, is that juries are racially biased–they are more likely to sentence to death those who kill whites than whose who kill blacks. Their reason for thinking that the death penalty would be so costly is that to guarantee fairness convicted murderers must have the right to appeal their convictions and sentences. As a result, there would usually be many trials before an execution occurs. These are important points to consider in thinking about the death penalty. Of course, you might think that other points that favor the death penalty out-weigh them. Or you might think that there are ways to avoid racial bias and excessive cost. Still, this editorial presents an argument worthy of serious consideration.

It is not our purpose now to decide whether this argument is a good one. Rather, the point of looking at it now is to contrast the reasoned argument it con-tains with the less focused outburst in Example 1. Example 2 is a relatively thought-ful discussion of an issue, far superior to Example 1. One of the goals of this text is to learn to distinguish serious arguments from other kinds of writing.

We also find arguments in advertisements.

Example 3

Let Inside Traders Work for You

If you want to see your investment dollars grow, trust our investment advisors at Inside Traders, Inc. We can't guarantee that every investment you make with us will be a winner, but our record is exemplary. We work hard to get you the information you need to make wise decisions. Our customers stick with us and we have become one of the most successful investment advisory firms in the nation. So, if you want results, let Inside Traders work for you.

The point of this advertisement is to convince readers that Inside Traders is a good investment advisory service. A good investment advisor is one who gives clients advice that helps them select profitable investments. In general, a better advisor gives advice that leads to more profits and a poorer advisor gives advice that leads to fewer profits.[3]

The upbeat tone of Example 3 might lead you to think that it makes a strong case for the merits of Inside Traders. However, a closer look reveals that there isn't

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2. *Rochester Democrat and Chronicle*, April 2, 1989, p. 12A.

3. Other factors might also be used in measuring the quality of an investment advisor. For example, some advisors might treat their clients more courteously than others. We will ignore such factors in this discussion.

much of an argument here. The alleged facts presented on behalf of Inside Traders are that their people work hard, that customers stick with the company, and that it is a successful firm. Now, these facts may provide some reason to think that Inside Traders gives good advice, but they are far from conclusive.

What is particularly noteworthy for our purposes is the claim that the firm is "successful." It is not clear just what this means. To say that an investment advisory firm is successful might mean that it gives good advice, and this would be directly relevant to your concerns as a potential investor. However, to say that a firm is successful is typically to say that it makes a big profit itself. The fact that Inside Traders makes a lot of money itself, of course, has no direct connection with the quality of the advice they give to their clients. Indeed, they might make their profit by encouraging their clients to buy and sell stocks frequently, thereby increasing the amount of the commissions paid to Inside Traders.

In this example, figuring out whether a good argument is presented depends largely on understanding exactly what is meant by the words used. It is easy to let the positive style of the presentation lead us to think that it presents a good argument. One of our goals in this text is to learn to get beyond such superficial features and to identify and assess the merits of the basic argument itself. We'll see that we often have to pay careful attention to exactly what is meant by the claims made in an argument.

A third place in which we find arguments is in reports of scientific research, such as the following excerpt from a newspaper article reporting on a study of the drinking habits of college-age students:

Example 4

Drinking Age Law May Encourage Minors to Drink

The 21-year-old drinking age might actually encourage minors to drink, according to a new study . . . [which] . . . showed that 81 percent of underage students admitted using alcohol while only 75 percent of students over 21 said they consumed alcohol. Also, 24 percent of underage students were heavy drinkers, compared to 15 percent of those of legal age considered heavy drinkers.[4]

In Example 4 the writer's claim is that setting the minimum drinking age at 21 may encourage minors (people under 21) to drink. This is an interesting and important point, since the main reason for raising the drinking age to 21 was to discourage drinking by people under 21. The author of the article claims that the law may have an effect exactly the opposite of what was intended. According to the article, this claim about the effect of the drinking age law is supported by statistical data showing that the percentage of students under 21 who drink alcohol is higher than the percentage of students 21 and over who drink. Additional support is supposed to come from the fact that a higher percentage of the younger students were heavy drinkers.

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4. "Drinking Age Law May Encourage Minors to Drink," *Rochester Times-Union*, May 30, 1989, p. 5B.

To understand fully this sort of argument one must be familiar with statistical claims based on surveys and scientific studies.

Notice that the passage doesn't say merely that minors drink more than those 21 and over. It also says that the higher drinking age law may *encourage* drinking by minors. To say that the law encourages drinking by minors is to say that the law brings about or causes an increase in drinking by minors. (Perhaps this would happen because minors tend to display their independence by breaking the law.) It is important to realize, however, that the information presented here says nothing about how much drinking minors do when there is a lower drinking age. For all we can tell from this report, people under 21 drink just as heavily when the drinking age is 18 rather than 21. So, the information given here provides no basis for thinking that the law encourages drinking by minors. This information does not show that the legal drinking age affects people's drinking habits. As a result, the argument presented here is weak.[5]

In each of the four passages we have examined the author is trying to prove or establish some point. To do this the author produces some reasons or evidence supporting that point. These reasons and the points they are intended to establish combine to form ***arguments***. The claim the argument is intended to establish is its ***conclusion***. The reasons that are supposed to support the conclusion are the ***premises*** of the argument. Part of what we've been doing in examining Examples 1–4 is identifying the premises and conclusions of the arguments they contain.

Identifying the premises and conclusions of the arguments presented in passages such as these is essential to understanding or interpreting the argument in the passage. It is part of determining exactly what the author means. What can make this task difficult is the fact that people do not always express their arguments clearly. Sometimes people leave some of their premises unstated, on the assumption that readers and listeners will know what they have in mind (or won't notice their reliance on faulty assumptions). In interpreting argumentative passages we often have to add premises to the arguments to make explicit their overall structure and content. Furthermore, because arguments typically occur as parts of longer essays, we have to distinguish the premises and conclusion from other parts of the passage. We call the process of interpreting and clarifying an argument ***reconstructing the argument***.

Once we have identified the argument in a passage, we can go on to decide whether the authors have given good reasons in support of their claims, that is, whether they have succeeded in establishing the point they set out to establish. When we do this we are ***evaluating the argument***. ***Argument analysis*** is the process that consists of these two elements, reconstruction and evaluation, as shown in the following chart. As we develop and refine this method, additional details will be added to the chart. By following the steps identified here, the process of argument analysis will become systematic and well-defined.

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5. Note, however, that the claim actually made is only that the drinking age law *might* encourage drinking by minors. By hedging in this way, the author makes a very modest claim.

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│  │                                       │  │
│  │   The Steps of Argument Analysis      │  │
│  │                                       │  │
│  │   1.  Reconstruct the argument.       │  │
│  │   2.  Evaluate the argument.          │  │
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So far we have briefly illustrated the method of argument analysis as it applies to written material. However, this method is not limited to the interpretation and evaluation of the writings of others. You also deal with reasons and arguments when you think about something on your own. For example, suppose you wonder whether your favorite team will win the championship this season or you want to know whether going to college really helps people get better jobs. What you are likely to do in these cases is to think about all the information you have relevant to these topics and try to determine what conclusion that information supports. To do that is to consider the reasons, or the arguments, on both sides of a question and determine which is the stronger argument.

Thus, you can also evaluate reasons and arguments when you are simply thinking about things on your own. Arguments are not restricted to situations in which two or more people are debating some issue. In fact, as we will see, the best way to approach arguments is not to think of them as parts of contests in which one person tries to defeat another. Rather, it is best to think of them as factors you consider when you want to determine the most reasonable thing to believe about a topic. When other people present arguments, they simply provide you with new arguments to consider in deciding what you should believe.

There is no limitation on the sort of topic about which arguments can be constructed. Anything that you can think about or study is something you can formulate arguments about, whether it's the behavior of tiny particles, the causes of crime, or the history of sports. Arguments are made in all fields, including morality, religion, and art. We can argue about moral behavior, the merits of various religious views, and the quality of paintings and musical compositions.

Once you start to look for arguments, you'll realize that you encounter them frequently. Newspapers and magazines contain essays, editorials, and letters to the editor that include arguments. Scientific articles and books present arguments for scientific theses, and these arguments are commonly summarized in newspapers and magazines. Advertisements may contain arguments about the effectiveness and value of a product. In discussions with friends and colleagues, one frequently hears reasons in support of some point of view. Arguments are all around us.

People regularly interpret and evaluate the arguments they encounter, though perhaps without realizing exactly what they are doing. They attempt to understand

these arguments and decide whether they are good ones. While in many cases people assess arguments accurately and easily, there are also cases in which they fail to do this. This is not surprising. Argument analysis is a skill that, like many others, can be done well only after study and practice.

The goal of this text is to improve your ability to analyze arguments. It presents a precise method for identifying, interpreting, and evaluating arguments. The goal is not to demonstrate which specific arguments are good ones and which are not, but to provide you with a method for evaluating the arguments you encounter or think of, no matter what the topic is.

EXERCISES AND STUDY QUESTIONS[6]

*1. What are the two main parts of arguments?

 2. What are the two main elements of argument analysis?

*3. We often say that people who yell at each other as part of a heated dispute are having an argument. What is the connection, if any, between this kind of argument and the arguments discussed in the text?

 4. The text notes that Example 1 does not contain a good argument. Do you agree? Why or why not?

*5. Reread Examples 1–4. State precisely and clearly the main conclusion of the argument in each example.

 6. How good are the arguments in Example 2? Do you find them convincing? Why?

 7. The passage that follows is an excerpt from a discussion of a Supreme Court decision in the Johnson Controls case. Johnson Controls makes batteries, and some of their workers are exposed to dangerous chemicals. Pregnant women exposed to these chemicals have a significantly higher than normal chance of giving birth to a child with birth defects. The company adopted a policy prohibiting all women of child-bearing age from working at these jobs. Some women employees sued, claiming that the policy amounted to sex discrimination. The Supreme Court ruled in favor of these women.

> **Protect the Unborn from Greed**
>
> The Supreme Court decision banning corporate fetal-protection regulations is a sham. Though hailed by some misguided souls as an end to "illegal sex discrimination," in fact the court has announced to the nation that the child in the womb is of absolutely no significance to the future of the family.

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6. Answers to exercises marked with an asterisk may be found at the end of the chapter. Answers for most odd-numbered exercises and some even-numbered exercises are given.

It is indeed unfair for women who work to face situations that belittle their high level of professionalism by denying them equal remuneration. It is an insult to all working women when such deplorable circumstances arise.

But it is even more unfair for an employer to disregard the special needs of female employees as they either plan to bear children or in fact bear children. Surely, the moral employer would not hesitate to protect a woman employee from a situation threatening her or her children.

But nothing in the moral order is of any significance to this present court, as this decision makes perfectly clear. Not only does the court ignore corporate desires to protect female employees, but it denies that a pregnant woman is indeed present with a child as she works.

The child in the womb does not exist! Thus saith the court. The woman who plans to have children one day is nobody special! Thus saith the court. The family unit which functions only because both parents must work is to be economically deprived if mom does not want to submit herself to certain chemical threats. Thus saith the court.[7]

Do you think that this is a carefully argued piece of writing, similar to Example 2, or is it more like Example 1? What are the main points made in the essay? What do they show about the merits of the Court's decision?

II. REASON, RHETORIC, AND ARGUMENT ANALYSIS

The kind of argument analysis we will study in this text differs from some other familiar sorts of analyses of arguments. Popular discussions of arguments often focus on issues having to do with persuasiveness and verbal competition. Some analysts focus on the literary merit of the writer's prose, for example. In this section we will contrast rational argument analysis of the sort examined in this text with these other kinds of analysis.

Gerry Spence, an enormously successful trial lawyer, has written a best-selling book about arguments called *How to Argue and Win Every Time*.[8] Spence sees arguments as tools we use to get what we want from others. He writes, "Argument is a tool by which we can achieve an end, satisfy a want, fulfill a desire. Argument is the mechanism by which we reveal the truth—the truth for us."[9] As he sees it, winning an argument is succeeding in getting what we want out of it.

The way Spence thinks about arguments is similar to the way many commentators think about political debates. In these debates, candidates defend their records and criticize the records of their opponents. You might think that political debates contain a wealth of arguments, and that discussions of the debates offer analyses of

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7. Judie Brown, "Protect the Unborn from Greed," *USA Today*, March 25, 1991, p. A6.

8. Gerry Spence, *How to Argue and Win Every Time* (New York: St. Martin's Press, 1995).

9. Ibid., p. 25.

these arguments. It will therefore be instructive to look at some typical analyses of campaign debates. We'll use as our examples accounts of the 1988 debate between presidential candidates George Bush and Michael Dukakis. Descriptions of more recent debates would be similar in character. Both excerpts are from analyses that appeared in the *Washington Post* in the days immediately following the debate.

Example 5

Bush on Points

It was a close match, but in watching Sunday night's bloodless affray between George Bush and Michael Dukakis, I scored it 12–8 for Bush. The vice president came across as a man who pays a decent respect to Rule Six, this being the maxim that goes as follows: Don't take yourself too damn seriously.

Dukakis may have a sense of humor, but it hasn't been visible thus far. The gentleman is Very Serious. He is also very composed and very articulate. He is very almost everything, but he is not very appealing. Dukakis has a way of smiling with his mouth but not with his eyes. Like a poorly thawed sweet roll, he is still frozen in the middle.

The value in these engagements lies in the opportunity they provide for judgments of character. Is the candidate an attractive person? Would you feel comfortable with him in the Oval Office? Never mind his views on subsidies for wheat and corn: The question is, do you like the guy? Do you trust him?

My impression was that Bush looked sure of himself, and Dukakis looked too sure of himself. Bush exhibited the mature confidence of a man who is not afraid to kid an institution: "Is it time for our one-liners?" Dukakis got off his prepared jabs with the ease of a Johnny Carson who has memorized his midnight monologue. Bush was better.[10]

Charles Krauthammer presents a rather different analysis of the debate.

Example 6

Cold Fish, Yes, But He Won

Maybe I'm a pointy-head, but in the debate I saw Sunday night, Michael Dukakis knocked George Bush around the ring for 90 minutes . . . .

The winner, going away, was Dukakis. Of course, I may not be the best judge of what plays . . . . [A] small focus group of undecided voters found that Dukakis had turned nearly all of them off. Dukakis lost one of these viewers at the opening handshake when he showed up six inches shorter than Bush.

The Bush I saw Sunday night was tall and terrible. He whined. He stumbled. He looked nervous and hyperactive. From the first question about drugs, he was on the defensive . . . his tongue betrayed him. He mangled his lines . . . .

> Dukakis′ close was strong. Maybe too strong. If there is a backlash against his debate performance it will not be against the solid content but against the stolid persona. Not just cool and detached but smug and smirky.[11]

The main goal Kilpatrick and Krauthammer have in their analyses is to establish who "won" the debate. Winning, here, involves making the best impression on voters. Our goal in looking at these analyses is not to add to this discussion about who won the debate. Instead, our goal is to call attention to two very different ways of looking at arguments.

One striking feature of these analyses is their emphasis on competition. Both authors use boxing metaphors to express their overall evaluation of the debate, Kilpatrick claiming that he scored it "12–8 for Bush," while in Krauthammer's view "Michael Dukakis knocked George Bush around the ring for 90 minutes." Although it is perfectly appropriate to look for winners and losers in presidential debates, our goal in argument analysis is not to look for winners and losers in competitions. In analyzing an argument, our goal is to determine whether the argument succeeds in showing its conclusion to be true.

If two people give arguments on opposing sides of some issue and you conclude that one has given a better argument, it may be true that the one who gave that argument has "won," but that is of secondary importance. The important point, for our purposes, is that it is now reasonable for you to believe the conclusion of the stronger argument. Think about arguments with the goal of answering the question "What should I believe now?" rather than "Who won this intellectual contest?"

A second important feature to notice in Kilpatrick's and Krauthammer's analyses is that they emphasize demeanor, elocution, and style. Krauthammer says that Bush "whined," that he "looked nervous," and that he "mangled his lines." Dukakis, on the other hand, was "not just cool and detached but smug and smirky" and a "cold fish." Kilpatrick tells us that Dukakis is "very composed and very articulate . . . but he is not very appealing." Bush "looked sure of himself" and displayed "mature confidence." What is entirely missing from these analyses is a discussion of the merits of the arguments the candidates gave for the various claims they made.[12]

When applying the techniques of argument analysis to the Bush-Dukakis debate, we would look carefully at the content of the claims the two candidates made. Emphasis would be on how well they defended their points. Did either give any good reasons to think he would be a better president? Did either give any good reasons to prefer his proposals or style of leadership to those of the other? We would ignore their speaking styles and personalities entirely, or discuss them only when they bear on their arguments about the issues.[13]

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11. Charles Krauthammer, "Cold Fish, But He Won," © 1988, Washington Post Writer's Group. Reprinted with permission.

12. Only portions of the entire essays have been reprinted here. However, almost no attention is given to the merits of the arguments in these essays.

13. Although not relevant to this analysis, speaking style and personality are still worthy of consideration as qualifications for the presidency.

There is nothing wrong with analyzing debates in the way Kilpatrick and Krauthammer do. They are addressing the ***rhetorical power*** of the debaters and their arguments. A person is rhetorically powerful when the person can convince people of what he or she says. A person might be rhetorically powerful as a result of the ability to present ideas in a very clear, logical, and convincing manner. But rhetorical power also can result from rather different factors. A person who speaks clearly, has a strong voice, a confident manner, and an honest appearance may be more rhetorically powerful than a person lacking these traits. The same arguments may be more persuasive when presented by a person having these traits than by a person lacking them.

Like people, arguments themselves can have rhetorical power. Some arguments tend to convince people of their conclusions. Sometimes, this effectiveness is a consequence of the fact that the argument really is a good one: its premises do provide strong reasons to accept its conclusion. But sometimes arguments are rhetorically powerful for other reasons. For example, arguments that appeal to particularly vivid and striking examples sometimes tend to convince people of general conclusions that they do not really support.

In their discussion of the presidential debates, analysts such as Kilpatrick and Krauthammer focus on the impact a speaker's performance might have on the audience. In this case, the relevant fact is whether the candidate is likely to attract voters by his performance. And it may be that the factors they look at are what influence voters. If that is the case, then it is appropriate for them to examine these factors, and it is equally appropriate for the candidates themselves to worry more about their appearance and their debating style than about whether they actually have any good reasons to believe the things they say.[14]

However, there is another important aspect of analyzing an argument. Besides examining its rhetorical power, we can assess its ***rational strength***. An argument has rational, or logical, strength when it provides a good reason to believe its conclusion, even if it does not always persuade people. Likewise, an argument lacks rational strength when it does not provide a good reason to believe its conclusion, even if it does persuade people. So, rational strength and rhetorical power are very different things.

To illustrate further the difference between assessments of the rational strength of an argument and assessments of other features, consider the following excerpt from a commentary by Annette T. Rottenberg on an article by Roger Sipher. Sipher had argued for the abolition of laws requiring attendance at school. Rottenberg comments as follows:

Example 7

The strengths of Sipher's argument are clear, direct organization, readable language, and listing of the specific dividends that would follow

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14. Of course, it is also possible that what voters pay attention to in debates is in part determined by what commentators such as Kilpatrick and Krauthammer choose to write about or talk about.

implementation of his proposal. Equally important is the novelty of the proposal, which will outrage some readers and delight others. In either case the proposal will arouse attention and initiate discussion.

However, the originality of the solution may also constitute a weakness. The more original the solution to a problem, the more likely it is to encounter initial resistance. Sipher's argument is too short to answer the many questions his readers might have about possible disadvantages. The argument, in other words, should be considered an introduction to any attempt to solve the problem, a limitation of which Sipher was probably aware.[15]

In the first sentence of this excerpt Rottenberg comments on the way in which Sipher presents his argument, saying that it is clear and direct. This is surely a good feature of an essay, but it has no direct bearing on the rational strength of the argument. If Sipher's argument is as clearly stated as Rottenberg suggests, then it should be easy for readers to understand just what his argument is. His clear style, however, tells us nothing about how good an argument it is; it might be a clearly stated argument that lacks rational strength since it offers no good reason for its conclusion. Rottenberg also comments on the novelty of Sipher's argument. That might make it interesting and provocative, but it also has nothing to do with its rational strength. Novel arguments can be good ones, and they can be very bad ones. These considerations have to do with the ***literary merit*** of Sipher's essay, or how original, interesting, and well-written it is. Finally, Rottenberg says that Sipher's argument will "encounter initial resistance." This comment addresses its rhetorical force, not its rational strength.

When you examine an argument for rational strength, you are attempting to determine whether the argument's premises provide you with good reason to believe that the argument's conclusion is true. Although people do concern themselves at times with rhetorical power and with literary merit, in many ordinary situations it is rational strength that is our primary, or even our only, concern. For example, suppose that you wonder whether going to college is worth the time, money, and effort it takes. To help you decide, you look into the question of whether college graduates typically earn higher incomes and lead more fulfilling lives than people who don't graduate from college. You read some articles about the topic, including some that take opposing views on the matter. Your goal in evaluating what you've read is not to find out which authors present their arguments most clearly, or which arguments are most likely to be persuasive to an average reader, or which author presents the most novel view. You want to know what the evidence is about the lives of college graduates. Your interest is in the truth of the matter, not in the rhetorical or literary

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15. Annette T. Rottenberg, *Elements of Argument; A Text and Reader*, 2nd ed. (New York: St. Martin's Press, 1988), p. 44. Roger Sipher's article "So That Nobody Has to Go to School If They Don't Want to" is reprinted in the same volume, pp. 41–42.

merit of the essays. In other words, your concern is with the rational strength of the arguments about the issue and the truth about the value of a college education.

There may be times when determining the truth is not your goal. For example, sometimes your main goal is to make yourself feel good. If you had this goal when you studied a topic, you'd want to end up believing whatever was most comforting, interesting, or exciting, whether it is true or not. Thus, for example, some people find it very exciting to believe that there is life on other planets. Such a belief might make them feel good. Other people might find such a belief frightening. They would prefer to believe that there is no life on other planets. When these people reason about life on other planets, they may have something other than determining the truth as their aim. Another reason you might study a topic is to find something interesting or original to say about it, perhaps in a paper you have to write. In this situation, the truth of what you say may be of secondary importance to you.

In this text, however, we are not concerned with these other factors. The fact that believing something would be comforting or exciting or original just has no connection with whether or not it is true, or with whether or not there is some argument that shows it to be true. In assessing an argument, we will not be concerned with its rhetorical power, its originality, or its provocativeness. To focus on rational strength will require some effort, because a large part of what we ordinarily read and hear focuses on rhetorical power or the other factors mentioned. As the example of determining the value a college degree illustrates, rational strength is what we do (or should) care about in most cases.

EXERCISES AND STUDY QUESTIONS

*1. According to the text, you can evaluate an argumentative essay in terms of the rational strength of its argument, its rhetorical power, and its literary merit. State clearly the main things that go into each type of evaluation.

2. The text mentions several factors that make a person rhetorically powerful. What are they? Are there factors that add to rhetorical power other than those mentioned in the text?

*3. Could an argument be both rhetorically powerful and rationally strong, or are these exclusive features?

4. Suppose that an English professor analyzes a debater's performance by evaluating her grammar, her vocabulary, and the organization and structure of her answers. These considerations have mainly to do with literary merit. Do they have any bearing on rational strength or rhetorical power?

*5. Discuss the following claim: Arguments are best when they are presented clearly, when the sentences used are short and direct, and when jargon is avoided.

6. In Example 6, Krauthammer says that Dukakis lost one viewer "at the opening handshake when he showed up six inches shorter than Bush." This remark suggests that being tall contributes to one's rhetorical power. What other physical and personality traits do Krauthammer and Kilpatrick mention that they think

contribute to, or detract from, one's rhetorical power? Do you think that these factors do affect how people react to an argument? How could you find out if it is true?

7. While Kilpatrick's and Krauthammer's essays deal only with the rhetorical power of Bush and Dukakis, we can look at their own arguments and assess their rational strength. Kilpatrick argues that Bush won the debate, while Krauthammer argues that Dukakis won. What are the main points each author presents in support of his conclusion? How good are their arguments (from a rational point of view)?

8. In the third paragraph of his essay, Kilpatrick writes, "Never mind his views on subsidies for wheat and corn: The question is, do you like the guy? Do you trust him?" What is Kilpatrick's point here? Do you agree with him?

III. WAYS PEOPLE DEAL WITH ARGUMENTS

People respond to arguments in a wide variety of ways. No doubt the way a particular person responds varies from one time to another, depending upon the topic of the argument, the person's mood, or any number of other factors. Nevertheless, we can identify a few general types of respondent. We'll build upon a classification drawn up by Issac Watts in 1775 in his book *Logick*. Watts identifies four types of respondents: the credulous person, the person of contradiction, the dogmatist, and the skeptic, which he describes as follows:

> *The credulous person:* "The credulous Man is ready to receive every Thing for Truth, that has but a shadow of Evidence; every new Book that he reads, and every ingenious Man with whom he converses, has Power enough to draw him into the Sentiments of the Speaker or Writer. He has so much Complaisance in him, or Weakness of Soul, that he is ready to resign his own Opinion to the first Objection which he hears, and to receive any Sentiments of another that are asserted with a positive Air and must Assurance."[16]

> *The person of contradiction:* "The Man of Contradiction is of a contrary Humour, for he stands ready to oppose every Thing that is said: He gives a slight Attention to the Reasons of other Men, from an inward scornful Presumption that they have no Strength in them. When he reads or hears a Discourse different from his own Sentiments, he does not give himself Leave to consider whether that Discourse may be true; but employs all his Powers immediately to confute it."[17]

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16. Issac Watts, *Logick* (London: John Clark and Richard Hett, 1725), p. 208.
17. Ibid.

The dogmatist: "By what Means soever the Dogmatist came by his Opinions, whether by his Senses or by his Fancy, his Education or his own Reading, yet he believes them all with the same Assurance that he does a mathematical Truth; he has scarce any mere Probabilities that belong to him; every Thing with him is certain and infallible; every Punctilio in Religion is an Article of his Faith, and he answers all manner of Objections by sovereign Contempt."[18]

The skeptic: The skeptic "believes nothing" and "is afraid to give assent to anything."[19]

Although Watts wrote long ago, his classifications remain useful today. You probably know people who, like the credulous person, agree with virtually everything that is said to them; and you may know people who, at least in some moods, are like the person of contradiction who disagrees with everything. There are dogmatists among us, who hold their beliefs with the utmost conviction and pay no attention to new reasons or evidence. Equally, there are those, like Watts's skeptic, who withhold belief about almost everything out a fear of ever making a mistake.

Of course, Watts's categories are extremes. No one, or almost no one, is completely dogmatic, credulous, skeptical, or contrary. Still, it is useful to be aware of these general types. Another type worth noting, quite similar to the credulous person, is the person who insists that in controversial cases everyone is right. Such people are fond of saying that different things are true for different people or different groups, that some issues are matters of opinion, about which everyone (or no one) is right. We might characterize such people as "relativists."

People of all the types just described share a common trait: they fail to engage rationally with the arguments they encounter. They don't evaluate carefully the arguments they encounter and form their beliefs on the basis of the information they receive. People who do respond that way are ***rational thinkers***. They try their best to understand the information they receive and form conclusions based on that information. Sometimes they stick to their guns, and sometimes they are persuaded by new evidence. They see the issues as questions that have correct answers, even if they are hard to figure out. To a large extent, the purpose of this text is provide you with the tools needed to be a rational thinker.

Rational thinkers have a set of abilities and attitudes that enable them to deal effectively with arguments. Among the abilities are the following:

The ability to distinguish genuine arguments (reasons, evidence) from other things

The ability to understand and interpret arguments

The ability to evaluate arguments

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18. Watts, *Logick*, p. 210.
19. Ibid.

The first two abilities depend on sympathetic and careful reading and thinking. The third is largely a matter of being a careful and fair-minded critic.

The attitudes of a rational thinkers include the following:

A willingness to examine arguments with an open mind

A willingness to change one's mind when the arguments call for it

A willingness to give up comfortable or popular beliefs when the arguments call for it

A willingness to go along with popular views when the arguments call for it

A willingness to form beliefs even when matters are uncertain

Having these attitudes amounts to avoiding all the traits that characterized the types of people Watts described. To be a rational thinker you must avoid being overly credulous, contrary, dogmatic, or skeptical.

EXERCISES AND STUDY QUESTIONS

*1. You might think that the skeptic and the person of contradiction are just about the same in their reactions to arguments. What, exactly, is the difference between them?

2. Watts classified people into four groups by means of the way in which they characteristically respond to arguments. A fifth type was added in the text. Can you think of any additional typical sorts of responses to arguments?

*3. In what situation will a dogmatist and a person of contradiction respond in the same way to an argument? When will their responses differ?

4. As noted in the text, almost no one always exemplifies any one of the general types listed here. We all vary in our responses. Do you think that how we respond might depend on the subject matter of the argument? Are people more dogmatic on some topics and more credulous on others? What other factors might affect their responses?

IV. IMPEDIMENTS TO GOOD REASONING

Although people deal with arguments frequently and they naturally interpret and evaluate these arguments, they do not do as well at argument analysis as they could. There are several interrelated factors that get in the way of successful argument analysis. In this section we will describe some of these factors.

A. Lack of an Adequate Vocabulary

You may have had the experience of hearing an argument and suspecting that there was something wrong with it but found yourself unable to say exactly what the flaw

was. Part of the problem may have been that you didn't know the words to use to describe the strengths and weaknesses of arguments. As with nearly any complicated intellectual activity, argument analysis is easier and more successfully done by those who have a clear and precise set of terms to apply. So far we have spoken of arguments being "good" or "effective" or "successful," but we have given no precise definitions of these terms.

We distinguished rhetorical power and literary merit from rational strength, and this improved somewhat our ability to describe arguments clearly and concisely. However, several other distinctions are useful as well. A careful examination of arguments reveals that there are a variety of different ways in which they can go wrong and a corresponding set of strengths or virtues they can have. To analyze arguments effectively, we need a precise vocabulary for describing their characteristics.

The point of developing a precise set of terms to describe arguments is not only to aid in communicating our thoughts about arguments to others. Using such terms also improves the clarity and precision of our thoughts themselves. Think about an activity that you know a lot about, such as sports or music or computers. Most likely there is an extensive vocabulary associated with that activity, and mastering that vocabulary enables you to think about it in a more organized and precise way. You can then express your thoughts to others in a way that enables them to understand you. But without this vocabulary you would probably have much vaguer and less precise ideas, and far less understanding of the activity. The same is true of argument analysis. Without learning the vocabulary of argument analysis, you won't be able to think about arguments clearly, much less communicate effectively about them.

B. The Desire to Be Tolerant and Open-Minded

To engage in argument analysis requires a willingness to say of others at times that they have made a mistake, that an argument they have given is defective. Yet many of us pride ourselves on our willingness to tolerate the views of others, and we value our freedom of opinion. There appears to be a conflict here, since a tolerant person who respects another's right to his or her opinions will not be judgmental about those opinions. The value we place on tolerance and freedom might seem to discourage careful argument analysis.

It is a mistake, however, to think that there really is a conflict between engaging in argument analysis on the one hand and being tolerant and respectful on the other. Tolerance and respect largely have to do with the manner in which you treat others. There is nothing intolerant or disrespectful about carefully explaining to others the errors you see in their arguments. To do this is not to deny them their right to their opinions. Rather, it shows you are giving their ideas careful thought and attention, which is a sign of respect.

Furthermore, the point of learning argument analysis is not to put down the arguments of others. Rather, it is to learn to come to your own conclusion about the

merits of the arguments. If someone else has presented an argument on a topic that you care about, then it is in your own interest to evaluate that argument to see if it provides reason to change your mind about the topic. Your interest is in the argument, not in the person who gave it. If you end up criticizing the argument, you are not being intolerant of the person who presented the argument or in any way dictating what that person should believe.

Finally, notice that even if people have a legal or moral right to hold any opinion they like, some opinions or beliefs are based on good reasons and others are not. So, the fact that people have a right to their opinion need not prevent you from thinking about whether their opinion is supported by good reasons or not.

C. Misunderstanding the Point of Argument Analysis

Some difficulties people have with rational interpretation and evaluation of arguments may result from a failure to recognize the distinction between the rational strength of an argument and its literary merit or rhetorical power. If one thinks of an argument as a part of contest or debate, then one is apt to neglect the features of the argument that are relevant to its rational strength and focus instead on its superficial persuasiveness. The inclination to do this may be strengthened by the fact that so much of what we hear and read concerns the rhetorical power of arguments.

D. Misconceptions about Truth and Rationality

Another thing that gets in the way of effective argument analysis is the fact that many people have ideas about truth and about reasoning that discourage them from thinking about arguments in a clear way. For example, people sometimes say that controversial issues are "a matter of opinion." They are especially likely to say this about moral issues. Those who hold this view imply that there are no truths about morality; there are just different beliefs. This attitude discourages clear thinking about morality. If there are just opinions, then it is hard to see how any opinion could possibly be better or more reasonable than any other. If that's the case, there is little point in thinking about whether an opinion, your own or someone else's, is supported by good reasons.

E. The Use of Argument Stoppers

There are a variety of quick responses to arguments that have the effect of cutting off discussion and preventing careful analysis. We call these responses *argument stoppers*.

Some of them have been alluded to already, such as responding to an argument by saying, "Well, that's a matter of opinion." Other argument stoppers are remarks such as, "Who's to say what the truth is about that?" or "That's a subjective judgment." Comments such as these typically cut off discussion. They serve as a short way of saying, "I would prefer not to think about what you said. I would prefer to continue believing what I have believed up until now, so I'm going to ignore your argument." Of course, people rarely speak so bluntly, and their argument stoppers often are seemingly polite ways to avoid thinking about another's argument.

While there is some substance to the claim that a judgment is "subjective" or an "opinion," these are confusing and abused terms, to be used with considerable caution. We will discuss argument stoppers in various places throughout this text. As we attempt to understand what features of arguments people are noticing when they use argument stoppers, we will propose more effective and thoughtful responses to use instead.

EXERCISES AND STUDY QUESTIONS

*1. The first impediment to good argument analysis described in the text is the lack of an adequate vocabulary. Is this really an impediment? One can play basketball well without having a set of terms to describe all the bodily motions one must go through in playing the game. Many people can sing well without having a vocabulary for describing how one goes about singing. Is there any reason to think that argument analysis is different?

 2. Several argument stoppers were mentioned. List a few more simple remarks people make that tend to put an end to rational discussion of arguments. What do you think people mean when they make these remarks?

*3. It is often said that each person has a right to his or her own opinion. We also say that we are free to have our own beliefs. What do you think these claims mean? Is it true that we all have such a right? Does engaging in argument analysis in any way interfere with this right or freedom?

 4. The text mentions five impediments to good reasoning. Can you think of any others?

V. SUMMARY

This text presents a method of argument analysis. Argument analysis is a process that involves two main elements: the interpretation of written (or spoken) passages that contain arguments and the evaluation of those arguments.

In this text, the focus is on the evaluation of the rational strength of arguments. Arguments, or the passages in which they are found, can also be evaluated for rhetorical power and literary merit. We will not be concerned with these factors here.

Although each person responds to arguments in different ways in different circumstances, there are a few general tendencies that people seem to have. Some people are unduly credulous; they tend to believe whatever they are told. In contrast, other people are excessively contrary; they tend to disagree with whatever they are told. Some are dogmatic, insisting on their prior opinions no matter what new information comes their way. And others are unduly skeptical, refusing to believe anything for fear of making a mistake. A rational thinker, in contrast to these other types, evaluates new information, revising beliefs when the information calls for it and retaining beliefs when the information supports them. Sometimes this analysis puts one in the position of conforming to popular attitudes and sometimes it requires going against them.

Several things can get in the way of successful argument analysis. These include the lack of an adequate vocabulary, the fear that being tolerant and open-minded rules out engaging in argument analysis, misunderstanding the point of argument analysis, misconceptions about truth and rationality, and reliance upon argument stoppers. The method of argument analysis presented in this text is designed to help eliminate these impediments to good reasoning.

CHECKLIST OF KEY TERMS

- argument
- conclusion
- premise
- reconstructing an argument
- evaluating an argument
- argument analysis
- rhetorical power
- rational strength
- literary merit
- rational thinker
- argument stopper

CHAPTER EXERCISES

In this text, there will be an exercise set that includes some exercises requiring that you work on an argument notebook. We will use argument notebooks for two main purposes. First, you will collect and comment on editorials, essays, letters, and other written material in your argument notebooks. You will be asked to find and discuss material relevant to the topics covered in that chapter and to comment on the material you collect. Second, you will be asked to write in your argument notebooks about

some of the issues raised in the text. This will be the place for you to record some of the main questions and issues that you find puzzling or unclear.

There are many sources of material for your notebooks. Virtually every newspaper contains editorials, letters to the editor, and opinion columns. Your school newspaper, your local newspaper, and national newspapers such as the *New York Times* are good sources, as are national news magazines such as *Newsweek* and *Time*. Other magazines that include a considerable amount of good material include the *New Republic*, the *National Review*, and the *Nation*. Periodicals dealing with special topics that may be of interest to you, such as sports or computing, may also contain good examples of arguments. It is also possible to find a great deal of information on the World Wide Web. *Slate* magazine (http://www.slate.com) has numerous ongoing argumentative exchanges. There are web sites dealing with almost any issue, and you can often find links to argumentative pieces on topics of interest. Newsgroups are also potential sources, although in many cases the arguments presented in messages posted to newsgroups are not very well thought out.

You can probably find suitable articles and essays on nearly any controversial topic that is of interest to you. The controversy can concern what we should do in response to some problem (e.g., drug addiction) or it could be about a factual matter (e.g., whether capital punishment is a deterrent to crime). It will be useful for you to collect articles on topics of particular interest you.

Save the articles you collect in some orderly way and arrange them so it is easy for you to write comments about them. At times you will be asked to go back to material you've looked at earlier to reanalyze it in the light of newly presented ideas.

In exercises 1–4 you'll begin working on your argument notebook.

1. Cut out or photocopy the letters to the editor in some recent editions of a local newspaper. Do the letter writers engage in rational argument analysis, or do they use argument stoppers and other evasions?

2. Find some letters to the editor in a recent edition of the *New York Times* or some other highly respected national publication (the *Times* is currently available online). Compare the letters from your local newspaper to those that appear in this second source. Is there a noticeable difference in the style of the letters? Is there more rational evaluation of arguments in one source than in the other?

3. Identify three or four issues that are of interest to you. Begin collecting articles, editorials, letters, and other material about these issues.

4. Pick a controversial topic of interest to you and write a brief essay (one page at most) arguing in favor of your point of view about the topic. (If you have previously written such an essay, you can use that essay instead.) After you have written your essay, reread it and look carefully at the arguments you have given. Do you think that your arguments are good ones? How might someone respond to them?

5. According to the text, what is the main point of (rational) argument analysis? Do you think that previously, when you have thought about arguments, you have done this sort of analysis? If not, what have you done?

6. Consider the following statement:

> If you've ever felt frustration in trying to decide what is wrong with an argument, either your own or someone else's, you might have wondered if there were rules to help in the analysis. If you've ever been dissatisfied with your attempt to prove a case, you might have wondered how good arguers, the ones who succeed in persuading people, construct their cases. Good arguers do, in fact, know and follow rules. Studying and practicing these rules can provide you with some of the same skills.[20]

What does the author mean by "good arguer" here? How does her use of the term compare with ours?

7. In the following passage, an attorney is quoted as saying that she doesn't like jurors who "try to reason things out too much." Why might an attorney fear someone who reasons too much?

> Stupid prosecutor's trick of the month—and the competition is fierce for this one—goes to the assistant state attorney in the 2 Live Crew case who said one of the jurors, a 76-year-old retired professor, was trouble from Day One. "She was a sociologist, and I don't like sociologists," Pedro Dijolis said. "They try to reason things out too much."[21]

ANSWERS TO SELECTED EXERCISES

1. Premises and conclusions.
3. There is little, if any, connection between the two kinds of argument. When people yell at one another, they usually disagree about something and each is attempting to convince the other of his or her respective point of view. This has little to do with careful reasoning about issues.
5. Example 1: It is difficult to draw any clear conclusion from this passage. One possibility is: The Supreme Court decision on flag burning was a good one. An alternative conclusion is: People who oppose the Supreme Court decision on flag burning are inconsistent.
   Example 2: We should not use the death penalty.
   Example 3: Inside Traders, Inc., is a dependable investment advisory service.
   Example 4: The law requiring people to be 21 years old to drink alcohol may cause more drinking by people under 21.

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20. Rottenberg, *Elements of Argument*, p. 6.

21. Anna Quindlen, "Grand Juries," *New York Times*, October 25, 1990, p. A27. Copyright ©1990 by The New York Times Co. Reprinted by permission.

1. An argument has rational strength when its premises provide good reasons to believe its conclusion. An argument has rhetorical power when people tend to be convinced by it. An argument (or a written passage containing an argument) has literary merit when it is well written.
3. It could be both.
5. These considerations have mainly to do with literary merit. It may be that arguments with these characteristics also tend to have rhetorical power. These considerations have nothing directly to do with rational strength.

1. Both respond to arguments by denying that they establish their conclusions, but the person of contradiction tends to assert that the opposite (the denial) of the conclusion is true. The skeptic tends to avoid making any commitment one way or the other.
3. If an argument has a conclusion that a dogmatist disagrees with, then both the dogmatist and the person of contradiction will disagree with the argument. If the conclusion is one that the dogmatist supports, then the dogmatist and the person of contradiction will respond to the argument in different ways.

1. There is some reason to think that argument analysis differs from these other activities which can be done well without a good vocabulary. Argument analysis is an intellectual activity carried out mainly with words, whether they are written, spoken, or thought to oneself. It is likely that activities that are carried out by using words to describe things can be done better when one clearly understands the words used in the descriptions. In contrast, one need not use words to make one's body move in the ways necessary to succeed at a sport.
3. Probably, we mean that there is no legal restriction on what we are allowed to believe. Of course, there are some legal restrictions on what we are allowed to say. Engaging in argument analysis obviously does not restrict anyone else's legal rights. People may also think that we have a moral right to believe anything. This is a more difficult issue, since there is at least some basis for saying that it is morally wrong to have hateful or prejudicial thoughts. Whether this claim is true or not, engaging in argument analysis does not interfere with anyone else's moral rights, since it is primarily a way for a person to figure out what he or she should believe. It is not intended to tell others what they should believe.

Truth and Rationality

Good arguments provide good reasons to believe that their conclusions are true. But what does it mean to say that a conclusion is true? And what makes a reason a good one? These are the questions we will examine in this chapter. Understanding the answers to these questions will provide the basis for understanding the method of argument analysis that follows. It will also help you avoid some misunderstandings that can arise when analyzing arguments.

I. USES OF LANGUAGE

We use language for a wide variety of purposes. Sometimes we ask questions, sometimes we give commands, and sometimes we describe things. We use different kinds of **sentences** for these purposes. To ask questions we use **interrogative sentences**, such as

> 1. What time is it?
> 2. Did you feed the dog?

To give commands we use **imperative sentences**, such as

3. Tell me the time!
4. Feed the dog!

To describe things we use *declarative sentences*, such as

5. Some gardeners do not use pesticides.
6. I fed the dog.

Declarative sentences can be about all sorts of things. They can describe relatively minor points, and they can describe major events. Declarative sentences can be about things that are easy to observe and check, and they can be about things that are difficult to know. All the following are declarative sentences.

7. Richard Nixon resigned from the presidency in 1974.
8. Sylvester Stallone does not like to wear pink jumpsuits.
9. There are more than 100 billion insects in the world.

Declarative sentences are the only ones that can be true or false. It wouldn't make any sense to respond to questions or commands such as (1)–(4) by saying, "That's true" or "That's false." Such responses to (5)–(9) would make perfect sense.

When we give arguments, we almost always use declarative sentences. You can't argue for a question or a command, but you can argue for the truth of any declarative sentence.[1] You can't prove that something is true by asking a question or giving a command, but you can describe some facts in an effort to argue for a conclusion. Thus, declarative sentences are used to express the conclusions and premises of arguments.

EXERCISES AND STUDY QUESTIONS

*1. State whether each of the following sentences is declarative, interrogative, or imperative.
  *a. Boston is west of Chicago.
  *b. When is the next train to Los Angeles?
   c. The house is on fire!
  *d. There's a fly in my soup.
  *e. Close the door!
   f. Will whoever took my bicycle return it?
   g. Appearances can be deceiving.
  *h. I don't know what time it is.

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1. Of course, you can argue that some particular answer to a question is correct and you can argue that it is a good idea to issue a certain command. But you can't argue that the questions or commands themselves are true or false.

i. God exists.

j. More people oppose abortion than capital punishment.

*k. I oppose capital punishment.

l. You should do your homework.

*m. Do your homework!

2. Sometimes people use interrogative sentences when they don't really intend to ask a question. Using the interrogative sentence is just a colorful way of saying what could be said more directly using a declarative sentences. To do this is to ask a "rhetorical question." Write three examples of rhetorical questions, then rewrite them as declarative sentences.

II. TRUTH AND CORRESPONDENCE TO THE FACTS

A. The Basic Idea

To say that a sentence is **_true_** is to say that things really are the way the sentence says they are. Sentence (7) above, for example, says that Nixon resigned from the presidency in 1974. It is true if Nixon did resign from the presidency in 1974. Sentence (8) says that Sylvester Stallone does not like to wear pink jumpsuits. It is true if things are that way, that is, if Stallone does not like to wear pink jumpsuits. Sentence (9) is true if there are as many insects in the world as it says there are.

If this seems very simple, that's good. It is very simple. Declarative sentences are used to describe the world or some part of it. If a sentence describes the world correctly, that is, if things are the way it says they are, then it is true. If, on the other hand, things are not the way a sentence says they are, then it is **_false_**. In other words, a sentence is true when, and only when, it "corresponds" to the facts. This idea is expressed in the following "correspondence principle" or (CP):

> **CP:** A declarative sentence is true just in case it corresponds to the facts as they actually are. A declarative sentence is false just in case it fails to correspond to the facts as they actually are.

Notice that (CP) doesn't say anything about when we _know_ that a sentence is true. It just states the conditions under which a sentence is true.

The correspondence theory of truth may seem to be so obviously right that it is not worth stating. There are, however, two reasons to formulate it. First, certain examples and issues sometimes lead people to reject (CP). Although many of those matters are ones we can safely set aside, there is one that we should consider here. We will turn to this objection shortly. Second, although the general idea behind (CP) is correct, there are some details about its precise formulation that require our attention. Some of these details are of particular interest in this text, since misunderstandings concerning them can get in the way of successful argument analysis.

B. A Mistaken Objection to the Correspondence Principle (CP)

Sometimes thinking about actual or possible examples leads people to say or think things that are incompatible with the correspondence principle. We'll consider only one such example here.[2]

In ancient times it was widely thought that the earth was flat. Children were told by their teachers that the earth was flat. The experts agreed. Furthermore, the earth did look flat (ignoring, of course, all the mountains and valleys). Suppose some child in those days said (in her language):

10. The earth is flat.

Was that sentence true? Did it correspond to the facts? Some people, when thinking about this sort of example, feel uneasy about saying that ancient schoolchildren who thought that the earth was flat were simply wrong, that their statements were false. So they say things like, "Well, it was *true for them* that the earth is flat."

There are, of course, many other examples we could propose that are similar to this example. Some people are apt to say such things in discussions of current controversies. They say the different points of view about an issue are "true for" the various participants in the controversy. Recall the brief quotation from attorney Gerry Spence in which he said that "Argument is the mechanism by which we reveal the truth–the truth *for us*."[3] Sentences about religious matters sometimes evoke the same response. Perhaps the idea behind these remarks is that a sentence is true for a person if the person believes it, or believes it with conviction. Or maybe the idea is that truth refers to what is generally accepted in one's society; thus, (10) was true for the ancients but false for us.

While it may seem harsh to say simply that ancient schoolchildren were wrong about the earth and their statements false, we'll see later that there is something we can say about them that is more favorable. However, the fact is that they *were* wrong about the shape of the earth. They thought it was flat, and it wasn't. So, when they said (10), or its equivalent in their language, they were saying something false. If you say otherwise, you'd have to say that at some time the earth changed shape; it went from (more or less) flat to (more or less) round. And that's obviously wrong. Your thinking about this might be helped by considering what a clear-headed and fair-minded ancient person who miraculously came back to life today would say. That person, upon seeing pictures of the earth from space and learning other relevant facts, would eventually agree that, amazing as it might be, the earth is (and was) actually round, not flat. In other words, she'd agree that what she said about the shape of the

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2. Other issues along these lines are typically covered in courses in epistemology, metaphysics, and sometimes philosophy of language.

3. Gerry Spence, *How to Argue and Win Every Time* (New York: St. Martin's Press, 1995), p. 25. Emphasis added.

earth years ago was false. And that's what you should say as well. To say that they were wrong, of course, is not to say that they were bad people or were stupid, or anything else critical of them.

The conclusion to draw from this discussion is that we should resist the temptation to say that something is "true for" someone or some group just because they believe it, or because they believe it with conviction and sincerity, or even because nearly everyone around them believes it. We should not abandon (CP) as a result of examples like this one. This is an extremely important background point for getting started in argument analysis. Arguments only make sense under the assumption that there is some truth—some fact—that the argument is about. We often argue because we disagree about what the actual truth is. We make use of arguments in an effort to figure out or establish what the truth is. Slipping into "true for" talk obscures this point and stifles effective argument analysis. It leads us to think that, somehow, people who really do disagree can somehow both be right.

C. Improving upon the Basic Idea

Even if we agree that truth consists in correspondence with the actual facts, there is an important detail that the correspondence principle overlooks.

Example 1

Feeder and Walker have an agreement that if one of them feeds the dog in the morning, the other one will walk the dog. It is a rainy day and neither of them wants to walk the dog. Feeder says, "I fed the dog, so you [Walker] should walk the dog." Walker replies, "No, you are wrong. I fed the dog." (Assume that there was only one portion of food available, so it couldn't be that both of them fed the dog.)

Notice that both Feeder and Walker use the same sentence:

11. I fed the dog.

This example raises a question about exactly how to interpret (CP). According to this principle, a declarative sentence is true provided it correctly describes the world. Well, does sentence (11) correctly describe the world or not? If we say yes, we seem to be committing ourselves to the conclusion that both Feeder and Walker spoke the truth when they said (11). That can't be right. If we say no, then we seem to be committing ourselves to the conclusion that neither Feeder nor Walker spoke the truth when they said (11). That can't be right either.

In this example, sentence (11) describes things differently depending upon who says it. Feeder uses it to talk about himself and Walker uses it to talk about herself. If, for example, only Feeder fed the dog, then (11) correctly describes the world when Feeder says it, but it misdescribes the world when Walker says it. If Walker fed the dog, then the situation is reversed. This leads to the result that the sentence some-

times describes the world correctly and sometimes doesn't. It's not clear what (CP) tells us about sentences like this.

The fact is that (CP) is not exactly the right principle to express our fundamental idea about truth. To understand how to modify (CP), we need to make two points. The first is a distinction between sentence tokens and sentence types. Sentence **tokens** are specific utterances or inscriptions such as marks on paper or the chalkboard. Sentence **types** are the patterns that tokens follow; they are kinds, or types, of sentence. So, when Feeder and Walker each say (11), they utter different sentence tokens, but their tokens are of the same type. Similarly, different copies of the same book have different sentence tokens, but the corresponding tokens in the two copies are tokens of the same type.

The second point is that sometimes two sentence tokens of the same type are used to express the very same thought or idea and sometimes they are used to say different things. Consider Feeder and Walker again. They each use a sentence of the same type, but Feeder uses his token to say something about himself and Walker uses her token to say something about herself; that is, Feeder and Walker uses their sentences to express different propositions. A **proposition** (also called a **statement**) is the specific thought or idea that a declarative sentence token expresses. Two sentence tokens express the same proposition when one fact in the world shows the two tokens to be true. In many cases, people who use tokens of the same sentence type express the same proposition. For example, suppose you and I each say:

12. The New York Yankees won the World Series in 1996.

In this case we express the same proposition. One fact, the Yankees winning the 1996 World Series, would make both our tokens true. If there is no such fact, because the Yankees did not win that year, then both tokens would be false. The case of Feeder and Walker and sentence (11) is different. They used the same sentence (type) to express different propositions. Their sentence tokens would correspond to two different facts in the world.

We can improve on our fundamental principle about truth by making it about propositions rather than sentences. The revised principle is

CP1: A proposition is true just in case it describes things as they actually are. A true proposition corresponds to the facts. If a proposition says that a certain object has a particular characteristic, then it is true just in case that object actually does have that characteristic. A proposition is false just in case it fails to describe things as they actually are. A false proposition does not correspond to the facts. If a proposition says that a certain object has a particular characteristic, then it is false if that object actually does not have that characteristic.

Sidebar: Types and Tokens

The distinction between types and tokens applies to things other than sentences. Imagine watching a play in which there are a lot of characters dressed exactly alike. You might say:

T. Those actors are wearing the same costume.

In this case, you are not making the silly assertion that several actors are somehow inside the same suit. Rather, you mean that the actors are wearing costumes of the same *type*.

Now imagine a different context. Suppose that an old play is being performed once again, and in the revival the actors wear the very same costumes the actors in the original performances wore. Looking at a photograph of the lead actor from the original performance and the lead actor in the revival, you might again say:

T. Those actors are wearing the same costume.

Here, you mean that the actors are wearing the same specific, or token, costume. You don't mean that they are wearing costumes of the same type.

Sentences, then, are linguistic representations of propositions. And we can say that a sentence token is true when the proposition it expresses is true.

Many sentences are like (11) in that they can be used to express different propositions in different situations. Consider sentence (7):

7. Richard Nixon resigned from the presidency in 1974.

There are many people named "Richard Nixon." There are also lots of different presidencies; one can be president of a school board, a company, or a math club, for example. We can use sentence (7) to talk about resignations from those presidencies as well. Thus, we can use sentence (7) to express a number of different propositions. However, a sentence is always used in a particular **context**, or situation. Typically, the context makes it clear which proposition a speaker intends, but when it doesn't serious confusion can result.

Sometimes people take the idea that the same sentence (type) can be used to express different propositions too far. They think that no two tokens express the same proposition. But this claim is mistaken. For example, consider

13. *Reason and Argument* is a book about arguments.

There's a token of that sentence in your copy of this text. There's another token of that sentence in every other copy of the book. But all those tokens are used to express exactly the same proposition. All those tokens are about the same book and they say the same thing about it. If you were to write down in your notebook another token of the same sentence, that token would also express the same proposition. And if someone were to

translate this text into Spanish, she would produce more tokens that express the same proposition. Thus, two (or more) tokens can express the same proposition.

The distinction between sentences and propositions is an extremely important one. To understand and evaluate the arguments we read and hear, we have to be careful to properly identify the propositions the authors are expressing in their sentences.

D. Some Consequences of the Revised Correspondence Principle

As we've seen, every proposition describes some aspect of the world. Either it correctly describes the world, in which case it is true, or it incorrectly describes the world, in which case it is false. A proposition can't describe the world correctly and also describe it incorrectly. It must be either true or false. It can't be both and it can't be neither. In other words, a proposition must have exactly one *truth value*.

We can summarize this idea in the "one truth value principle" or (OTV):

OTV: Every proposition has exactly one truth value. It is either true or false, but not both.

The one truth value principle does not say anything about whether we know what truth value a proposition has. There are many propositions whose truth value we can't know. For example, consider

14. The number of people on the island of Manhattan at noon on January 25, 1652, was even.

There's no way for us to know about this now. There were some definite number of people on the island at that time, and that number was either even or odd. So (14) is either true or false, but not both. However, we don't know, and at this point can't know, which it is. There is, of course, no reason at all for us to care whether (14) is true. However, there are many other important propositions about the distant past, about the causes of human behavior, and about many other topics that we can't know about or can know about only with great difficulty. Still, those propositions have a truth value, and that truth value depends on whether or not the propositions correctly describe the world.

Another consequence of the correspondence principle has to do with the connections between thoughts and feelings on the one hand and truth on the other. Some characteristics of things depend in part on what people think about the things or how they feel about them. For example, whether a movie is frightening depends on whether people are frightened by it, and whether a person is well-liked depends upon whether others like the person. Other characteristics of things do not depend at all on people's attitudes or feelings. For example, the length of time it takes the earth to rotate around the sun and height of Mount Everest are not in any way dependent on what people think or feel. Truth and falsity are properties of the latter sort. A proposition is true provided it really does correspond to the facts. It is false if it doesn't.
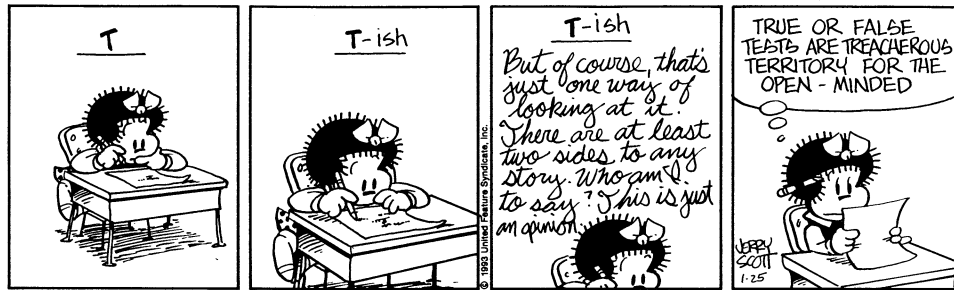
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The truth or falsity of a proposition does not depend on how you, or people generally, feel about that proposition.

EXERCISES AND STUDY QUESTIONS

*1. The following sentences all contain the word "true," or a variant. In some of the sentences "true" is used in the sense of "corresponds to the facts," and in others it has a different meaning. Indicate which sentences use true in the sense described in the text. For those sentences in which it has a different meaning, explain what that meaning is.

  a. Everything stated in my history book is true.
  b. He's a true friend.
  c. Do you swear to tell the truth, the whole truth, and nothing but the truth?
  d. Your bicycle will run better if you true the wheels.
  e. He truly believes that things will turn out well.

 2. The same sentence can be used to express different propositions in different situations or contexts. For example, proposition sentence (11) expresses depends on who said it. What features of the situation or context help to determine which proposition is expressed by the following sentences.

  a. I am sleepy.
  b. You will not be here tomorrow.
  c. It is sunny today.
  d. We will not tolerate any more of your abuse.

*3. Could different sentences ever be used to express the same proposition? If so, give some examples. If not, explain why not.

 4. One of the main goals of reasoning is to learn the truth. What are some other goals of reasoning? Do you think that people really are trying to learn the truth when they think about things, or do some of these other goals take precedence?

*5. Does the truth value of this proposition depend on what people think about the topic?

    Nearly everybody believes that the earth is round

6. Whether a proposition is true or false does not depend on how people feel about it. But consider the following proposition:

   Pop U. Lar is well-liked

   Doesn't the truth value of this proposition depend on how people feel? Explain.

7. What mistake is made in the following claim?

   The statement that there are an odd number of pebbles in Pebble Beach is neither true nor false since no one knows how many pebbles there are in Pebble Beach.

8. What, according to the text, might people have in mind when they say that something is "true for me" or "true for Americans"? According to the text, it would be better not use "true for" to express what they have in mind. Why? Do you agree?

9. Explain the source of the confusion in the following discussion.

   Student 1: How many classes do you have this week?

   Student 2: Only three—philosophy, chemistry, and psychology. My history class is canceled this week.

   Student 1: Only three! I have twelve—three English classes, four biology classes, three sociology class, and two art history classes.

III. RATIONAL BELIEF

We now know that a good argument is one that provides us with a good reason to think that its conclusion is really true. But what counts as a good reason for thinking that a proposition is true? We turn now to a preliminary discussion of this topic.

A. Belief, Disbelief, and Suspension of Judgment

Suppose you are thinking about a proposition with an eye toward determining whether or not it is true. What are the possible outcomes of this process? You might come to the conclusion that the proposition is true, you might decide that it is false, and you might find that you are unable to decide. These three results correspond to the three main cognitive attitudes you can take toward a proposition: belief, disbelief, and suspension of judgment. If you conclude that a proposition is true, then you *believe* the proposition; if you conclude that it is false, then you *disbelieve* the proposition; and if you can't decide, then you *suspend judgment* about the proposition.

   In considering any proposition, you must take one of these three attitudes toward it. The following example illustrates the idea. Suppose you are trying to remember whether Thomas Jefferson was the second or the third president of the United States. While doing this, you are considering several propositions, including this one:

15. Thomas Jefferson was the second president of the United States.

When you are done thinking about this proposition, you must believe it, disbelieve it, or suspend judgment about it. However, there are many varieties of belief,

and belief comes in various degrees or strengths. If you feel very sure that (15) is true, then you believe it. If you have a much weaker attitude, if you are merely slightly inclined to accept it, then you also believe it. Given this broad meaning of "belief," and a correspondingly broad meaning of "disbelief," it's easy to see that you must end up taking one of the three options listed. You believe the proposition (take it to be true) or disbelieve the proposition (take it to be false) or suspend judgment (have no opinion). There's no way you could avoid one of these three positions.

You also can't come to more than one of these conclusions at one time. If you believe the proposition, you can't at the same time also disbelieve it or suspend judgment about it. You can, of course, keep changing your mind. One minute you might believe it and the next minute disbelieve it. After changing back and forth like this for a while, you might give up and suspend judgment. But at any one time, you must have exactly one of these three attitudes.

We can sum up this situation in the following "belief principle":

BP: Whenever a person considers any proposition, that person must believe the proposition, or disbelieve the proposition, or suspend judgment about the proposition. A person cannot at any time have more than one of these attitudes toward one proposition.

The belief principle is not a recommendation about what you should do. It is not saying that you *should* take one of these three attitudes toward propositions you consider. Rather, it is describing the fact that your options are limited in such a way that you *must* choose exactly one of these three options.

The situation characterized by (BP) is similar to the situation of a voter in the voting booth considering a referendum. Suppose that the referendum concerns building a new school (and raising taxes to pay for it). The voter has exactly three options concerning the referendum. She can vote for it (this is analogous to believing a proposition). She can vote against it (analogous to disbelieving the proposition). Or she can choose not to vote at all (analogous to suspending judgment). She is unable to do more than one of these options, and she can't avoid doing at least one of them.

To say that you must choose one of the alternatives is not to say that you can't do other things in addition to choosing one of the alternatives. The result of your deliberation may be that you disbelieve (15), that is, you believe (15) is false. It may be that you are also very unhappy as a result because you have bet a considerable amount of money on the truth of (15). You may continue to hope that (15) is true. Any number of other things may happen when you think about (15), or any other proposition, but it will always be the case that you believe, disbelieve, or suspend judgment about that proposition.

The voting analogy is useful in this regard as well. Our voter might vote for the referendum either enthusiastically or reluctantly. She might vote in favor by pulling

the lever with her right hand or her left hand. Although there are many ways in which she might carry out one of the three options, she is bound to carry out exactly one of them.

As we are using the word "belief," it covers a wide range of attitudes. At one extreme are the things of which we feel most certain. Examples might include your belief about what your name is and the belief we all have that there are such things as tables and chairs. At the other extreme are the things that we have only the slightest inclination to accept. Examples might include beliefs about the outcome of future sporting events or beliefs about things that happened long ago that we can only dimly recall. We will use the word "belief" as the general term covering all these cases. This may extend the application of the word beyond its normal range, but as long as we understand what is meant, no problems will arise from this linguistic decision.

There are many sentences that do not contain the word "believes" but still report what someone believes. Consider, for example,

16. Jones thinks that all trees lose their leaves in the fall.

In (16), "thinks" means the same as "believes," so (16) reports a belief that Jones has. We also use "feels" to report beliefs, as in

17. Some economists feel that the federal budget deficit is not a serious problem.

We also use the word "hold" to report beliefs, as in

18. We hold these truths to be self-evident . . . ,

which is another (and better) way of saying that we believe that these truths are self-evident.

When another person expresses a belief, we often report what that person has done by saying that he or she "claims," "contends," or "asserts" something. Typically, by saying these things we also attribute beliefs to the person. (Strictly speaking, someone could claim that something is true without believing it.) There are, then, many ways to report beliefs. There are shades of meaning that differentiate these terms, and in some cases those differences are important. However, they are all used to characterize conditions that count as beliefs. Thus, the word "believe" is used in a very inclusive sense here.

Some people think of beliefs as particularly important personal thoughts. For example, they speak of their religious beliefs or their moral beliefs, where these are often important aspects of their lives. But as we are using the term here, beliefs can be about any topic, important or trivial. We can have beliefs about the meaning of life and we can have beliefs about what will be on TV tonight.

People sometimes think that beliefs are limited to things about which people are uncertain and about which there is considerable disagreement. They might say that they believe that there are no living creatures on Mars, whereas they *know* that there are living creatures on Earth. However, as we use the word "belief," one's beliefs include things of which one is certain as well as things in which one has only limited confidence. Belief, then, is a very general category, and it includes as subcategories attitudes such as feeling sure, having some inclination to accept, and so on.

B. Belief and Truth

When a person believes a proposition, she believes that the world is a particular way—the way the proposition says it is. Her belief is true just in case the proposition she believes is true, and this requires that the world actually is the way the proposition says it is. When the world isn't the way she believes it to be, then her belief is false. Whether a belief is true has nothing to do with how sincere or well-meaning the person is in holding the belief or how strongly convinced of its truth the person is. Long ago people had false beliefs about the shape of the earth. Sometimes people believe that they have done all their chores or work for the day, only to find out they forgot about something. In such cases they have a false belief. The crucial point here is that whether your belief is true depends not at all on how strong your belief is. It depends entirely on whether your belief accurately describes the world. The truth of beliefs, like the truth of propositions, depends on how the world is, not on the existence or strength of the beliefs.

C. Belief and Disagreement

To believe a proposition is the same as to believe that it is true. For example, believing that there is life on Mars is the same thing as believing that it is true that there is life on Mars. To believe a proposition is to believe that the world is the way that the proposition says it is. It is not to think that it would be good if the proposition were true or to hope that it is true. To believe a proposition is to believe that it really is true and that things are the way the proposition says they are. To disbelieve a proposition is to believe that the proposition is false and that the world really isn't the way the proposition says it is.

When two people disagree about a proposition, one of them must believe the proposition (believe that it is true) and the other one must disbelieve the proposition (believe that it is false).[4] If they both believe the proposition or they both disbelieve the proposition, then they don't disagree about it. But if one believes it and the other disbelieves it, then they do disagree.

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4. Perhaps there is also disagreement when one person believes a proposition and the other suspends judgment about it. However, we will confine out attention to disagreements in which people have opposing beliefs.

Since a proposition can't be both true and false, it follows that if two people disagree—one of them believes the proposition and the other disbelieves it—then only one of them has a true belief. In believing the proposition, one of the people believes that the world is the way the proposition says it is, while the person who disbelieves the proposition believes that the world is not that way. No matter how sincere or well meaning both these people are, one of them must have a false belief. The world can't both be and not be the way the proposition says it is.

The fact that we sometimes use the same sentence to express different propositions in different contexts might lead you to think that there is a disagreement where there really isn't one. In cases of apparent disagreement it is important to be clear about what propositions the people involved are defending. It could be that people who seem to disagree are just using words differently, and that there is no proposition about which they disagree. For example, suppose that Hasno License is a fifteen-year-old neighbor, about whom I say:

19. Hasno License can't drive a car.

You might argue with me, claiming that he can drive. To settle the matter, you give Hasno the car keys and he goes out to the car, starts it up, and drives away. Even though we may seem to disagree here, we really don't; that is, there is no proposition that I believe and you disbelieve in this example. The belief I was expressing by means of (19) could also be expressed by saying

19a. Hasno License is not allowed to drive a car.

What you denied, and successfully showed to be false, was

19b. Hasno License does not have the ability to drive a car.

Sentences (19a) and (19b) say very different things. In fact, (19a) is true and (19b) is false. There was no disagreement between us in this example, since the proposition I asserted was not the same as the one you denied. We were using sentence (19) to express different propositions. In contrast, if we differed about the legal driving age, we might have a genuine disagreement about the proposition expressed by (19a). If we differed about Hasno's ability, we would have a genuine disagreement about (19b).

Furthermore, people may seem to agree because both use the same sentence to express their beliefs. However, it is possible they are using that sentence to express different propositions, and that their underlying beliefs are really in conflict. For example, two people might both say that they support free speech, but the sorts of things they count as "speech" may be so different that there is a significant disagreement between them. To understand others and to know whether they disagree with one another, then, we must know which propositions they believe.

Sidebar: Disagreement on Matters of Taste

Another situation in which there is no real disagreement, or there is a disagreement but not one about the truth value of a proposition, arises when people express differences in taste or attitude toward something. It only makes sense to argue about something when there is an objective fact that can be disputed. For example, suppose two people go to a movie. When they leave, one of them reports liking it and the other reports not liking it. One gives reasons in favor of the movie and one reasons against. Is there a disagreement here? When *A* says, "I liked the movie," what he says is true. And when *B* says, "I didn't like it," that is true too. There is no conflict here, in the sense that one must be right and one must be wrong.

Contrast this situation with two people arguing about the shape of the earth or the number of insects in the world. In these cases it must be that in the end one is right and one is wrong. An argument, we've said, is a set of reasons that is supposed to establish the truth of some conclusion. In the movie example, *A* and *B* are not trying to do that. *A* is not trying to convince *B* that he really did like the movie. Instead, he's explaining why he liked it. *A* is not trying to establish the truth of the conclusion "I liked the movie."

It's important to distinguish the attitudes people might have toward a movie with what seems to be a different point: whether the movie is a good one. If there is such a thing as an objectively good movie, if there are some standards such that any movie satisfying them is a good movie, then there can be arguments about what those standards are or whether some particular movie satisfies them. But if there are no such standards, if instead there are simply individual tastes and preferences, then, it seems, there is no such thing as the truth of the matter about whether a particular movie was a good one. And if that's the case, then it doesn't make any sense to try to present an argument for (or against) the conclusion that a particular movie was a good one. Arguments only make sense when they have as a conclusion something that could be true or false. They make sense only in contexts in which there is at least the potential for people to disagree about the truth value of their conclusion.

EXERCISES AND STUDY QUESTIONS

*1. Some of the following sentences report or imply that a person believes or disbelieves a particular proposition, while others merely describe or imply mental attitudes other than beliefs. State whether each implies a belief. For those that do imply a belief or disbelief, state what belief it implies the person has.
   a. Jones is thinking about the proposition that it will rain tomorrow.
   b. Smith denies that she took the money.
   c. Wilson affirms the proposition that he is a vegetarian.
   d. Brown contends that there will be a war.
   e. Johnson accepts the fact that she will never win an Academy Award.
   f. Black endorses the proposition that affirmative action is constitutional.

g. White wonders whether he should buy a new pair of shoes.

h. Hope hopes that it will rain.

2. Does the proposition "*S* believes in God" imply that *S* believes any particular proposition? Does it imply anything else, for example, about how *S* behaves or what *S* cares about?

*3. Comment on the following claim.

> You can never tell what a person believes. No matter how the person acts, his actions may be misleading.

4. Can you freely choose what to believe? If you can't freely choose your beliefs, can you do anything to indirectly affect what you believe? If you can freely choose your beliefs, how do you do it?

*5. Discuss the following objection to (BP).

> I know that I like peach pie, I don't merely believe that I like it. Thus, the proposition "I like peach pie" is one that I neither believe nor disbelieve nor suspend judgment about. So it is an exception to (BP).

6. People sometimes "agree to disagree." What does this mean?

*7. Suppose I like peach pie and you don't like peach pie. Does it follow that we disagree about anything? Does our disagreement concern the truth value of any proposition?

D. Reasons for Belief

D1. Reasons and Evidence

Sometimes people have good reasons for the things they believe and sometimes they don't. Scientists who have done careful research about the effects of smoking cigarettes have good reasons to believe that smoking cigarettes causes lung cancer. The reports of these scientists provide the rest of us with good reasons to believe that same proposition. Our reasons, though, differ from theirs. Their reasons include the facts and data turned up in their research. Our reasons come from their reports or testimony. Perhaps we should concede that the scientists' reasons are a bit better than the reasons the rest of us have.

   Other familiar cases provide us with additional examples of good reasons. I have a good reason to believe that my car is out in my driveway: I see it. I also have good reason to believe that I ate a bagel for breakfast today: I remember doing it. In contrast, you might have a friend, Shirley, who believes that she's been reincarnated many times. It's likely that she doesn't have any good reason to believe that. There are other cases in which people believe something without any good reason. Consider the following:

Example 2

Wanna Bet is standing in front of a roomful of people. She has tossed a coin and allowed it to land on the floor where no one else can see it. Hasa Hunch is one of the people in the room who cannot see the coin. Wanna has said nothing about whether the coin came up heads or tails. Hasa Hunch believes that the coin landed with the head side facing up. She accepts Wanna Bet's offer to make a bet about this.

Assume that Hasa knows that the coin is fair; it is equally likely to land with the head side as with the tail side facing up. In this situation, is it rational for Hasa to believe this proposition:

20. The coin landed with the head side up.

Your answer to this question should be a resounding no. The same applies to the proposition

21. The coin landed with the tail side up.

It is not rational for Hasa to believe this proposition either. Clearly, the rational attitude for her to have toward these propositions is to suspend judgment about them. This is because the information she has about them is perfectly neutral; it doesn't provide any good reason to form a belief about which way the coin landed. Later on, if Hasa Hunch is able to see the coin or if Wanna Bet tells her how it landed, then she may acquire a good reason to believe (21).

We get reasons for beliefs from various sources, including such things as perception of the world around us, memory of the past, and the testimony of others. All the information we have concerning a proposition constitutes our *evidence* about the proposition. Sometimes this evidence comes in the form of data from carefully controlled experiments and sometimes it comes from more casual observations of the world around us. When the evidence we have supports a proposition, then it is rational (or reasonable) for us to believe that proposition. When the evidence goes against a proposition, then it is rational for us to disbelieve that proposition. And when the evidence is neutral, then it is rational to suspend judgment about the proposition.

We can sum things up in the following "principle of rational belief" or (RB):

RB: If a person's evidence concerning a proposition supports that proposition, then it is rational for the person to believe the proposition. If the person's evidence goes against the proposition, then it is rational for the person to disbelieve the proposition. And if the person's evidence is neutral, then it is rational for the person to suspend judgment concerning the proposition.

A consequence of (RB) is that rational belief is not the same as carefully formed belief. To see why, consider an example. Suppose you are interested in some topic in Russian history. In an effort to learn more about the topic, you go to the library and read through all the relevant books. You go about your study in a very careful and methodical way. At the end of your research, you come to believe a particular proposition about Russian history. From this information, we can't tell whether it is rational for you to believe that proposition or not. Despite the careful manner in which you went about gathering evidence, you might have come to a conclusion that is not supported by the evidence you've gathered. Being careful in this way does not guarantee the rationality of the beliefs you form. What matters is the quality of your evidence. Rational belief is belief based on good reasons. It is belief that is guided by the evidence.

D2. Fallibilism

One of the most important errors people make once they start thinking about rationality and evidence is to think that the only good evidence is conclusive evidence. To help us explore this error, consider the following:

Example 3

Prior to the presidential election of 1948 it was widely believed that the Republican candidate, Thomas Dewey, would defeat the Democratic incumbent, Harry Truman. Polls showed Dewey to be far ahead and nearly all the experts predicted his victory. Early election returns conformed to the predicted pattern, and the early editions of some newspapers reported that Dewey had won. A famous photograph shows a triumphant Truman holding a newspaper with a banner headline reading "Dewey Wins." To everyone's surprise, Truman won the election.

Consider this case from the perspective of an average, reasonably well-informed citizen, whom we'll call Miss Led. Miss Led has heard the predictions, heard the early election returns on the radio, and seen the morning paper with its banner headline declaring Dewey the winner. Try to identify the rational attitude for Miss Led to have toward these propositions:

22. Dewey won the 1948 presidential election.
23. Truman won the 1948 presidential election.

Clearly, it is rational for Miss Led to believe (22) and to disbelieve (23). This is because all the information available to her, all her evidence, indicates that (22) is true and that (23) is false. With the advantage of our extra information we can tell now that her evidence was misleading, but that does not affect the rationality of her belief.

This example helps us to see a crucial fact about rational belief. A belief can be rational even though it is false. Put another way, our evidence can make it rational

for us to believe a proposition but that evidence does not guarantee that the proposition is true. We can have a good reason to believe something even if that proposition is false. That is what happened in the case of Miss Led. The idea that a belief can be rational even though it is actually false is known as **_fallibilism_**. When the evidence that makes our beliefs rational is fallible, or imperfect, it can lead us to false beliefs.[5] **_Conclusive evidence_**, in contrast, is so strong that it can never lead to false beliefs. The main idea of fallibilism, then, is that it is rational to believe something when your evidence supports it, even if that evidence is not entirely conclusive and does not guarantee the truth of what you believe.

There is a tempting line of thought that leads people to reject fallibilism. Reflecting on Example 3, you might point out that if Miss Led had thought carefully about the situation, she would have realized that it is possible that Dewey lost. She might have thought, "It's possible that Truman will win despite the polls and the early returns and the newspaper headline. After all, such things can be wrong. Newspapers make mistakes, people change their minds, and no election forecaster is perfect. So, it would be reasonable for me to suspend judgment about who won." The idea here is that since her evidence is not conclusive, she might be wrong. Therefore, suspending judgment is the rational attitude for her to take toward (22) and (23).

This line of thought, however, has disastrous consequences. Consider some of the beliefs you hold that seem to be most certain and obvious. Examples include beliefs about what your name is, the school you go to, who the president of the United States is, and so on. Do you have evidence sufficient to *guarantee* the truth of any of these propositions? Is your evidence conclusive?

The answer is no. Probably you learned your name from your parents, but your evidence does not guarantee that they did not lie to you about your name. Likewise, you are probably registered as a student at your school, but it is possible that the registrar has dropped your name from the roster. You learned who the president is from the various news media, but you do not have evidence that guarantees there isn't a vast conspiracy to mislead you and others about this. Or maybe while you've been locked away studying, the president has resigned or been assassinated. Now these are unlikely possibilities, and most of them are not worth taking seriously. But your evidence does not guarantee that they are false and thus does not guarantee that the propositions about your name or your school or the president are true. So, if it were rational to believe things only when the evidence guaranteed their truth, it wouldn't be rational to believe many basic propositions about everyday life.

Consider another example. Suppose some people on a jury are deciding the fate of someone accused of a crime. We know, by extending the considerations described earlier, that no matter what evidence the prosecutor presents, it is always possible that the defendant is innocent. Witnesses can lie and physical evidence can be doctored.

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5. We are also fallible in another sense: we sometimes fail to believe what it is rational for us to believe. That is, sometimes people form beliefs that go against their evidence. Although this is true, it is not what the word 'fallibilism' is meant to describe in this context.
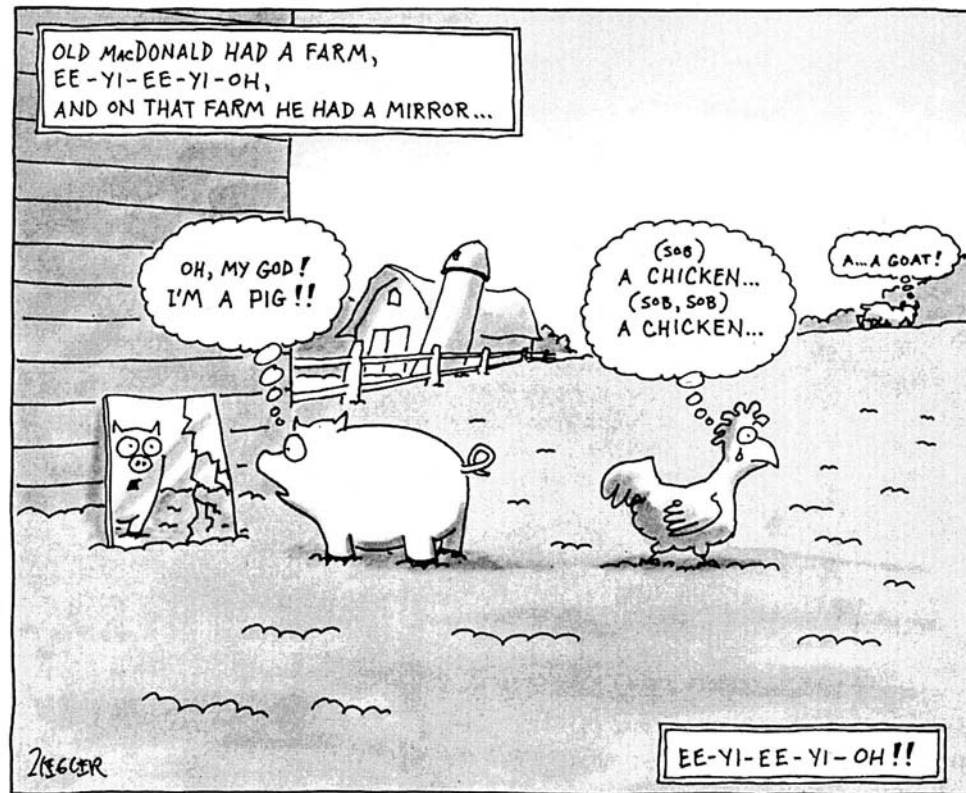
Even if it is extremely unlikely that this is the case, it is still possible. So, the evidence against the defendant will never be enough to guarantee his or her guilt. On the other hand, sometimes there is sufficient evidence to make it reasonable to believe that the defendant is guilty. It is a mistake to think that reasonable belief requires conclusive evidence.[6]

In general, the problem with requiring conclusive evidence is that it is far too restrictive. It leads to a kind of paralysis in which people suspend judgment about everything. The rational thing is to do the best we can with the evidence available to us. The rational thing is to believe something when we have adequate reasons to believe it, even if those reasons are not absolutely conclusive. Our evidence is often incomplete and sometimes misleading; it is fallible. No matter what our evidence,

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6. Notice that if conclusive evidence is required, members of the jury shouldn't believe that the defendant is innocent either. They should, in every case, suspend judgment about the guilt or innocence of the defendant.

there is almost always some possibility that our conclusion will be wrong. But it is absurd to overreact to this fact by suspending judgment about everything and refusing to be guided by the best evidence we have.

Following the principle of rational belief, that is, believing just those propositions that your evidence supports, will lead you to have true beliefs most of the time. Of course, sometimes you will be wrong. The only way to avoid ever being wrong would be to form beliefs only when the evidence is conclusive. But then you'd end up suspending judgment almost all the time, and that's worse than making some mistakes.

D3. Strength of Evidence

Evidence can support a proposition to varying degrees; some evidence provides nearly conclusive support for a proposition. Other evidence might support it only slightly. (RB) implies that it is reasonable to believe the proposition in either case. To see the implications of this, consider the following:

> **Example 4**
>
> Jim Shortz teaches a physical education class of 100 students. He knows that there are 51 freshmen and 49 sophomores in the class. After class one day he finds that one student left a book in the room. He has no reason at all to think that either freshmen or sophomores are more likely to leave a book behind. Knowing that there are more freshmen than sophomores in the class, Jim believes that the book belongs to a freshman.

Is it reasonable for Jim to believe this proposition?

> 24. The person who left the book behind is a freshman.

According to (RB), it is. Because more than half of the students are freshmen, it is more likely than not that the student who left the book behind is a freshman. What Jim knows about the numbers of students provides him with a good reason (but not a very good reason) to believe (24).

Some people might think that this conclusion is mistaken and that it is not reasonable for Jim to believe (24) because the evidence in favor of (24) is so slight. They would not say that he should disbelieve (24) either. That would be even worse than believing it, since his evidence does slightly support (24) rather than deny it. These people would argue that the rational thing in this case is to suspend judgment.

This example raises a difficult issue. Critics of (RB) think that the example shows that we should replace (RB) by a rule saying that it is reasonable to believe a proposition only when one's evidence strongly supports the proposition. Although there is some merit to this objection, in the end it is not a good objection. Remember that belief includes a range of attitudes, from absolute conviction to hesitant acceptance. In a case such as this one, Jim should have only a most hesitant belief.

To further elaborate (RB), we might say that one's evidence can support a proposition to a greater or lesser degree, and the strength of one's belief should be proportional to the strength of the evidence. Example 4 does not show that (RB) is false. Rather, it helps us to identify a second principle to go along with (RB), namely, the "principle of proportional belief":

> **PB:** It is rational to proportion the strength of one's belief to the strength of one's evidence. The stronger one's evidence for a proposition is, the stronger one's belief in it should be.

In Example 4, Jim's evidence is so weak that his belief should be very hesitant. It's also true that it would be a mistake for him to take any important actions that depended on this belief. It would be foolish for him to bet his life on the truth of (24). However, it is reasonable for him to believe it. So (RB) is a correct principle after all, and it is the principle that we will adopt for the remainder of this text. However, we should keep in mind that this principle makes a belief reasonable even when the evidence supports it only very slightly.

D4. Irrational Belief

A good way to understand more clearly just what (RB) entails is to consider cases in which people fail to follow its dictates, or do not believe rationally. We will look at three cases of this kind.

a. Motivational Errors. Sometimes our hopes or our fears lead us to believe propositions not supported by our evidence.

Example 5

Opto Mist is planning a picnic for Saturday. He has been working very hard lately, good friends are coming into town for the day, and he has a wonderful place picked out for the picnic. Opto very much wants to go on this picnic. The weather forecast for Saturday is quite tentative. The forecaster says that there is a 50 percent chance that it will be sunny and a 50 percent chance that it will rain. It all depends on which direction a storm system goes, and it is too early to tell which way it will go. Because Opto wants so much for it to be nice, he believes that it will be sunny on Saturday.

In this case, Opto's evidence about Saturday's weather is neutral. The rational thing, according to (RB), is to suspend judgment. However, Opto has a strong motivation to believe that it will be sunny. After all, that is what he very much wants to be true. That is why he believes that it will be sunny. This example shows how a *motivational error* can lead a person to believe something that his evidence does not support.

In many other similar cases, the evidence may strongly suggest that something is true even though you don't want it to be true. For example, the evidence may sug-

gest that you are going to get a bad grade in some course, or that someone you care about is seriously ill. Despite the evidence, you might be optimistic and fail to believe what is rational. You might refuse to face the facts. While you might feel better as a result, at least for a while, to believe something contrary to your evidence is not to believe rationally. Thus, having a motivation to believe a proposition even though we don't have good reasons for doing so can lead us to believe irrationally.

Another example illustrates the same point. When a baseball player comes up to bat in a crucial situation, he may well have a great deal of confidence that he will get a hit. He may believe that he will succeed. Having this confidence is probably very good for him; it may increase his chances of succeeding. Still, his belief is irrational, since the evidence suggests that he won't get a hit. Even the most successful hitters fail to get a hit about two-thirds of the time. The evidence does not support the batter's optimistic belief, even though that belief is beneficial.

Likewise, consider a patient who has come down with a terrible disease. Thinking that she will get better may in fact increase her chances of recovering, even if the evidence supports the conclusion that she will not. (Suppose only 10 percent of the optimistic patients recover and even fewer of the pessimists.) In this case, there is a strong motivation for the patient to believe that she will recover, and it may well be in her interest to believe that she will. But that belief is not a rational belief; it is not supported by the evidence.[7]

b. Misevaluation of Evidence.   A second factor that leads people to have irrational beliefs is misevaluation of evidence. They think that the evidence supports a proposition when in fact it doesn't. Politicians and other speakers often take advantage of this error. They describe one or two vivid examples of something and thereby lead us to form general conclusions that they don't adequately support. For example, a vivid description of someone who cheats the welfare system may lead us to believe that there is a lot of cheating or that the welfare system is seriously defective. People are often led to mistaken beliefs in these cases. Because the details of the example or the manner of its presentation are rhetorically powerful, people tend to misevaluate or overestimate the significance of the evidence.

Speakers and writers who have considerable rhetorical power may induce us to misevaluate evidence. The persuasive ways in which they present their views or their appealing styles may lead us to think that certain evidence supports a conclusion

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7. There is a strong temptation to say that it is reasonable for the patient to believe that she will recover, even though this belief goes against her evidence. What inclines us to say this is the fact that the belief is beneficial to her; she will be better off if she believes that she will recover than if she doesn't. This may seem to be an objection to (RB), but in fact it is not. What the example makes us see is that there are two different sorts of rationality or reasonableness. One kind of rationality is "practical rationality." An action is practically rational (or reasonable) when it is useful or beneficial. So, believing that one will recover in this example is practically rational, since it tends to be beneficial. The other kind of rationality (or reasonableness) has to do with knowledge and true belief. It is this sort of rationality that we are dealing with in (RB). An impartial observer would not rationally believe that the patient would recover.

when it really doesn't support it. In part, this may be because we don't clearly attend to the evidence itself. Instead, we let these other factors distract us.

c. Not Considering the Total Evidence. In some cases people focus on only the part of their evidence that supports a proposition, and they fail to consider other parts of their total evidence that count against the proposition. When they do this, they may have a belief that is not rational according to (RB). This idea can be illustrated by a revised version of Example 4. Suppose we add the following to Jim's evidence: the book left behind in the classroom is the textbook for an upper-level mathematics class, and this is a class that almost no freshmen take. Jim still has a reason to believe that a freshman left the book in the classroom: the fact that more than half the students in the class are freshmen. But he now has an even better reason to think that a sophomore left the book: the fact that it is a book only sophomores are likely to have. Overall, the evidence in this revised example supports the proposition that a sophomore left the book in the room. If Jim were to ignore his combined evidence, by focusing only on the total number of freshmen, and thus believe that a freshman left the book, then his belief would not be rational.

When (RB) says that believing a proposition is rational provided one's evidence supports it, it means that one's overall evidence or *total evidence* must, on balance, support that proposition. Merely having some piece of evidence in favor of a proposition does not make believing that proposition rational, since that evidence can be outweighed by other evidence that goes against the proposition.

E. Rationality, Relativity, and Objectivity

We saw earlier that the truth value of a proposition is not relative, in that a proposition can't have one truth value for one person and a different truth value for another. Rationality is different in this respect. It can be rational for different people to have different attitudes toward the same proposition. The reason for this is that different people can have different evidence about the same proposition.

Example 6

You are on a jury hearing the case of Heza Thief, who is accused of robbing a bank. The evidence presented against Thief isn't very convincing. One witness tentatively identifies him as the robber but admits under cross-examination that he didn't get a very good look at the robber. Other seemingly honest witnesses report that Thief was with them at the time of the robbery, thus providing him with an alibi. No fingerprints, suspicious financial dealings, or past record is brought up to indicate his guilt. In fact, however, Thief is guilty. His witnesses were paid off to support his alibi and the police have done a bad job investigating this case.

Now, consider the proposition

25. Heza Thief robbed the bank.

In this example, although (25) is true, your evidence does not support it, and it is not rational for you to believe (25). Now consider the situation from the standpoint of Heza Thief. His evidence includes his own memories of robbing the bank. He knows what the truth of the matter is, that he did rob the bank. Thus, it is rational for Heza Thief to believe (25). We thus have an example in which it is rational for one person to believe a proposition but not rational for another person to believe the very same proposition because the two people have different evidence concerning the proposition.

It can also happen that it is not rational for a person to believe a proposition at one time but rational at a later time. This could happen to you with respect to (25). Suppose that some time after the trial Thief becomes a prominent city official. Eventually, a newspaper reporter does a thorough investigation of his past. One of the lying witnesses reveals the story, and eventually the whole truth comes out in the newspaper. Thief even admits to his guilt. At this point, it becomes rational for you to believe (25) because your evidence has changed.

This point about time may help to alleviate misgivings some of you may have felt earlier in the chapter when we said that ancient schoolchildren were wrong when they believed that the earth is flat. Their beliefs were false, but they were nevertheless reasonable ones. They did have good reasons to believe as they did. They had the testimony of the experts on their side and they seemed to have perceptual evidence supporting their belief.

It is extremely important to realize, however, that rationality depends on evidence in the way just described; it is not a matter of personal choice. At any given time, each person has some body of evidence. That evidence supports some propositions and fails to support others. If two people have exactly the same evidence, then the same propositions are supported by that evidence and the very same beliefs would be rational for those two individuals. A person could *think* that his evidence supports some proposition but be mistaken as a result of a motivational error, a misevaluation of evidence, or the failure to take into account his total evidence.

EXERCISES AND STUDY QUESTIONS

*1. State whether each statement is true or false.
   a. If a person considers a proposition, then the person must either believe the proposition or disbelieve the proposition.
   b. If you have some evidence against a proposition, then it is always rational for you to disbelieve the proposition.
   c. If a proposition is true, then it is always rational for you to believe the proposition.
   d. Since Smith and Jones disagree about whether there will be increased inflation next year, one of them must be irrational.
   e. Since Smith and Jones agree about whether God exists, it can't be that one of them is rational and the other irrational on this topic.

2. Comment on each of the following claims.
- **a.** Jones's belief that he would get the job must have been irrational, since it was false.
- **b.** I realize that all the experts agree, but the experts have been wrong before. So it is not reasonable to believe them.
- **c.** Jones has thought very hard about that topic. So his beliefs about it must be rational.

*3. Discuss the following objection to principle (RB). A person who is shipwrecked on a deserted island has a much better chance of surviving if he believes that he will be rescued than if he doesn't. The belief will give him the strength and motivation to do what he must to stay alive, and this will give him a better chance of living until help arrives. As a result, it surely is rational for him to believe that he will survive, even if he doesn't have any evidence supporting that belief. So (RB) is wrong.

4. Describe briefly the main evidence you have for the following beliefs. How good do you think this evidence is?
- **a.** Your belief about who the current president is.
- **b.** Your belief about who the first president of the United States was.
- **c.** Your belief that the earth revolves around the sun.
- **d.** Your religious beliefs.
- **e.** Your belief that the sun will rise tomorrow.
- **f.** Your belief that other people have thoughts and feelings similar to your own.

*5. In Example 2 Hasa Hunch has a hunch that a coin has landed heads up. Does this hunch count as evidence in favor of the proposition that the coin landed heads up. Why or why not?

6. Suppose that three people—*A*, *B*, and *C*—are individually considering some proposition, *P*. *A* comes to the conclusion that *P* is true, *B* comes to the conclusion that *P* is false, and *C* suspends judgment about *P*. Could all three of them be rational in having the attitude they do? If not, why not? If so, how?

IV. SUMMARY

We use sentences in a variety of ways. Interrogative sentences are used to ask questions. Imperative sentences are used to issue commands. Declarative sentences are used to describe things.

It is important to distinguish between a sentence and the proposition it expresses. The same sentence can be used to express different propositions in different situations, and different sentences can sometimes be used to express the same proposition.

The fundamental principle about the truth and falsity of propositions is the correspondence principle:

CP1: A proposition is true just in case it describes things as they actually are. A true proposition corresponds to the facts. If a proposition says that a certain object has a particular characteristic, then it is true just in case that object actually does have that characteristic. A proposition is false just in case it fails to describe things as they actually are. A false proposition does not correspond to the facts. If a proposition says that a certain object has a particular characteristic, then it is false if that object actually does not have that characteristic.

Sentences are linguistic representations of propositions. A sentence is true provided it expresses a true proposition. The truth value (truth or falsity) of a proposition (or a sentence expressing it) depends on the actual facts in the world, not how people happen to feel about the proposition or what they think about it.

Belief is a mental attitude toward a proposition. To believe a proposition is not to act in any particular way. Rather, it is to accept the proposition, to take it to be true. Belief is a general notion, with strong conviction and hesitant acceptance being examples of more specific attitudes that all count as belief. The belief principle describes our options with respect to a proposition we are considering:

BP: Whenever a person considers any proposition, that person must believe the proposition, or disbelieve the proposition, or suspend judgment about the proposition. A person cannot at any time have more than one of these attitudes toward one proposition.

Beliefs, like sentences, can be true or false. A belief is true when it is a belief in a true proposition. A belief is false when it is a belief in a false proposition. Thus, the truth value of a belief, like the truth value of a proposition, depends upon how the world is. Beliefs are not made true by being sincere or well-meaning.

The fact that sentences can be used to express different propositions can lead you to think that people are disagreeing when they really don't have any genuine disagreement. People have genuine disagreements when and only when there is some proposition that one believes and the other does not. Sometimes people use sentences in ways that make it seem that they disagree, but they are just using words in different ways and there is no proposition about which they really disagree. Similarly, sometimes people seem to agree because they agree that some sentence is true, but they may be using that sentence to express different propositions and they may disagree about these propositions.

Beliefs and other attitudes can be assessed for their rationality. Rationality is linked to evidence, as expressed in the following principle:

RB: If a person's evidence concerning a proposition supports that proposition, then it is rational for the person to believe the proposition. If the person's evidence goes against the proposition,

> then it is rational for the person to disbelieve the proposition.
> And if the person's evidence is neutral, then it is rational for the
> person to suspend judgment concerning the proposition.

By allowing that a rational belief can be based on evidence that does not guarantee the truth of the belief, (RB) endorses a kind of fallibilism. To reject fallibilism would require holding that it is only rational to believe propositions supported by conclusive evidence. Since we have conclusive evidence for practically nothing, to reject fallibilism is to commit oneself to the highly implausible view that it is rational to suspend judgment about nearly everything.

The main things that lead people to hold irrational beliefs are motivational errors and misevaluations of evidence. The former often occurs when one has strong motivation to believe a proposition for which one has little or no evidence. Such motivation can come from the fact that the belief is comforting or beneficial in some way. Misevaluation of evidence can occur in a variety of ways, including focusing on only a portion of one's evidence and ignoring other evidence. Under the principle (RB) beliefs should be guided by one's total evidence, not just selected portions of one's evidence.

Rationality is relative, in that what is rational for one person to believe may not be rational for another person to believe. Also, it may be rational for a person to believe something at one time and disbelieve it at some other time. Rationality is objective, however, in the sense that what is rational is not determined by the thoughts or feelings of the person. It is determined by the nature of the evidence the person has.

CHECKLIST OF KEY TERMS

- sentence
- interrogative sentence
- imperative sentence
- declarative sentence
- truth
- falsity
- token
- type
- proposition (statement)
- context
- truth value
- belief
- disbelief
- suspension of judgment
- rationality

- evidence
- fallibilism
- conclusive evidence
- motivational errors
- misevaluation of evidence
- total evidence

CHAPTER EXERCISES

1. People often pledge to "tell the truth" in a courtroom and in other settings. What exactly are we promising to do when we promise to tell the truth? If someone keeps her promise to tell the truth, does it follow that every statement she has made (while keeping the promise) is true? Explain.

2. In the following passage a lawyer makes a claim about the ways lawyers sum up (make concluding remarks about) a case.

   There are as many different ways of summing up as there are trial lawyers, and there is no one correct way to deliver a summation, or to learn how to give one. It is largely a matter of instinct and experience.[8]

   Does this statement conflict with the account of truth given in the chapter? Suppose I find that a certain way of summing up is best, and say that it is correct (or best) to sum up in that way. Is my statement true?

3. Some people remain somehow dissatisfied with (CP1), even if they find it difficult to say exactly what is wrong with it. If you think there is something wrong with it, write out your objection as clearly as you can. Use examples to illustrate your point. If you think that some section of the chapter does not adequately explain how (CP1) works or why it is correct, identify that section and explain its weakness.

4. Discuss the following objection to (RB).

   The principle of rational belief says that it is always rational to believe in accordance with your evidence. But surely there are times when it is not rational to believe a proposition even though your evidence supports it. For example, if you are about to drive across a bridge and your kids, your grandmother, and the governor are in the car with you, you should consider the proposition that the bridge is secure. For it to be rational for you to believe this proposition, it is not enough for your evidence merely to support it. You should not believe the proposition unless your evidence very strongly supports it.

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8. Steven Phillips, *No Heroes, No Villians: The Story of a Murder* (New York: Vintage Books, 1977), pp. 196–97.

5. How does the fact that people use the same sentence to express different propositions show that some apparent disagreements are not genuine disagreements? Can it also happen that people who seem to agree about things (because they say that the same sentences are true) really do disagree? If so, how?

6. Discuss the reasoning in this passage.

> Some students like to bring good luck charms, such as lucky coins, rabbit's feet, and other objects, with them when they take exams. These things are thought to bring good luck and thus help them to do better on the exam. This is quite irrational.

In thinking about this, distinguish bringing to an exam something that is supposed to give you luck from bringing something that is supposed to give you answers, such as crib sheets, notes, and copies of the previous year's exam.

7. Find the text of a political speech. Look for the ways in which the speaker attempts to persuade listeners. Do you find rational argument, or is the speaker trying to take advantage of errors of the sort discussed in this chapter?

8. The Declaration of Independence states that we hold some truths to be "self-evident." What do you think self-evidence is? Are the things mentioned in the Declaration really self-evident? Can you think of anything else that is self-evident?

9. In many criminal cases the defendant is supposed to be found guilty only if the prosecution establishes guilt "beyond a reasonable doubt." What do you think this means? How would you explain it in terms of the concepts discussed in this chapter? In some other trials the standard of evidence is "preponderance of evidence." What do you think this means? How would you explain it in terms of the concepts discussed in this chapter?

10. In this chapter, the idea that certain propositions can be "true for" one person yet false for other people is discussed. Do you agree with the claim made there that "true for" talk is a confusing way to speak and is best avoided? Explain your answer.

11. Some critics think that (RB) is defective. Can you think of anything that might be wrong with this principle? Is it in any way too restrictive or limiting? By saying that rationality depends only on evidence, is the principle overlooking something?

12. William Safire describes the right way to form an opinion as the "application of principle and experience to new situations; independence; originality; loyalty; most of all, mind over gut."[9] Describe the differences between Safire's view and the one described in the text.

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9. William Safire, "Forming Public Opinion," *New York Times*, December 10, 1990, p. A19.

13. Continue to collect articles, letters, essays, and editorials. Look through the material you've collected so far. Can you find any claims that seem to conflict with (CP1).

14. Look over the letters to the editor you have already collected, or find some new ones. Select some letters whose authors clearly express disagreement with something said in a previous edition of the newspaper. Do the letter writers provide reasons to think that the claim they dispute is false? If not, what do they present instead?

ANSWERS TO SELECTED EXERCISES

1a. Declarative
 b. Interrogative
 d. Declarative
 e. Imperative
 h. Declarative
 k. Declarative
 m. Imperative

1a. Here "true" has the same meaning as in the text.
 b. In this sentence "true" means "genuine" or "loyal."
 c. A person "tells the truth" when the person says what he or she thinks is true. A person who makes an honest mistake hasn't failed to tell the truth. So "true" here has a different meaning than in the text.
 d. A wheel is true when it is properly aligned.
 e. This means that he really does believe that things will turn out well. "True" is used here to express emphasis.
 3. Yes. The best examples are sentences in different languages translated from each other.
 5. No. However, it does depend upon what people think about the statement that the earth is round. It does not depend upon what they think about the displayed statement itself.

 1. Sentences (a), (g), and (h) do not imply any beliefs or disbeliefs. Sentence (b) can be used to say that Smith believes that she did not take the money. However, it can also be used to say that she says that she did not take the money (no matter what she believes). Similar comments apply to (c). Sentences (d), (e), and (f) imply that the person believes the proposition mentioned.
 3. A person"s behavior can give you a very good idea about what he or she believes. So, you can tell what the person believes, unless "telling what he or she believes" requires being absolutely certain about what he or she believes.
 5. I do believe that I like peach pie. The reason it seems odd to say "I believe that I like peach pie" is that usually we do not say that we believe something when we are very sure of it. Instead, we say "I feel sure" or "I know." But it is still true that we believe the statement in these cases.
 7. It does not follow that we disagree about anything. There need not be any proposition I believe and you disbelieve.

1a. False. The person could suspend judgment about the statement.
  b. False. The rest of your evidence might support the statement.
  c. False. Your evidence might fail to support it.
  d. False. They may have different evidence, and each might be following that evidence.
  e. False. One may have good evidence for the belief and the other not have good evidence.
3. This objection confuses what is beneficial with what is rational. It is surely in the ship-wrecked person's interest to believe that he will be rescued. (Perhaps, in some practical sense, it is rational for him to believe this.) But given his evidence this is not a reasonable belief. A neutral observer with the same evidence should not believe that he will be rescued.
5. No. She has no reason to think that such hunches are accurate.

Well-Formed Arguments

People evaluate arguments regularly and naturally, often without realizing exactly what it is that they are doing. However, our ordinary vocabulary for evaluating arguments is not very clear or precise. In addition, our ordinary evaluations of arguments do not always carefully distinguish their rational merits from other characteristics, such as their novelty or rhetorical effectiveness. In this chapter, we will develop a set of clearly defined terms that we will use to describe the rational strengths and weaknesses of arguments. Once we have learned this terminology, we will be able to state and evaluate arguments much more clearly and succinctly.

I. ARGUMENT ANALYSIS

A. The Standard Form of Arguments

When someone gives an argument in support of a statement, the person typically offers other propositions as evidence for the statement in question. Often the passage or essay containing the argument includes other material as well. There may be examples illustrating various points. The author might explain how he or she came to believe the proposition. Sometimes there are jokes and anecdotes. There also may be remarks ridiculing people with opposing views or perhaps comments to the effect that those who disagree are well-meaning but confused.

To determine whether an argument is a good argument, it is best to state the argument in a very clear form that highlights the reasons given in the argument and the proposition they are intended to support. Other material—background information, jokes, anecdotes—is eliminated. Presenting the argument in this way enables us to focus on the gist of the argument without being distracted by these other things.

As we've seen, arguments have two main components. The reasons, the things that are supposed to support the claim in question, are premises. The proposition the premises are supposed to support is the conclusion. An argument consists of one or more premises and a conclusion. We will write arguments in a particular format, or ***standard form***, by listing each premise, on a separate numbered line, drawing a line, and then writing the conclusion. An argument that has three premises will look like this:

1. First premise

2. Second premise

3. Third premise

4. Conclusion

Of course, there do not have to be three premises; there can be any number. Numerous examples of arguments, both in ordinary prose and in standard form, will be given later in this chapter.

At times it will be difficult to rewrite arguments in standard form, but there are four main reasons for going to the trouble of doing so:

1. Writing arguments in standard form helps you avoid including extra steps in the argument. In normal prose people often include material that isn't strictly part of their argument. By writing the argument out in standard form it is easier to see just what is part of the argument and what isn't. You are less likely to include the extra material in the argument when it is written out in this way.

2. Sometimes people don't bother to write down all of their assumptions and reasons when they give an argument. They may think that some things go without saying. As we will see in detail later, it is important to include these unstated premises since sometimes they are controversial and sometimes they are false. Writing the argument in standard form makes it easier to spot the places where there are missing premises and easier to figure out what they are.

3. People often state their premises and conclusions in obscure, misleading, or imprecise ways. Rewriting arguments in standard form encourages clearer and more precise formulations of arguments. This makes the arguments easier to understand and evaluate.

4. When arguments are written out in standard form, you can easily refer to the various premises and the conclusion since each element has its own number. This makes discussion of arguments simpler and more convenient.

These advantages of rewriting arguments in standard form will become more apparent after you have practiced doing it for a while. At first, it may be difficult to figure out what is really part of the argument and what isn't, but with practice this will get much easier.

B. The Steps of Argument Analysis

The whole project of extracting arguments from prose passages and putting them in standard form and then deciding whether these arguments are good arguments is ***argument analysis***. As previously described, argument analysis can be broken down into two main steps, each of which will be further subdivided later. The first step is ***reconstructing the argument***. This is the process of taking a prose passage and rewriting the argument it contains in standard form. To do this, you must read the passage carefully, figure out what the author is saying, identify the premises and conclusion of the argument, and then write everything out in standard form. The second main step of argument analysis is ***evaluating the argument***. In this step you decide whether the argument outlined during the first stage is a good argument.

Although it might seem to make sense to learn about the first stage of argument analysis first, we will study the second stage first. When you reconstruct an argument, your goal is to extract from the prose passage you have read the best argument you can for the author's conclusion. There wouldn't be much point to reconstructing the argument in a less favorable way. This means that to know how to reconstruct an argument, you need to have some idea of what makes an argument a good argument. Therefore, it makes sense to learn what makes an argument good or bad before studying in detail how to reconstruct arguments that are expressed in ordinary prose.

C. Evaluating Arguments: An Introduction

Since the point of giving an argument is to provide support for its conclusion, an argument will be successful if it does provide support for its conclusion. In other words, an argument succeeds if it presents good reasons to believe that its conclusion is true, and it fails if it does not present good reasons for its conclusion. By this standard, it is possible for arguments to be rhetorically effective or to have literary merit even if, from a logical or rational point of view, they are no good. Arguments may often convince listeners because they are in some way persuasive, even if they don't present genuinely good reasons for their conclusions. Arguments can also be interesting or surprising without providing good reasons for their conclusions. It is the rational merits of arguments that is our primary concern in this text.

In this section we will examine a few simple arguments and consider some points that might be made in their evaluation. This analysis will provide us with a better idea of just what an argument is and what the criteria for a good argument are. Following this introduction, we will spend the remainder of this chapter developing in detail the criteria for a good argument.

Example 1

Legal Eyes is in favor of legalizing possession and use of drugs. He reasons, "Drugs should be legal. After all, those who use drugs harm only themselves."

Legal's argument is very simple. We can put it into standard form as follows:

Argument 1

1. Drugs hurt only those who use them.

2. Drugs should be legal.

Some people agree with the conclusion of this argument and some disagree. For now, set aside your own views about the legalization of drugs and focus on Argument 1 itself. Without reading on, try to think of things that opponents of drug legalization might say in response to this argument.

You might be tempted to criticize Argument 1 by proposing an argument against legalizing drugs. However, our goal here is to look at Legal's argument itself and figure out whether its premise provides good support for its conclusion. We're interested for now in examining this argument, not in formulating or examining other arguments.

There are a number of things critics might say directly in response to Argument 1, but two points are of particular importance. We can put these points into the mouths of two critics.

Critic 1: It is true that drugs hurt only those who use them. But this does not show that they should be legal. Sometimes people have to be protected from their own foolishness and mistakes. This may be a case in which it's the job of the government to make it harder for people to harm themselves.

Critic 2: If it were true that drugs hurt only those who use them, then I'd accept your argument. But it is not true. When pregnant women use drugs, they hurt their unborn children. When parents use them, they often become less responsible and caring parents and so they hurt their children. Some people who use drugs become violent and harm their spouses or others with whom they come into contact. So, drugs don't hurt only drug users.

In examining these two responses to Argument 1, our goal is not to decide whether either of these critics is right. The important point is to see that they make very different sorts of points about the argument. It is the general nature of their criticisms that we are trying to identify.

Critics 1 and 2 differ from one another in two ways. First, they differ over the merits of the premise, which says that drugs hurt only those who use them. Critic 1 begins by saying that this premise is true. In contrast, the main point critic 2 makes is that (1) is false because drugs hurt people other than the users themselves. Second, critic 1 thinks that the premise of the argument, though true, is not a good reason to believe the conclusion, whereas critic 2 thinks that the premise is a good reason for the conclusion, or at least that it would be a good reason for the conclusion if it were true. So, critic 1 accepts the premise of the argument but denies that the premise provides good support for the conclusion. He thinks that the conclusion does not follow from the premise. Critic 2 thinks that the premise is false, but that the conclusion does follow from it.

This simple example illustrates the two ways an argument can go wrong: it can have a false premise, or its conclusion can fail to follow from its premise(s). Let's look at two more very simple examples.

Example 2

Connie and Diane are discussing the recent student elections. They want to know whether Boris voted. Connie reasons as follows: "Boris is a responsible student. So he must have voted." Diane replies, "I agree with you about Boris's being responsible, but it just doesn't follow that he voted. He might have been sick or out of town or too busy. We can't conclude that he voted."

Example 3

Daniel and Anders are wondering how cold it is outside. Daniel looks outside and sees that the water on a nearby pond is frozen. He then argues: "The water in that pond is frozen. Water freezes at 0 degrees Fahrenheit. So it must be 0 degrees Fahrenheit or lower outside." Anders might reply, "That would be a good argument if you were right about the freezing point of water, but water freezes at 32 degrees Fahrenheit, not 0 degrees Fahrenheit."

In Example 2, Connie's argument has as a premise the statement that Boris is a responsible student. Its conclusion is the statement that Boris voted. In standard form, it would look like this:

Argument 2

1. Boris is a responsible student.

2. Boris voted.

Diane points out that Connie's conclusion, (2), doesn't follow from her premise, (1). Diane does not dispute the premise itself; in fact, she says that (1) is true. Even if (1)

is true, she claims, (2) still need not be true. So her point is similar to the point critic 1 made about Argument 1.

In Example 3, Anders says that the argument would be a good one *if* the premises were true. In this case, the standard form of the argument is

Argument 3

1. The water in that pond is frozen.

2. The freezing point of water is 0°F.

3. It is 0°F or less outside.

Anders's point is that one of the premises, (2), is not true. Anders points out that Daniel has simply made a mistake about the temperature at which water freezes. So this criticism is similar to the one made by critic 2 about Argument 1.

We see, then, that an argument can go wrong in two ways: it can have a conclusion that doesn't follow from its premises, and it can have a premise that isn't true. To be a good argument, an argument's conclusion must follow from its premises, and its premises must themselves be acceptable ones. The rest of this chapter will discuss what it means for a conclusion to follow from, or be supported by, a set of premises.

EXERCISES AND STUDY QUESTIONS

State whether each of the following statements is true or false. Briefly explain your answers.

*1. An argument must have at least three premises.
 2. When reconstructing an argument from a written passage, one sometimes should omit some things that were stated in the original passage.
*3. To evaluate an argument is to say whether you agree with the conclusion.
 4. The only good way to criticize an argument is to show that it has a false premise.
 5. When you reconstruct an argument, you should never add anything to the reconstruction that wasn't in the original argument.

II. WELL-FORMED ARGUMENTS

When you examine an argument to see whether its conclusion follows from its premises, you focus not on whether the premises are true but rather on the connection between the premises and the conclusion. You pretend, or assume, that the premises are true and then ask whether, if you knew that the premises were true, you would then have a good reason to believe that the conclusion is true. If you would, then the conclusion does follow from the premises.

Any argument whose conclusion does follow from its premises is a ***well-formed argument***. We can distinguish two kinds of well-formed arguments. Sometimes it is impossible for the premises to be true and the conclusion false. This kind of argument is called ***deductively valid*** (or, more simply, ***valid***). At other times, the premises merely make the conclusion probable. This kind of argument is called ***inductively cogent*** (or just ***cogent***).[1]

A. Validity

A1. A Preliminary Definition of Validity

The following definitions can provide a useful starting point for discussing validity.

> **D1:** An argument is *valid* if and only if it is impossible for the premises of the argument all to be true and the conclusion of the argument to be false.

An alternative definition puts the point slightly differently.

> **D1a:** An argument is *valid* if and only if the following condition holds: necessarily, if the premises of the argument are all true, then the conclusion is true as well.

By either definition, in a valid argument the truth of the premises *guarantees* the truth of the conclusion.

Our use of the word "valid" in these definitions is a technical use of the term that is similar to its use in formal logic. Whereas in ordinary conversation we say such things as, "That's a valid point," as we use the word in this text, only whole arguments can be valid. An argument is valid when the premises guarantee the truth of the conclusion. An argument that is not valid is called an ***invalid argument***.

Some simple examples will make the idea of validity clearer.

Argument 4

1. Boris is a student at State U.

2. All students at State U. voted.

3. Boris voted.

Argument 4 is valid. It is impossible for premises (1) and (2) both to be true and conclusion (3) to be false. What makes this argument valid is not the fact that if (1) and

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1. It is tempting to use the phrase "inductively valid" instead of "cogent." However, it is an established tradition in logic to use the word "valid" as short for "deductively valid." To introduce the phrase "inductively valid" would therefore cause confusion.

(2) are true, then (3) is probably true or likely to be true. Rather, there is no way that (3) could be false if (1) and (2) are true. The truth of (1) and (2) guarantees the truth of (3). One way to convince yourself of the validity of this argument is to imagine a situation in which (3) is false. You'll find that in whatever story you tell in which (3) is false, (1) or (2), or both, are also false.

In assessing an argument for validity, you should not sneak in additional information that connects the premises to the conclusion, even if that information is obvious. Consider the following argument:

Argument 5

1. Pluto is a planet.

2. Pluto is more than two feet in diameter.

It might be obvious that all planets are more than two feet in diameter, and thus if (1) is true, then (2) is also true. However, (1) by itself does not guarantee that (2) is true. It is only (1) in conjunction with the fact that all planets are more than two feet in diameter that guarantees the conclusion. So, Argument 5 is not valid. An expanded argument, however, would be valid:

Argument 5a

1. Pluto is a planet.

2. All planets are more than two feet in diameter.

3. Pluto is more than two feet in diameter.

The second bit of information, as obvious as it may be, must be stated as a premise to make the argument valid.

Furthermore, you can tell that Argument 4 and Argument 5a are valid without knowing anything at all about the subjects mentioned in the arguments. You don't have to know who Boris is, what State U. is, what students are, or what they voted on to tell that Argument 4 is valid. Similarly, you don't have to know what Pluto is or what a planet it is to tell that Argument 5a is valid. You can tell that these arguments are valid just by looking at the premises and the conclusions and seeing how they are connected to one another. Whatever Pluto is and whatever planets are, *if* Pluto is a planet and all planets are more than two feet in diameter, then surely Pluto is more that two feet in diameter. It is this connection between the premises and the conclusion that makes the argument valid.

A2. Patterns of Argument

Valid arguments often follow some fairly simple patterns. A *pattern of argument* displays the underlying form or logical structure of an argument. It is the pattern an argument follows that determines whether or not it is valid. One way to improve at argument

analysis is to become familiar with the common patterns of argument, both valid and invalid, that people use. Once you are familiar with the patterns, it will be easy to evaluate many of the arguments you encounter. Furthermore, when you are reconstructing arguments you will often choose to express the arguments using these common patterns.

We can describe the pattern of Argument 4 as follows. The first premise says that some individual is in some general group or category; in this case, Boris is in the group or category of students at State U. The second premise says that all members of that group or category have a certain characteristic, in this case, voting. The conclusion is that the individual mentioned in the first premise has this characteristic. We can display this general pattern of argument as follows:

1. x is an A.

2. All As are Bs.

3. x is a B.

In our example, "Boris" takes the place of x, "student at State U." takes the place of A, and "voted" takes the place of B.[2] Any other appropriate terms could be inserted instead, and you can easily make up additional arguments following this same pattern.

Consider again Argument 5a:

1. Pluto is a planet.

2. All planets are more than 2 feet in diameter.

3. Pluto is more than two feet in diameter.

It follows the same pattern, with "Pluto," "planet," and "revolves around the sun" going in for x, A, and B.

One of the benefits of becoming familiar with patterns of argument is that you can assess arguments for validity more easily. Every argument following the pattern just described is valid no matter what goes in for x, A, and B. So, if you come across an argument following this pattern, you can easily tell that it is valid. As we look at other arguments, we will describe their patterns as well.[3] We will then have a supply of simple argument patterns. Many of the arguments we encounter follow one of these simple patterns. Once you have learned them, you'll find it easy to decide whether these arguments are valid.

Let's look at another simple argument and identify the pattern it follows.

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2. It isn't exactly true that the word "voted" simply replaces B in these formulas. If it did, then we'd get for line (2) "All students at State U are voted," which is ungrammatical. To make the sentence grammatically correct, we had to drop the word "are." We still say that this argument follows the pattern.

3. Some common patterns of argument are displayed in the tables at the end of this section.

Example 4

Biz E. wants to make a phone a call, so he picks up the phone but he hears that someone else is already making a call from one of the other phones on the same line. He quickly hangs up, without identifying the voice he heard. He then wonders who is using the phone. He knows that it must be either his wife or his son, since there is no one else at home. He then looks out the window and sees that his son is out in the backyard mowing the lawn, so he concludes that his wife is the one on the phone.

We can reconstruct the reasoning here rather easily. The argument looks like this:

Argument 6

1. Either my son is on the phone or my wife is the phone.

2. It is not the case that my son is on the phone.

3. My wife is on the phone.

The first premise says that one or the other of two alternatives is true. The second premise says that one of those two options is not true. So the conclusion drawn is that the other option is true. We can represent this pattern of argument as follows:

1. Either P or Q.

2. $\sim P$ (P isn't true).

3. Q.

In our example, P stands for "My son is on the phone" and Q stands for "My wife is on the phone." The symbol $\sim$ means "It is not the case that" or "It is false that." ($\sim P$ is read as "not-P.") This is also a valid pattern of argument. If the premises of Argument 6 are both true, then its conclusion must be true as well. Any possible situation that you consider in which the conclusion is not true will also be a situation in which one or the other of the premises is also not true. (If you aren't sure of this, try to imagine a situation in which (1) and (2) of Argument 6 are true. You'll find that (3) is true as well.) The same is true no matter what goes in for P and Q.

Before going on to identify a few more patterns of argument, it will be useful to take note of an important difference between the two patterns so far identified. The two patterns of argument we've just identified–the pattern of Arguments 4 and 5a and the pattern of Argument 6–differ from one another in an important way. Notice that in the case of Argument 6 the pattern identified whole sentences whereas in the pattern for Arguments 4 and 5a the pattern broke the sentences down into smaller units. Thus, in the pattern for Arguments 4 and 5a we had a letter, x, standing for the names "Boris" and "Pluto" and the letters A and B standing for the *predicates* (descriptive phrases) "is a student," "is a planet," and so on. This sort of argument represents ***predicate logic***. In contrast, in representing the form of Argument

6 we did not break the sentences up into smaller units. We had letters standing for whole sentences, but nothing standing for the parts, such as "my wife" or "on the phone." The latter kind of argument illustrates what is known as **sentential logic**, or **propositional logic**.

In the examples above, and throughout the text, we make use of some standard logical abbreviations and notations. We use the capital letters *P*, *Q,* and *R* to stand for complete sentences. **Compound sentences** are formed by combining two or more simpler sentences, and we abbreviate compound sentences by using sentences as "*P* and *Q*," "*P* or *Q*," and "If *P* then *Q*." When we want to say that some statement is not true, we will use the symbol ~. Thus, if *P* abbreviates "The Republican candidate won" then ~*P* abbreviates "It is not the case that the Republican candidate won."

When displaying the pattern of arguments in predicate logic, we use lowercase letters such as *x* and *y* to abbreviate names of individuals and uppercase letters such as *A* and *B* to abbreviate words and phrases expressing properties or characteristics of individuals. Thus, we might write "If *x* is an *A*, then *x* is a *B*" to abbreviate "If Jones is an astronaut, then Jones is brave." When we are discussing arguments containing premises such as "All astronauts are brave" we might use the abbreviation "All *A*s are *B*s." Finally, we can also make use of the ~ to abbreviate a sentence such as 'Jones is not an astronaut'. We might write this as "*x* is ~*A*."

This notation provides a way to describe patterns of argument concisely and conveniently. Some people find this abstract notation extremely useful while others do not. Unlike symbolic logic texts, which emphasize the use of these symbols and the logical systems from which they are taken, in this text we will only make limited use of them to aid our understanding of arguments expressed in ordinary English. However, it is important to learn the notation and to become comfortable with it.

The differences between sentential logic and predicate logic loom very large in courses on symbolic logic. For our purposes, we simply need to recognize the different sorts of patterns arguments follow. In the three arguments we classified above, why did we describe the pattern one way in the first two cases and the other way in the third case? The answer has to do with the parts of the arguments that play an important logical role in the argument. These are almost always the units that are repeated or occur more than once in the arguments. Look again at Argument 6. Notice that certain complete sentences are repeated in the argument.

1. Either my son is on the phone or my wife is the phone.

2. It is not the case that my son is on the phone.

3. My wife is on the phone.

The entire conclusion occurs inside the first premise of the argument and the whole second premise (except for the ~) also occurs in the first premise. In contrast, the whole conclusions in Arguments 4 and 5a do not occur in the premises of those arguments, but the parts of those conclusions do:

Argument 4

1. (Boris) is a ⌐student at State U.⌐
2. All ⌐students at State U.⌐ ⬡voted.⬡
3. (Boris) ⬡voted.⬡

Argument 5a

1. (Pluto) is a ⌐planet.⌐
2. All ⌐planets⌐ are ⬡more than two feet in diameter.⬡
3. (Pluto) is ⬡more than two feet in diameter.⬡

The key thing to look for is whether the whole conclusion occurs inside one of the premises. If it does, then the argument is almost definitely best seen as an argument from sentential logic. If the whole conclusion does not appear in a premise, but the parts of the conclusion appear in different premises, then the argument is most likely best taken to be one from predicate logic.

EXERCISES AND STUDY QUESTIONS

1. In each of the following arguments identify the parts of the argument that are repeated by drawing circles and boxes as was done with Arguments 4, 5a, and 6.
   *a. **1.** Michael is a basketball player.
   2. All basketball players are very tall.
   3. Michael is very tall.
   b. **1.** Either the Democrat will win or the Republican will win.
   2. It is not the case that the Democrat will win.
   3. The Republican will win.
   *c. **1.** No jockeys weigh more than 250 pounds.
   2. Willie is a jockey.
   3. It is not the case that Willie weighs more than 250 pounds.
   d. **1.** If you tried, you succeeded.
   2. You tried.
   3. You succeeded.

2. For each of the arguments in exercise 1, state whether you divided it into parts in such a way that it is best represented as an argument from sentential logic or from predicate logic.

A3. Some Patterns of Argument in Sentential Logic

Words that are used to combine simple sentences to form more complex sentences play a central role in sentential logic. Among the key terms are "and," "or," and "if ... then."

Notice that any two sentences can be used to form a bigger sentence by means of these terms. Thus, for any sentences *A* and *B*, we can form the complex sentences "*A* and *B*," "*A* or *B*," and "If *A* then *B*." We can also form the **negation** of any sentence *A* by writing "It is not the case that *A*." We can abbreviate this as ~*A* or "*Not-A*". Sentences formed by combing two sentences with the word "and" are known as **conjunctions**. "Or" sentences are known as **disjunctions** and "if-then" sentences are known as **conditionals**. The common patterns of argument make use of sentences of these kinds.

Sentential Connectives

Conjunction   *A* and *B*
Disjunction   *A* or *B*
Negation   ~*A*
Conditional   If *A* then *B*
Biconditional   *A* if and only if *B*
                    (If *A* then *B*, and if *B* then *A*)

"Or" is often used in arguments that are known as *arguments by elimination*. Argument 6 above is an example. Its first premise says that one or another of two propositions is true, its second premise "eliminates" one of those possibilities, and the argument concludes that the remaining possibility is true. The pattern of argument, then, is as follows:

Argument by Elimination

1. *P* or *Q*.

2. ~*P*.

3. *Q*.

There are two simple patterns of argument that make use of conjunctions. If each of two statements is true, then so is their conjunction:

Conjunction

1. *P*.

2. *Q*.

3. *P* and *Q*.

And if a conjunction is true, then each conjunct is true. Arguments making use of this fact are sometimes said to make use of the rule allowing for *simplification*:

Simplification

1. *P* and *Q*.

2. *P*.

Probably the most common and most important arguments involve conditionals. We will describe a few such arguments here, and we will return to arguments like these at several points in this text. In a conditional, the first part–the "if" clause, or ***antecedent***–is claimed to be sufficient for the truth of the "then" clause, or ***consequent***, as in:

If the president is in the White House, then the president is in Washington, D.C.

The pattern of this sentence can be represented by

If *P* then *Q*.

The idea behind a conditional is that the truth of its antecedent is sufficient for the truth of its consequent. And in this case, the conditional is true.

We can make use of the above conditional in arguments following several different patterns. Suppose, for example, that we know that it is true and we also know that the president is in fact in the White House. Then we could construct the following simple argument:

Argument 7

1. If the president is in the White House, then the president is in Washington, D.C.

2. The president is in the White House.

3. The president is in Washington, D.C.

Arguments following the pattern of Argument 7 are sometimes said to be cases of *affirming the antecedent*. The second premise in the argument affirms, or asserts the truth of, the antecedent of the conditional in the first premise. The pattern, then, is as follows:

Affirming the Antecedent

1. If *P* then *Q*.

2. *P*.

3. *Q*.

Arguments following this pattern are valid. If *P* is sufficient for *Q*, and *P* is true, then *Q* must be true as well. There's no way both premises could be true yet the conclusion false.

Next, suppose that you start with the same first premise and you add a second premise saying that the president is not in Washington. Suppose, for example, that you've just seen him giving a speech at the United Nations in New York. You might then argue:

Argument 8

1. If the president is in the White House, then the president is in Washington, D.C.

2. The president is not in Washington.

3. The president is not in the White House.

This argument is also valid. Arguments like this one are cases of *denying the consequent*. Their pattern is

Denying the Consequent

1. If *P* then *Q*.

2. ~*Q*.

3. ~*P*.

Sometimes arguments string together a few conditionals, as in this example of a *hypothetical syllogism*:

Argument 9

1. If the president is in the White House, then the president is in Washington, D.C.

2. If the president is in Washington, D.C., then the president is not on vacation.

3. If the president is in the White House, then the president in not on vacation.

The pattern in this case is

1. If *P* then *Q*.

2. If *Q* then *R*.

3. If *P* then *R*.

This is a pattern for valid arguments.

Consider next a case in which one premise is a conditional and the other premise denies its antecedent

Argument 10

1. If the president is in the White House, then the president is in Washington, D.C.

2. The president is not in the White House.

3. The president is not in Washington, D.C.

This argument is a case of *denying the antecedent*. Thus, the pattern of argument here is

Denying the Antecedent

1. If *P* then *Q*.

2. ~*P*.

3. ~*Q*.

Assume that there is no doubt about the truth of (1) and (2) of Argument 10. Does it follow that the president is not in Washington, D.C. In other words, is Argument 10 valid?

It is not valid. Even though (1) and (2) are true, there are lots of other places in Washington that the president could be besides the White House. He could be out jogging. He could be visiting the Lincoln Memorial. So (1) and (2) do not guarantee the truth of (3). Hence, arguments following this pattern are not valid. Denying the antecedent is not a valid pattern of argument.

Another invalid pattern is displayed in this example:

Argument 11

1. If the president is in the White House, then the President is in Washington, D.C.

2. The president is in Washington, D.C.

3. The president is in the White House.

Suppose that you know that both (1) and (2) are true. For example, you've just heard on the news an authoritative report stating that after many weeks of traveling, the president is spending the entire day in Washington, D.C. Do (1) and (2) guarantee the truth of (3)? No. Again, the president could be elsewhere in Washington, so this argument is invalid. This argument is a case of *affirming the consequent*.

Affirming the Consequent

1. If *P* then *Q*.

2. *Q*.

3. *P*.

Arguments following this pattern are invalid.

Tables 1 and 2 summarize most of the patterns of argument described here and present some additional examples. Two new patterns are added. These examples and the exercises that follow will help you gain familiarity with common patterns of argument. However, it often takes repeated practice over time for people to be able to identify patterns easily.

Table 1
Some Valid Patterns of Argument in Setential Logic

Pattern	Example
A. Argument by elimination 1. Either *P* or *Q*. 2. ~*P*. 3. *Q*.	1. Either the American League will win or the National League will win. 2. The American League won't win. 3. The National League will win.
B. Simplification 1. *P* and *Q*. 2. *P*.	1. Sarah knows logic and Sam does not know logic. 2. Sarah knows logic.
C. Affirming the antecedent (*Modus ponens*) 1. If *P* then *Q*. 2. *P*. 3. *Q*.	1. If the president is in the White House, then the president is in Washington, D.C. 2. The president is in the White House. 3. The president is in Washington, D.C.
D. Denying the consequent (*Modus tollens*) 1. If *P* then *Q*. 2. ~*Q*. 3. ~*P*.	1. If the president is in the White House, then the president is in Washington, D.C. 2. The president is not in Washington, D.C. 3. The president is not in the White House.
E. Hypothetical syllogism 1. If *P* then *Q*. 2. If *Q* then *R*. 3. If *P* then *R*.	1. If Jones passes the test, then Jones passes the course. 2. If Jones passes the course, then Jones graduates. 3. If Jones passes the test, then Jones graduates
F. Contraposition 1. If *P* then *Q*. 2. If ~*Q* then ~*P*.	1. If the president is in the White House, then the president is in Washington, D.C. 2. If the president is not in Washington, D.C., then the president is not in the White House.
G. Equivalence 1. *P* if and only if *Q*. 2. ~*P*. 3. ~*Q*.	1. Dan is president if and only if Dan is commander in chief. 2. Dan is not president. 3. Dan is not commander in chief.

Table 2
Two Invalid Patterns of Argument in Sentential Logic

Pattern	Example
A. Denying the antecedent 1. If *P* then *Q*. 2. ~*P*. 3. ~*Q*.	1. If the president is in the White House, then the President is in Washington, D.C. 2. The president is not in the White House. 3. The president is not in Washington, D.C.
B. Affirming the consequent 1. If *P* then *Q*. 2. *Q*. 3. *P*.	1. If the president is in the White House, then the president is in Washington, D.C. 2. The president is in Washington, D.C. 3. The president is in the White House.

EXERCISES AND STUDY QUESTIONS

Each of the following arguments follows one of the patterns displayed in Tables 1 and 2. Draw circles and boxes around the relevant parts and identify by name the pattern each argument follows.

*1. 1. If you like logic, then you love debate.
　　2. You love debate.
　　3. You like logic.

2. 1. If you like logic, then you love debate.
　　2. You like logic.
　　3. You love debate.

*3. 1. If you like logic, then you love debate.
　　2. It's not the case that you like logic.
　　3. It's not the case that you love debate.

4. 1. If you like logic, then you love debate.
　　2. It's not the case that you love debate.
　　3. It's not the case that you like logic.

*5. 1. If you like logic, then you love debate.
　　2. If it's not the case that you love debate, then it's not the case that you like logic.

6. 1. You like logic if and only if you love debate.
　　2. It's not the case that you like logic.
　　3. It's not the case that you love debate.

7. 1. You like logic and you love debate.
　　2. You like logic.

8. 1. Either you like logic or you love debate.
　　2. It is not the case that you like logic.
　　3. You love debate.

  9. 1. If you like logic, then you love debate.
     2. If you love debate, then you should consider being a lawyer.
     3. If you like logic, then you should consider being a lawyer.

A4. Some Patterns of Argument in Predicate Logic

We have already seen, in Arguments 4 and 5a, one valid pattern from predicate logic. We will examine a few more patterns here.

    To understand this next group of arguments it is necessary to examine first the sentences that play a key role in them. Consider the following sentences:

    All men are mortal.
    Most professional basketball players are very tall.
    Some students go to summer school.

Each of these sentences is a ***generalization***. They do not say anything about any specific individual. Instead, they say that some portion of one group belongs to another group. For example, the first one says that all things that belong to the group men also belong to the group of things that are mortal. In other words, all things that have the property (or characteristic or attribute) of being a man also have the property of being mortal. We can display the patterns of these sentences in the following ways:

    All *A*s are *B*s.
    Most *A*s are *B*s.
    Some *A*s are *B*s.

Notice that all these sentence patterns contain the phrase "*A*s are *B*s" preceded by some word that states how many of the *A*s are *B*s. The word saying how many of the

Table 3
Some Patterns of Valid Arguments in Predicate Logic

Pattern	Example
1. All *A*s are *B*s. 2. *x* is an *A*. 3. *x* is a *B*.	1. All men are mortal. 2. Socrates is a man. 3. Socrates is mortal.
1. All *A*s are *B*s. 2. *x* is not a *B*. 3. *x* is not an *A*.	1. All desserts are sweet. 2. This lima bean is not sweet. 3. This lima bean is not a dessert.
1. All *A*s are *B*s. 2. All *B*s are *C*s. 3. All *A*s are *C*s.	1. All fork-tailed flycatchers are birds. 2. All birds have wings. 3. All fork-tailed flycatchers have wings.
1. No *A*s are *B*s. 2. *x* is an *A*. 3. *x* is not a *B*.	1. No men are mothers. 2. Tom Cruise is a man. 3. Tom Cruise is not a mother.

Table 4
Some Patterns of Invalid Arguments in Predicate Logic

Pattern	Example
1. All *A*s are *B*s. 2. *x* is not an *A*. 3. *x* is not a *B*.	1. All men are mortal. 2. Fido is not a man. 3. Fido is not mortal.
1. All *A*s are *B*s. 2. *x* is a *B*. 3. *x* is an *A*.	1. All men are mortal. 2. Fido is mortal. 3. Fido is a man.

*A*s are *B*s is called a ***quantifier***. Many different quantifiers are used in generalizations, including "lots of," "nearly all," "hardly any," "few," and countless others.

Generalizations figure prominently in valid arguments from predicate logic. Table 3 displays some of the more common patterns. The common patterns in Table 4 are invalid.

EXERCISES AND STUDY QUESTIONS

Each of the following arguments follows one of the patterns identified in Tables 3 and 4. For each argument, use circles and boxes to identify its key parts. Then state the pattern for each argument and state whether or not it is valid.

*1. 1. All logicians are dull.
 2. Irving is a logician.
 3. Irving is dull.

 2. 1. All logicians are dull.
 2. Irving is not a logician.
 3. Irving is dull.

*3. 1. All logicians are dull.
 2. Irving is dull.
 3. Irving is a logician.

 4. 1. All logicians are dull.
 2. All (who are) dull are party animals.
 3. All logicians are party animals.

*5. 1. No logicians are dull.
 2. Irving is a logician.
 3. Irving is not dull.

 6. 1. All logicians are dull.
 2. Irving is not dull.
 3. Irving is not a logician.

 7. 1. All bearded logicians wear glasses.
 2. Irving is a bearded logician.
 3. Irving wears glasses.

A5. A Modification of the Definition of Validity

Arguments such as the following one raise a question about our definition of validity.

Argument 12

1. Jones is a mother.

2. Jones is female.

Is Argument 12 valid? You might think it is. Since there is no way the premise could be true and the conclusion false, it seems that the truth of the premise does guarantee the truth of the conclusion. On the other hand, you might think that Argument 12 is not valid. There is no recognizable valid pattern of argument here, and we've said that validity has to do with the pattern or form of argument.

The correct answer to this question is somewhat complicated, for there are two very different ways in which the premises of an argument can be said to guarantee the truth of the argument's conclusion. One way depends only on the form or pattern of the argument. Argument 4, for example, is valid no matter who the term "Boris" refers to and no matter what is meant by "student" or "State U." In contrast, the premise of Argument 12 appears to guarantee the truth of its conclusion, but this depends in part on the fact that "mother" means "female parent," so anything that is a mother is also female. Consequently, if (1) is true, then (2) will be true as well. There are, then, two ways to think about validity: one concerns the form of arguments alone and a second takes the meanings of the key terms of the argument into account.

For our purposes, we will interpret validity in the first way, that is, the validity of an argument will not depend on extra assumptions about the meanings of terms. Valid arguments are ones whose pattern or structure all by itself assures that the premises are properly related to the conclusion. To avoid confusion, we can refine our earlier definition of validity as follows:

D1b: An argument is *valid* if and only the argument follows a pattern such that it is impossible for any argument following that pattern to have true premises and a false conclusion.

According to this definition, if an argument is valid, then it follows a pattern such that all arguments following that same pattern are also valid.

On this new understanding of validity, Argument 12 is not valid. However, Argument 12 is very closely connected to another argument that is valid. The premise of Argument 12 could be replaced by

1a. Jones is a female and Jones is a parent.

Notice that (1) and (1a) are equivalent. When (1a) is put into the argument, we get

Argument 12a

1a. Jones is female and Jones is a parent.

2. Jones is female.

This argument does follow a valid pattern. It is an instance of simplification (see Table 1). Another alternative to Argument 12 is one that adds as a premise the assumption about meaning that might have led us to think it was valid. This revised argument is

Argument 12b

1. Jones is a mother.

2. All mothers are female.

3. Jones is female.

This argument is also valid.

Thus, arguments like Argument 12, by our revised definition are not valid. However, these arguments can easily be converted into ones that are valid. This policy of fleshing out the argument encourages us to make explicit the assumptions on which arguments depend. In this case, it encourages us to make explicit premise (2), or to replace (1) by (1a). In general, it is best to get these unstated assumptions out into the open since in some cases these assumptions are mistaken.

A6. Testing Arguments for Validity

There are a variety of ways to determine whether an argument is valid or invalid. Some of these methods are developed in detail in the study of symbolic logic. Such methods are useful, especially when dealing with longer and more complex arguments. Here, we will make use of the following techniques. Each assumes that you already have an argument in standard form and are trying to decide whether it is valid.

Find Examples That Establish Invalidity. One way to assess an argument for validity is to try to imagine possible situations in which the premises of the argument are all true but the conclusion is false. If there are such cases, then the argument is invalid. Here's an example in which this method is effective:

Argument 13

1. All students are eligible to vote in the referendum on the school nickname.

2. Stew Dent is eligible to vote in the referendum on the school nickname.

3. Stew Dent is a student.

Can you think of a situation in which (1) and (2) are true but (3) is false?

It's not hard to think of such a situation. Suppose all students are allowed to vote in the referendum and all faculty are also allowed to vote in the referendum. Suppose that Stew Dent is a member of the faculty. In that case, (1) and (2) are true but (3) is false. Notice that (1) does not say "*All and only* students are eligible to vote in the referendum." So Argument 13 is invalid.

Finding counterexamples is a simple and useful method for showing an argument to be invalid. There are three points about its use to keep in mind, however. First, the example must really be a possible case, as was found for Argument 13. Such a possible case cannot be found for the following argument:

Example 14

1. All fathers are male.

2. Bill is a father.

3. Bill is male.

Here there is no possible case in which all fathers are male and Bill is father but Bill is not male.

Second, when using examples to establish invalidity, you must be sure to use examples in which *all* the premises are true and the conclusion false. You can't establish the invalidity of an argument by showing that its conclusion can be false when *some* of its premises are true. Thus, for Argument 14 you can't simply describe a case in which (1) is true and (3) is false. There are such cases, but they will be ones in which (2) is also false. You can only show that an argument is invalid by means of an example if the example is one in which all the premises are true and the conclusion is false.

Third, examples of the sort we've been discussing can establish that an argument is invalid. But we have to be careful in using this method to conclude that an argument is valid. Suppose you try to think of possible cases in which the premises of an argument are true and the conclusion false, and you find that you can't think of any such example. Does it follow that the argument is valid?

No. It is possible that you just haven't thought hard enough or haven't thought about the right sort of example. Thus, finding an invalidating example is sufficient to prove invalidity, but failing to find such an example is not sufficient prove validity.

Look for Examples That Show the Invalidity of Other Arguments Following the Same Pattern.   Sometimes, for one reason or another, you simply can't think of an example to show the invalidity of the argument at hand, but you will be able to find an example showing the invalidity of another argument following the same pattern. Consider the following argument:

Argument 15

1. All U.S. presidents (before the year 2000) are male.

2. George Washington is male.

3. George Washington is a U.S. president (before the year 2000).

Suppose that, as you think about this argument, you fail to come up with a case in which (1) and (2) are true and (3) is false. Before concluding that it is valid, examine its pattern:

1. All *A*s are *B*s.

2. *x* is *B*.

3. *x* is an *A*.

Can you come with another argument of this pattern that you know to have true premises and a false conclusion? It should be easy. One example would be

Argument 16

1. All mothers are parents.

2. Bill Clinton is a parent.

3. Bill Clinton is a mother.

We know that there are possible cases in which (1) and (2) are true and (3) is false. The way things actually are is one such case. So Argument 16 is invalid. Since Argument 15 has the same form as Argument 16, it too is invalid. And it should now be easy to imagine a situation in which the premises of that argument are true and the conclusion false: a case in which Washington lost the election. Even though we know that in fact that didn't happen, he could have lost. It is a possibility.

Check the Pattern.   Once you've identified the pattern of an argument, you can check that pattern against those listed. In many cases, the argument pattern will be on the list of valid arguments or invalid arguments. Checking the pattern against those listed in the text won't give you any theoretical understanding of the matter, just an answer. Furthermore, there is a limitless number of possible patterns of argument, only a few of which are listed in the tables. Nevertheless, familiarizing yourself with the common valid and invalid patterns is an enormously useful thing to do. Many of the arguments we encounter do conform to these patterns. With practice, you will become able to assess these arguments for validity automatically.

EXERCISES AND STUDY QUESTIONS

*1. Each of the following sentences describes an argument having a certain combination of features. If it is possible for there to be an argument of the sort described, give an example of an argument having those features. If it is not possible, explain why.
   a. A valid argument with true premises and a false conclusion.
   b. A valid argument with false premises and a true conclusion.
   c. An invalid argument with true premises and a true conclusion.
   d. A valid argument with false premises and a false conclusion.

  e. A valid argument with a false conclusion.

  f. A valid argument with at least one true premise and a false conclusion.

2. For each of the following arguments, identify the key elements (by drawing circles and boxes around them) and state whether or not the argument is valid. For each argument, state the pattern of argument. If it is not valid, describe a possible situation in which the premises are true but the conclusion is false.

  *a. 1. Either it will rain tomorrow or it will snow tomorrow.
  2. It will not rain tomorrow.
  3. It will snow tomorrow.

  *b. 1. If you didn't pass the test, then you didn't pass the course.
  2. You did pass the test.
  3. You did pass the course.

  *c. 1. If crime pays, then criminals are rich.
  2. Crime pays.
  3. Criminals are rich.

  *d. 1. Some philosophers are fast runners.
  2. Some fast runners have beards.
  3. Some philosophers have beards.

  *e. 1. All penguins can fly.
  2. Tweety bird is a penguin.
  3. Tweety bird can fly.

  f. 1. If Jack is in Hollywood, then Jack is in California.
  2. Jack is not in Hollywood.
  3. Jack is not in California.

  g. 1. If Jack is in Hollywood, then Jack is in California.
  2. Jack is in Hollywood.
  3. Jack is in California.

  h. 1. If Jack is in Hollywood, then Jack is in California.
  2. Jack is in California
  3. Jack is in Hollywood.

  i. 1. If Jack is in Hollywood, then Jack is in California.
  2. Jack is not in California
  3. Jack is not in Hollywood.

  j. 1. Either it will rain or it will snow.
  2. If it rains, then the ground will get wet.
  3. If it snows, then the ground will get wet.
  4. The ground will get wet.

  k. 1. If Jones passes the test, then Jones will be pleased.
  2. If Jones is pleased, then he will buy his friend a gift.
  3. If Jones passes the test, then he will buy his friend a gift.

  l. 1. If Jones studies, then Jones will pass.
  2. If Jones passes, then Smith will be surprised.
  3. Jones will study.
  4. Smith will be surprised.

    m. 1. If Jones studies, then Jones will pass.
       2. If Jones passes, then Smith will be surprised.
       3. Jones will not study.
       4. Smith will not be surprised.
    n. 1. All animals have four legs.
       2. All fish are animals.
       3. All fish have four legs.
    o. 1. All birds can fly.
       2. Rover can't fly.
       3. Rover is not a bird.
    p. 1. No birds can fly.
       2. This robin is a bird.
       3. This robin can't fly.

3. Show that the following arguments are invalid.
    *a. 1. George is a bachelor.
       2. George is male.
    b. 1. All even numbers are greater than one.
       2. Ten is greater than one.
       3. Ten is an even number
    *c. 1. All men are mortal.
       2. Rover is not a man,
       3. Rover is not mortal.
    d. 1. Albert is a college professor.
       2. Albert graduated from high school.

B. Cogency

Validity is a high standard, and many familiar arguments fail to meet it. Just how high a standard it is will become apparent by considering the following argument:

Argument 17

1. Boris is a student at State U.

2. Almost all the students at State U. voted.

3. Boris voted.

Argument 17 should strike you as a pretty good argument. If you knew that both its premises were true, in most situations it would be reasonable to believe its conclusion. However, Argument 17 is definitely not valid. It is possible that Boris is among the few students who did not vote. Hence, it is possible that (1) and (2) are both true and (3) is false. This is enough to establish that Argument 17 is invalid. Moreover, this argument is invalid even if we know on independent grounds that Boris did in fact vote. The argument is not valid because (1) and (2) do not, by themselves, guarantee the truth of (3).

The fact that Argument 17 is not valid but nevertheless a good argument makes it apparent that there is a way for arguments to succeed without being valid. In the remainder of this chapter we will examine this other sort of good argument.

B1. The Definition of Cogency

Compare Argument 17 with the following variations:

Argument 17a

1. Boris is a student at State U.

2. Most of the students at State U. voted.

3. Boris voted.

Argument 17b

1. Boris is a student at State U.

2. Some of the students at State U. voted.

3. Boris voted.

Argument 17c

1. Boris is a student at State U.

2. None of the students at State U. voted.

3. Boris voted.

Argument 17a isn't as good as Argument 17, but it isn't all that bad either. Given only the information in the premises in Argument 17a, it is at least more likely than not that Boris voted. So those premises do provide fairly good reasons to think the conclusion is true. Arguments 17b and 17c, on the other hand, are very bad. Obviously, the premises in Argument 17c provide no reason at all to believe that Boris voted. In fact, those premises guarantee that this conclusion is false. Argument 17b is a little trickier, but its premises don't provide any good reason to believe the conclusion either. This is because the mere fact that *some* students voted doesn't make it at all likely that Boris voted. There might be 10,000 students, only 3 of whom voted. That would be enough to make the premises of Argument 17b true. So Argument 17b is not a good one.

Argument 17 and its three variations are all invalid. If we said that all invalid arguments were bad arguments, then we would have to condem all these arguments equally. That would be a mistake, since Arguments 17 and 17a are much better than the other two. We call these good but invalid arguments inductively cogent, or, simply cogent.

Our preliminary definition of cogency is as follows:

D2:   An argument is *cogent* if and only if it is not valid but the premises of the argument are good reasons for the conclusion.

Another way in which we can express basically the same idea is

D2a: An argument is *cogent* if and only if it is not valid but the conclusion is probably true if all the premises are true.

Arguments 17b and 17c above don't even pass this test, so they are neither valid nor cogent. We describe bad arguments such as these as ***ill-formed arguments***. We can define this precisely as follows:

D3: An argument is *ill-formed* if and only if it is neither valid nor cogent.

Finally, we can offer this definition of a well-formed argument:

D4: An argument is *well-formed* if and only if it is either valid or cogent.

Every argument, then, falls into one of three categories: valid, cogent, or ill-formed. Table 5 summarizes the possibilities.

B2. Degrees of Cogency

We saw that Argument 17a is a cogent argument, but it is not as good an argument as Argument 17. Argument 17a just barely passes the standard for inductive cogency, while Argument 17 seems to pass it with flying colors. The contrast between these two arguments illustrates that there are degrees of cogency. While both arguments are cogent, the premises of Argument 17 support the conclusion more strongly than do the premises of the other argument. These examples also bring out an important difference between validity and cogency: there are no degrees or strengths of validity. If an argument's premises guarantee that its conclusion is true, then it is valid. If they don't, then it is invalid. The premises can't "sort of" guarantee that the conclusion is

Table 5
Characteristics of Well-Formed and Ill-Formed Arguments

Well-Formed Arguments		Ill-Formed Arguments
Valid arguments	Cogent arguments	
Truth of premises guarantees truth of conclusion.	Truth of premises does not guarantee truth of conclusion, but the conclusion is probably true if the premises are true.	Premises do not even make conclusion probable.

true or guarantee it "pretty well." Either they do or they don't, so either the argument is valid or it's not.

While every argument is either cogent or not, one argument can be more cogent than another depending on how well the premises support the conclusion. Two arguments may both have premises that provide good reasons for their conclusions, but one provides better reasons than the other. The one with better reasons is more cogent than the other. The more probable the premises make the conclusion, the more cogent the argument is. An argument such as Argument 17 is more cogent than Argument 17a.

Although it is possible to achieve mathematical precision in measuring how cogent arguments are, we need only keep the following point in mind. Some arguments are not cogent at all because they don't even make their conclusions more probable than not, and among the arguments that are cogent, some are better, or more cogent, than others depending on how strongly premises the support the conclusion.

EXERCISES AND STUDY QUESTIONS

*1. Each of the following items contains a description of an argument. If there can be an argument that fits the description, then give an example of such an argument. If there can't be such an argument, then explain why.
   a. A cogent argument with true premises and a false conclusion.
   b. A cogent argument with false premises and a false conclusion.
   c. An ill-formed argument with true premises and a true conclusion.
   d. An argument that is both valid and cogent.
   e. A cogent argument with at least one false premise and a true conclusion.
2. According to the text, there are degrees of cogency but there are not degrees of validity. Why are there no degrees of validity? Why can't one argument be "more valid" than another?

B3. Cogency and Background Information

Some examples will show that we must refine our preliminary definition of cogency in a way parallel to the way we refined our definition of validity.

Argument 18

1. The teacher's first name is John.

2. The teacher is male.

You might think that this is cogent, but it isn't. Its pattern is

1. t is J

2. t is M

You might think that Argument 18 is cogent because you can assume that almost everyone named John is male. While that's true, you must add your assumption to the premises:

Argument 18a

1. The teacher's first name is John.

2. Almost everyone whose first name is John is male.

3. The teacher is male.

The new pattern is

1. *t* is *J*

2. Almost all *J*s are *M*s.

3. *t* is *M*

Thus, an argument is cogent only if the premises all by themselves, without additional assumptions such as the one added to Argument 18a, make the conclusion probable.

Now consider the following argument:

Argument 19

1. Stew Dent is a college student.

2. Stew Dent graduated from high school.

Is Argument 19 valid or cogent or ill-formed? It is easy to determine that it is not valid. It is at least possible for someone to go to college without graduating from high school. So (1) does not guarantee that (2) is true. It is plausible to think that Argument 19 is also cogent. After all, almost all college students are high school graduates, so (1) does make (2) probable. Thus, it appears that this argument does satisfy the requirement for being cogent.

Notice, however, that in saying why this seemed to be a cogent argument we appealed to the well-known fact that most college students are high school graduates. It isn't (1) by itself that makes (2) probable. Rather, it is (1) together with this additional fact that makes (2) probable. The only reason you were tempted to say that Argument 19 is cogent is that you knew this fact and took it into account in thinking about the argument. In effect, you counted it as an additional premise of the argument. Someone who didn't happen to know about this fact would say that (1) doesn't provide any reason at all to believe (2).

Argument 19, then, is an ill-formed argument. It is neither valid nor cogent. However, we can easily expand the argument to make it cogent. All we have to do is add the linking premise that connects (1) to (2):

Argument 19a

1. Stew Dent is a college student.

2. Almost all college students have graduated from high school.

3. Stew Dent graduated from high school.

This more complicated argument makes explicit the background information that is relied on by people who were tempted to view Argument 19 as cogent. Notice that we could make Argument 19 valid by adding a premise saying that all college students graduate from high school. In reconstructing arguments from prose passages, it is often necessary to add premises to the argument, and decisions about which sort of premise to add have to be made.

Arguments, such as Arguments 18 and 19, that are ill-formed but that can be made cogent or valid by the addition of a fairly obvious and simple premise, are known as **incomplete arguments**. Arguments 18a and 19a are cogent because we need not rely on any additional background information. We can tell, just by looking at the arguments themselves that their premises provide a good reason to believe their conclusions. Cogency, like validity, is an internal feature of an argument. It doesn't depend on what the facts in the world are, just on how the premises relate to the conclusion.

You might think that it would be a good idea to say that Argument 19 is itself cogent, since the background information needed to arrive at 3.19a is so obvious and well-known. But to say this would make our definition of cogency much more complicated. We'd have to have some way to decide which background information is so obvious and well-known that it need not be stated and which background information must be stated in the argument. It is simpler and clearer to say that arguments such as 3.19 are incomplete (and ill-formed) and that their more complex variations, such as 3.19a, are cogent. Thus, in the arguments we formulate we need to make explicit all the information relevant to the conclusion, rather than only some portion of that information.

After revising our definition of cogency to exclude in complete arguments, as we did for validity, we now have

> **D2b:** An argument is *cogent* if and only if it is not valid but it follows a pattern such that all arguments following that pattern have a conclusion that is probably true if the premises are true.

Although some logicians might question this definition, the issues they'd raise don't affect the sorts of arguments we will be concerned with. We can use (D2b) as our working definition of cogency. According to it, Argument 17a is cogent since any argument following that same pattern will be one whose premises are properly related to its conclusion.

B4. Patterns of Cogent Arguments

There several common patterns of cogent arguments, just as there are for valid arguments. We will examine only a few such patterns here, all of them from predicate logic rather than sentential logic.

Consider again Argument 17a:

1. Boris is a student at State U.

2. Most of the students at State U. voted.

3. Boris voted.

The first premise of this argument says that Boris is in a certain group, students at State U., the second premise says that most members of that group are in a second group, voters; and the conclusion is that Boris is in the second group. Thus, we can display its form as

1. x is an A.

2. Most As are Bs.

3. x is a B.

Table 6 lists a few of the more common patterns of cogent arguments. As you can see, the patterns displayed here all make use of generalizations containing the quantifier "most." The key pattern for the sentence is thus

Most As are Bs.

There are, of course, many other quantifiers that commonly appear in cogent arguments. Variations on the patterns shown in Table 6, using quantifiers such as "nearly all," "usually," and other similar words are also cogent.

There are also some ill-formed arguments that sometimes deceive people. A few of these are shown in Table 7.

Table 6
Some Patterns of Cogent Arguments

Pattern	Example
A. 1. Most As are Bs. 2. x is an A. 3. x is a B.	1. Most Americans watch the Super Bowl. 2. Ann Landers is an American. 3. Ann Landers watches the Super Bowl.
B. 1. x is an A. 2. x is a B. 3. Most ABs are Cs. 4. x is a C.	1. Tiger is healthy. 2. Tiger is a cat. 3. Most healthy cats like to chase mice. 4. Tiger likes to chase mice.

Table 7
Some Patterns of Ill-Formed Arguments

Pattern	Example

A. 1. Most *A*s are *B*s.
  2. *x* is not an *A*.
  3. *x* is not a *B*.
	1. Most Americans have never gone to the moon.
	2. The Queen of England is not an American.
	3. The Queen of England has (=not never) gone to the moon.

B. 1. Most *A*s are *B*s.
  2. *x* is a *B*.
  3. *x* is an *A*.
	1. Most robins can fly.
	2. Tweety can fly.
	3. Tweety is a robin.

EXERCISES AND STUDY QUESTIONS

1. Identify the key parts of the following arguments and state the pattern of the argument. State whether the argument is valid, cogent, or ill-formed. If you think that an argument is not valid, then describe a situation in which the premises are true but the conclusion is false.

*a. 1. All study questions are boring.
   2. This question is not boring.
   3. This question is not a study question.

*b. 1. Most games require more than two players.
   2. Tennis is a game.
   3. Tennis requires more than two players.

 c. 1. Most joggers are healthy.
   2. Zola is a jogger.
   3. Zola is healthy.

*d. 1. Some joggers are athletes.
   2. Zola is an athlete.
   3. Zola is a jogger.

 e. 1. Some joggers are athletes.
   2. Zola is a jogger.
   3. Zola is an athlete.

 f. 1. All runners are athletes.
   2. Some athletes can't swim.
   3. Swim Suit is a runner.
   4. Swim Suit can't swim.

 g. 1. All runners can swim.
   2. All swimmers can dive.
   3. Some runners can dive.

*h. 1. If this study question is very easy, then most students will get the right answer.
   2. This study question is very easy.
   3. Most students will get the right answer.

    i. 1. If Sam passed the test, then Sam passed the course.
       2. If Sam passed the course, then Sam went to Europe in June.
       3. Sam went to Europe in June.
       4. Sam passed the test.
    j. 1. Luck E. Guess just found out that he won the lottery.
       2. Luck E. Guess is very excited.
   k. 1. All valid arguments have true conclusions.
       2. Dan Quayle's favorite argument is valid.
       3. Dan Quayle's favorite argument has a true conclusion.

2. The following arguments are tricky; all of them are invalid. State the pattern for each argument. Then give an argument following the same pattern that clearly has true premises and a false conclusion. State whether you think each of the arguments is cogent and explain why.

   *a. 1. Some runners can swim.
       2. Some swimmers can dive.
       3. Some runners can dive.
   b. 1. All tomatoes are fruits.
       2. Most fruits are juicy.
       3. Most tomatoes are juicy.
   *c. 1. Most vegetables are nutritious.
       2. Most nutritious things taste bad.
       3. Most vegetables taste bad.
   d. 1. Most joggers are healthy.
       2. Zola is not healthy.
       3. Zola is not a jogger.
   e. 1. Most bears can fly.
       2. Smokey is not a bear.
       3. Smokey can not fly.

*3. The following argument is ill-formed, mainly because it is incomplete. (It is similar to Argument 19 in this respect.) Expand the argument to make it cogent. What premise(s) would you add to make it valid?

    1. Works Alot got an A on every test and every paper for that course.

    2. Works Alot got an A in that course.

4. Evaluate the following argument.

    1. Darryl's team was losing by three 3 runs when Darryl came up to bat in the bottom of the ninth inning.

    2. When Darryl came up to bat, the bases were loaded and Darryl hit the ball over the fence in fair territory.

    3. Darryl's team won the game.

*5. Add premises to make the following argument cogent. (Be careful with this one; there are more unstated assumptions here than you are likely to notice at first.)

1. Jones got more votes than Smith in the recent election.

2. Jones won the recent election.

6. Arguments 10 and 11 are ill-formed. Can they reasonably be thought of as incomplete? What additional premises would have to be added to make them valid? How would the arguments have to be revised to be cogent?

III. VALIDITY, COGENCY, AND THE TRUTH VALUE OF PREMISES

Validity and cogency have to do only with the connection between premises and conclusions. Whether the premises of an argument really are true does not affect its validity or cogency. For example, consider again Argument 7:

1. If the president is in the White House, then the president is in Washington, D.C.

2. The president is in the White House.

3. The president is in Washington, D.C.

This is a valid argument since, as we've seen, it follows a pattern for valid arguments. Notice that you were able to tell that the argument is valid even if you did not know whether (2) really is true because you knew that *if* (1) and (2) were true, then (3) had to be true as well. Similar considerations apply to the other well-formed arguments discussed previously in this chapter. To assess validity and cogency you need not consider the actual truth value of the premises; all that matters is the connection between the premises and the conclusion, and this is something that is entirely *internal* to the argument.

A somewhat trickier point to see, but just a variation on what has been said, is that an argument can be valid or cogent even if one premise (or more) is known to be false. If, for example, we know that the president has gone on vacation in Utah, and thus we know that (2) is false, the argument would still be valid because it is still impossible for (3) to be false *if* (1) and (2) are both true. Similarly, the following argument is valid:

Argument 20

1. If the president is in the White House, then the president is on the moon.

2. The president is in the White House.

3. The president is on the moon.

Since Argument 20 follows the same valid pattern, it is valid no matter where the White House is and where the president is. It is valid because (3) must be true if (1) and (2) are.

Similar considerations apply to assessments of the cogency of arguments. You can assess arguments for cogency without concerning yourself with the actual truth value of the premises. All that matters is whether the conclusion is probably true if the premises are true. For example, think again about Argument 17a:

1. Boris is a student at State U.

2. Most of the students at State U voted.

3. Boris voted.

You can think about this argument and assess it for cogency even though you have no idea whether or not these premises are true. It could be that Boris is my pet cat (and not a student at State U) so that (1) is false. It could be that hardly any students voted, so that (2) is false.[4] Still, Argument 17a is cogent since (3) is probably true if (1) and (2) are true.

When assessing arguments for cogency, not only do you ignore the actual truth value of the premises, but you also ignore independent information you may have about the truth value of the conclusion. We have seen previously that in cogent arguments the conclusion is probably true if the premises are. So there will be some occasions on which there is a cogent argument that has true premises and a false conclusion. For example, Argument 17a is still inductively cogent even if Boris happens to be one of the minority of students who didn't vote or if you know that Boris didn't vote or is unlikely to have voted. To assess the argument for inductive cogency, you examine only the connection between premises and conclusion, and you ignore other information that you may have.

Information about the truth value of premises *is* relevant to the overall assessment of arguments. However, this information pertains to the soundness or strength of arguments, not to their cogency.

IV. SUMMARY

Argument analysis is a two-stage process. The first stage is reconstructing the argument. To reconstruct an argument is to extract an argument from an ordinary prose passage and rewrite it in standard form. In standard form, an argument is written with

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4. The fact that Boris and State U. are simply fictional items made up for the purpose of this example makes it even more obvious that the actual truth value of the premises is irrelevant to the cogency of an argument.

sequentially numbered premises and a conclusion. Some statements that are included in the original passage may not be included in the argument in standard form.

The second stage of argument analysis is argument evaluation. To evaluate an argument is to say whether or not it is a good argument. A good argument is one that provides good reasons to believe that its conclusion is true. An argument can go wrong in two main ways: by having premises that are not acceptable or by having premises that are not connected to its conclusion in a proper way. Arguments in which the premises are properly connected to the conclusion are said to be *well-formed*. Well-formed arguments fall into two categories: valid and cogent. These terms are defined as follows:

D1b: An argument is *valid* if and only the argument follows a pattern such that it is impossible for any argument following that pattern to have true premises and a false conclusion.

D2b: An argument is *cogent* if and only if it is not valid but it follows a pattern such that all arguments following that pattern have a conclusion that is probably true if the premises are true.

D3: An argument is *ill-formed* if and only if it is neither valid nor cogent.

D4: An argument is *well-formed* if and only if it is either valid or cogent.

Every argument must fall into exactly one of the first three of these categories. It must be valid, cogent, or ill-formed.

When assessing an argument for validity and cogency, it is often helpful to look at the form or pattern of the argument. Certain patterns of argument are commonly encountered. If you see that an argument you are evaluating fits one of these patterns, you can immediately tell whether it is valid, cogent, or ill-formed. These patterns are listed in the tables in this chapter. One can show that an argument is invalid by describing a possible situation in which all its premises are true and its conclusion is false or by producing another argument following the same pattern that can provide such an example.

Cogency, unlike validity, comes in degrees. The more support the premises of an argument provide for its conclusion, the more cogent the argument is.

Validity and cogency have to do only with the connection between an argument's premises and its conclusion. You can determine what status an argument has simply by looking at the argument itself, without taking into account any background information you may have. Arguments can be valid or cogent even if you know that their premises or conclusion is false. All that matters is the nature of the connection between the premises and the conclusion.

Sometimes an argument may seem to be well-formed because it is obvious that if the premises are true, then the conclusion is definitely or probably true. However,

if it seems this way because of some additional information not contained in the premises, then the argument itself is not cogent. An expanded argument that included that background information among its premises would be well-formed.

CHECKLIST OF KEY TERMS

- standard form of an argument
- argument reconstruction
- argument evaluation
- deductively valid argument
- inductively cogent argument
- invalid argument
- pattern of argument
- predicate logic
- sentential logic
- compound sentence
- negation
- conjunction
- disjunction
- conditional
- antecedent
- consequent
- generalization
- quantifier
- ill-formed argument
- well-formed argument
- incomplete argument

CHAPTER EXERCISES

1. Each of the following questions gives you some information about an argument and asks what you can conclude about the truth value of the premises or conclusion of that argument. Answer each question by stating whether the premise or conclusion is *definitely true*, *probably true*, *probably false*, *definitely false*, or you *can't tell* what truth value it has. For example, if you know that an argument is valid and has true premises, then you can conclude that the conclusion is definitely true.
   a. Suppose you know that an argument is ill-formed. What can you conclude about the truth value of its conclusion?

    b. Suppose you know that an argument is valid. What can you conclude about the truth value of its conclusion?

    c. Suppose you know that an argument is valid and that its conclusion is false and that one of its two premises is true. What can you conclude about the truth value of its other premise?

    d. Suppose you know that an argument is cogent and that its conclusion is true. What can you conclude about the truth value of its premises?

    e. Suppose you know that an argument is valid and that it has true premises. What can you conclude about the truth value of its conclusion?

2. Answer the following questions by stating whether the argument is *valid*, *cogent*, *ill-formed*, or *can't tell*.

    a. Suppose you know that an argument has all true premises and a true conclusion. What can you conclude about the status of the argument?

    b. Suppose you know that an argument has all true premises and a false conclusion. What can you conclude about the status of the argument?

    c. Suppose you know that an argument has at least one false premise and a true conclusion. What can you conclude about the status of the argument?

3. State whether the following arguments are *valid*, *cogent*, or *ill-formed*.

    a. 1. Whenever a person is commander in chief, the person is also president.
       2. Newt will be commander in chief, in 2006.
       3. Newt will be president in 2006.

    b. 1. Whenever a person is commander in chief, the person is also president.
       2. Newt was commander in chief in 1990.
       3. Newt was president in 1990.

    c. 1. Most commanders in chief are presidents.
       2. Newt is commander in chief.
       3. Newt is president.

    d. 1. Most days are odd-numbered.
       2. There was a day on which the U.S. population reached 200 million.
       3. The day on which the U.S. population reached 200 million was odd-numbered.

    e. 1. Most days are odd-numbered.
       2. There will be a day on which the U.S. population reaches 300 million.
       3. The day on which the U.S. population reaches 300 million will be odd-numbered.

4. Make up several original examples of valid, cogent, and ill-formed arguments. Write out the patterns of these arguments.

5. Explain, using examples, what an incomplete argument is.

6. In Example 2, Diane says that Connie's argument is no good. Put Connie's argument into standard form. Is the argument well-formed? Is it incomplete? If so, add premises to make it complete. Is the resulting argument valid? Is it cogent?

ANSWERS TO SELECTED EXERCISES

1. False. It must have at least one.
3. False. To evaluate an argument is to determine whether or not the premises of the argument provide a good reason to believe the conclusion.

1a. 1. Michael is a basketball player.
    2. All basketball players are very tall.
    3. Michael is very tall.
 c. 1. No jockeys weigh more than 250 pounds
    2. Willie is a jockey.
    3. It is not the case that Willie weighs more than 250 pounds.

1. Affirming the consequent
3. Denying the antecedent
5. Contraposition

1. 1. All As are Bs
   2. x is an A
   3. x is a B
3. 1. All As are Bs
   2. x is a B
   3. x is an A
5. 1. No As are Bs
   2. x is an A
   3. x is not a B

1a. Not possible. In a valid argument, if the premises are true, the conclusion must be true. A valid argument cannot have true premises and a false conclusion.
 b. 1. All politicians are male.
    2. Guy Lombardo is a politician.
    3. Guy Lombardo is male.
 c. 1. All brothers are male.
    2. All sisters are female.
    3. The United States has 50 states.
 d. 1. All brothers are female.
    2. All females are mothers.
    3. All brothers are mothers.
 e. See (d).
 f. 1. All brothers are male.
    2. Julia Roberts is a brother.
    3. Julia Roberts is male.
2a. Valid (argument by elimination)
 b. Invalid (denying the antecedent) Suppose you passed the test but didn't write the paper. Not writing the paper is also enough to make you not pass the course.
 c. Valid (affirming the antecedent)
 d. Invalid

1. Some *A*s are *B*s.
2. Some *B*s are *C*s.
3. Some *A*s are *C*s.

Suppose that (1) is true because there are some female (beardless) philosophers who are fast runners. Suppose (2) is true because there are some nonphilosophers who are fast runners and have beards. (3) could still be false.

e. Valid
1. All *A*s are *B*s.
2. *x* is an *A*.
3. *x* is a *B*.

3a. The pattern here is:
1. *g* is a *B*.
2. *g* is an *M*.

This is obviously invalid. Here's an argument following the same pattern:
1. Bob Dylan is a singer.
2. Bob Dylan is a giraffe.

c. Suppose Rover is an immortal god. Both premises are true, but the conclusion is false.

1a. 1. Most professional basketball players are over six feet tall.
2. Spud Webb is a professional basketball player.
3. Spud Webb is over six feet tall.
b. 1. Most professional basketball players are less than five feet tall.
2. George Costanza is a professional basketball player.
3. George Costanza is less than five feet tall.
c. 1. Most birds can fly.
2. Albany is the capital of New York.
d. Not possible. The definition of cogency requires invalidity.
e. 1. Most professional basketball players are under seven feet tall.
2. George Costanza is a professional basketball player.
3. George Costanza is under seven feet tall.

1a. Valid
1. All *A*s are *B*s.
2. *x* is not a *B*.
3. *x* is not an *A*.
b. Cogent
1. Most *A*s are *B*s.
2. *x* is an *A*.
3. *x* is a *B*.
d. Ill-formed
1. Some *A*s are *B*s.
2. *x* is a *B*.
3. *x* is an *A*

(If Zola is a soccer player, and not a jogger, the premises are true and the conclusion is false.)
h. Valid (affirming the antecedent)
2a. Pattern:
1. Some *A*s are *B*s.
2. Some *B*s are *C*s.
3. Some *A*s are *C*s.

Example to show invalidity:

1. Some men are parents.
2. Some parents are women.
3. Some men are women.

 c. Pattern:
    1. Most *A*s are *B*s.
    2. Most *B*s are *C*s.
    3. Most *A*s are *C*s.

Example to show invalidity:

1. Most American males are people over the age of fifteen.
2. Most people over the age of fifteen are women.
3. Most American males are women.

3. To make it cogent add "Most students who got an A on every test and every paper for that course got an A in that course."

5. You could make it valid by adding this premise:

> If Jones got more votes than Smith in the recent election, then Jones won the recent election.

To make it cogent is more complicated. You could add this generalization:

> In most cases, if x gets more votes than y in an election, then x wins the election.

This principle does not take into account the fact that Jones and Smith might have been running against a third candidate. To deal with this would require a more complex generalization. You also must add a premise saying the obvious:

The recent election is an election.

Strong Arguments

Merely being well-formed isn't enough to make an argument a good one. Consider, for example,

Argument 1

1. All rabbits can fly.

2. Donald Duck is a rabbit.

3. Donald Duck can fly.

Even though this argument is well-formed (because it's valid), it is an obvious failure because it has false premises. In this chapter we will study in detail the additional conditions beyond being well-formed that an argument must satisfy to be successful. Arguments that satisfy these additional conditions are ***strong arguments***. It will be useful to consider deductive strength separately from inductive strength.

I. DEDUCTIVE STRENGTH

A. The Definition of Deductive Strength

When you are evaluating an argument and find it to be deductively valid, the next thing to do is to evaluate the premises themselves. If you find that you are justified

in believing that they are true, then the argument is a good one and you should accept its conclusion. Successful arguments of this sort are ***deductively strong***. To be deductively strong, then, an argument must satisfy two conditions: it must be deductively valid, and all its premises must be justified (or reasonable).

Here is a simple example of a deductively strong argument:

Argument 2

1. All U.S. presidents prior to 1998 were men.

2. George Washington was a U.S. president prior to 1998.

3. George Washington was a man.

This argument satisfies both conditions for deductive strength. It is valid, and both its premises are justified. The same is true of the following example:

Argument 3

1. Either a Republican won the 1996 U.S. presidential election or a Democrat won the 1996 U.S. presidential election.

2. It is not the case that a Republican won the 1996 U.S. presidential election.

3. A Democrat won the 1996 U.S. presidential election.

These two examples have premises that all readers probably know to be true. However, as we saw, one person's evidence can differ from another person's evidence. As a result, an argument can have premises that are reasonable for one person to believe but not reasonable for another person to believe. Thus, just as the rational status of a proposition can vary from one person to another, the strength of an argument can vary from one person to another. If a valid argument has premises that are all justified for a certain person, then it is strong argument for that person. But if one or more of those premises is not justified for another person, then that same argument is not a strong argument for that other person.

Our precise definition of deductive strength, then, must take into account this potential variability from person to person:

> **D1:** An argument is *deductively strong* for a person if and only if
> 1. it is deductively valid; and
> 2. it is reasonable for the person to believe all the argument's premises.

Arguments that are not strong will be said to be weak. We will explain weak arguments in more detail later in the chapter.

B. Comments on the Definition of Deductive Strength

Because the deductive strength of an argument depends upon the reasonableness of its premises, several points about reasonableness carry over to strength. As we've seen, the deductive strength of an argument can vary from one person to another. However, it is tedious and unnecessary to add this qualification every time we speak. Often when we are evaluating an argument, it is clear that it will have the same status for all people, or perhaps all people who are participating in a conversation. For example, when I am teaching a class to students at my university, we might consider as an example arguments about people and topics familiar to everyone on campus. We might say of such an argument that it is strong, without always adding "for us but not for students at other schools." Similarly, when I wrote that Argument 3 is strong, I had in mind that it is strong for likely readers of this text. When the status of a particular argument is likely to differ for participants in a discussion, then it is important to make clear just which people you are saying it is strong, or not strong, for. When the argument has the same status for everyone, or everyone under consideration, it is less important to add this qualification. In addition, in many cases your interest is in figuring out whether an argument is strong *for you*. Often, when you say that an argument is strong, or weak, you mean that the argument is strong, or weak, for you.

As we saw, propositions can vary in just how reasonable it is for a person to believe them. Some are just barely reasonable; others approach certainty. Similarly deductively valid arguments are very strong for a person when their premises are very reasonable for that person. Deductively valid arguments are just barely strong when their premises are only slightly reasonable for the person. The strength of a valid argument is proportional to the reasonableness of its premises. In this text, when we say that an argument is deductively strong, we will mean that it is at least more reasonable than not to believe its premises.

Recall that whether a proposition is reasonable for you to believe depends on whether it really is supported by your evidence. Likewise, whether an argument is a strong one for you depends upon whether you really do have evidence supporting the premises. The fact that you believe the premises or that you think that your evidence supports them or that you want them to be true does not make the argument strong. What matters is whether your evidence actually does support them.

One additional point about strength corresponds to a point about reasonableness. Just as your evidence for a statement can vary over time, the rational status of a premise, and thus the strength of an argument, can vary over time. When you were a very young child you probably didn't know anything about U.S. presidents. At that time Argument 2 was not a strong argument for you. Now it is. The status of the argument changed over time.

The definition of deductive strength allows for two ways in which a valid argument can be weak. Sometimes an argument has a premise that you know to be false. Whenever that is the case, the argument is weak. But an argument can be weak in another way. For example, suppose you toss a fair coin and can't see which way it landed. Now, consider this argument about the coin:

Argument 4

1. Either the coin came up heads or it came up tails.

2. The coin did not come up heads.

3. Therefore, it came up tails.

This argument follows the pattern for arguments by elimination, and it is valid. More-over, the first premise of Argument 4 is well justified. Surely one of those two options did occur; there's nothing else that could have happened. So the argument is valid and (1) is true. All that remains to evaluate is (2). You are not in a position to reject (2) as false. To reject (2) as false is to assert that the coin did come up heads. But you are not justified in saying that either since you did not see how the coin landed. Therefore, instead of rejecting (2) as false, you should suspend judgment about (2). Still, this argument is a weak argument since it does not satisfy the requirement that its premises all be reasonable to believe. Thus, the second way in which an argument can be weak for you is for it to have a premise about which you should suspend judg-ment. You don't have to know that the premise is false; it is enough that you don't have reason enough to believe it.

For an argument to be strong, it must be that the conjunction of all its premises is reasonable. More precisely, the strength of a valid argument for a person is propor-tional to how reasonable it is for the person to believe the conjunction of all its premises. The significance of this condition comes out most clearly in arguments about statistical matters, and we will not go into that now. But the intuitive idea is simple enough. Suppose you have an argument that has five premises, and each is fairly rea-sonable for you to believe. It might be that, taken by itself, premise (1) is pretty rea-sonable. Taken by itself, premise (2) is fairly reasonable as well. And so on for the other premises. However, for the argument to be strong, it must be that *all the premises taken together* are reasonable, and there are certain sorts of cases in which each premise by itself is reasonable but their conjunction is not. An example will illustrate this idea.

Suppose there are five baseball games being played on one day. For each game, there is one team that is likely to win, based on previous records. For the sake of sim-plicity, assume that in each case it is the home team that is likely to win. It is fairly reasonable to believe that Home Team 1 (HT1) will beat Visiting Team 1 (VT1). It is also reasonable to believe that HT2 will beat VT2, and so on. Now, suppose we con-structed an argument having each of these statements as a premise. Premise 1 would be "HT1 will beat VT1," premise 2 would be "HT2 will beat VT2," and so on. The situation is that if all those games go as predicted, then team HT1 ends up in first place. We then have this argument:

Argument 5

1. HT1 will beat VT1.

2. HT2 will beat VT2.

3. HT3 will beat VT3.

4. HT4 will beat VT4.

5. HT5 will beat VT5.

6. If (1)–(5), then HT1 will be in first place.

7. HT1 will be in first place.

This is a valid argument, but what about the reasonableness of its premises? We are assuming that (6) is unquestionably true. For the argument to be strong it must also be reasonable to believe that all the home teams will win. In other words, it must be reasonable to believe the conjunction of (1)–(6). Those of you who are sports fans probably realize that even though it might be reasonable to believe each premise individually, it is far less reasonable to believe them when taken together. Since each visiting team has some chance to win, it might be fairly likely that at least one of them will win. In that case, even though each premise by itself is reasonable, the conjunction of all the premises is not reasonable. Therefore, Argument 5 is not a strong argument.

In general, then, what is required for an argument to be strong is that the conjunction of all its premises be reasonable, not merely that each premise by itself be reasonable. When you evaluate arguments you should examine each premise individually to see if it is reasonable to believe. If they all are reasonable, then you should consider whether their conjunction is also reasonable. For the most part, the conjunction will be reasonable if the individual premises are. The main possible exceptions are cases in which the premises are just barely reasonable.

On the basis of the preceding comments, we can summarize the situation you are in if you find an argument to be deductively strong. If you evaluate an argument and conclude that it is deductively strong, then it is reasonable for you to believe its conclusion and unreasonable for you to fail to believe its conclusion. Strong arguments are ones that succeed in doing what arguments are supposed to do: they provide a good reason for belief in their conclusion. You can't reasonably say, "Well, that argument is deductively strong, but I still don't think its conclusion is true."

You should also realize, however, that it remains possible that you are mistaken. We saw that our judgments about the truth value of statements are fallible. No matter how rational we are in believing a statement, we rarely can be absolutely certain that a particular statement is true. We often can be close to certain about the truth value of a statement, but there is almost always some possibility of error. A strong argument could have a reasonable but false premise. As a result, it is still possible that it has a false conclusion.

As we saw, it would be a big mistake to think that we should never believe any statements simply because our rational judgments about individual statements are fallible. It would be an equally big mistake to think that we should never accept any argument just because we are not absolutely certain that its premises are all true. When the premises of a valid argument are ones that, taken together, are all reasonable to believe, then it is a strong argument. We should not let the possibility of error push us into an excessively cautious stance in which we refuse to accept any arguments.

Sidebar: Circular Arguments

Some arguments satisfy the conditions for being strong, but they may seem to be defective. Consider the following example:

X. O. Cute argues that capital punishment is an effective deterrent to crime in the following way: "People are effectively deterred from committing crimes by capital punishment. It really does stop criminals from committing crimes. Therefore, capital punishment is an effective deterrent."

If you read X. O. Cute's statement carefully, you will see that his argument amounts to little (or nothing) more than this:

1. People are effectively deterred from committing crimes by capital punishment.
2. Capital punishment is an effective deterrent.

There is no doubt that there is something wrong with this argument. You can't establish the truth of its conclusion by means of this argument. You may think that the argument is ill-formed. However, if you look carefully at the premise and conclusion, you'll notice that they amount to the same statement. Suppose we rewrite the argument to make this fact explicit. The argument would then be

1. Capital punishment is an effective deterrent.
2. Capital punishment is an effective deterrent.

The pattern of this argument is most peculiar:

1. *P.*
2. *P.*

Surely, if (1) is true, then (2) is also true. Any argument following this pattern is definitely valid. But is it strong?

Many of us don't have a clear idea as to whether the premise of this argument is true. Our evidence about the effectiveness of capital punishment is mixed. As a result, for many of us this is a weak argument since it has an unjustified premise.

However, one might wonder what to say about the argument if one did have reason to believe its premise. Would that turn it into a strong argument? According to our official definition, it would then be a strong argument. However, it would remain a useless argument. Consideration of this argument wouldn't give us any new understanding of the issues surrounding capital punishment.

Arguments like this, in which the premise and the conclusion are the same, are often called *circular arguments*. Such arguments are valid, but often they are weak since the premise and conclusion are controversial and unjustified propositions. In some cases, however, the argument has a reasonable premise, and therefore is, strictly speaking, a strong argument. It remains, however, a useless and unhelpful argument, and it can be criticized for that reason.

Sidebar: Sound Arguments

It is customary in discussions of argument analysis to introduce the notion of a ***sound argument*** in addition to (or instead of) the notion of a strong argument. A valid argument is said to be sound when it has true premises. It is helpful to think of soundness and strength as characteristics of arguments that are analogous to truth and rationality (justification) as properties of statements. Just as a statement can in fact be true even though no one has any reason to believe it, and even if people have good reason to disbelieve it, a valid argument is sound if it has premises that are in fact true no matter what the rational attitude to take toward those premises is. The *strength* of an argument, however, is dependent on how reasonable it is to believe the premises and how much reason they provide for the conclusion. For the most part, we will discuss strength rather than soundness in this text. However, since the idea of a sound argument figures prominently in many discussions of logic and philosophy, it is good to be familiar with it as well.

The key points about deductive strength are summarized below.

Deductive Strength

1. Requires deductive validity and reasonable premises.
2. The strength of a valid argument is proportional to the reasonableness of the conjunction of all its premises.
3. Strength can vary from person to person, depending on the evidence the people have.

EXERCISES AND STUDY QUESTIONS

*1. State whether each statement is true or false. Briefly explain your answer.
  a. If an argument is deductively strong for one person, then it is deductively strong for everyone else.
  b. If an argument is deductively strong for you, then it is reasonable for you to believe the conclusion of the argument.
  c. All valid arguments with true premises have true conclusions.
  d. If an argument is valid and has true premises, then it is deductively strong for you.
2. A deductively strong argument can have a false conclusion. How can this happen?
3. All the following arguments are valid. For each argument, identify its pattern and then evaluate the strength of the argument.

*a. 1. Pas E. Fist doesn't like any violent movies that he sees.
   2. *Terminator 2* is a violent movie that Pas E. Fist saw.
   3. Pas E. Fist didn't like *Terminator 2*.

*b. 1. Either we will allow criminals to go free or we will apply the death penalty frequently.
   2. We will not apply the death penalty frequently.
   3. We will allow criminals to go free.

*c. 1. All philosophy students are male.
   2. All philosophy students are male.

*d. 1. No superhero has a weakness.
   2. Superman has a weakness.
   3. Superman is not a superhero.

*e. 1. All major league baseball players are male.
   2. Michael Jordan is a major league baseball player.
   3. Michael Jordan is male.

*f. 1. If the Democrats don't win (the presidential election) in 2020, then the Republicans will.
   2. The Democrats won't win in 2020.
   3. The Republicans will win in 2020.

g. 1. All bachelors are unmarried men.
   2. All unmarried men live alone.
   3. All bachelors live alone.

h. 1. Sargent Shriver is male and was the Democratic vice presidential candidate in 1972.
   2. Walter Mondale is male and was the Democratic vice presidential candidate in 1976 and 1980.
   3. Geraldine Ferrarro is male and was the Democratic vice presidential candidate in 1984.
   4. Lloyd Bentsen is male and was the Democratic vice presidential candidate in 1988.
   5. There were no other Democratic vice presidential candidates between 1972 and 1988.
   6. All Democratic vice presidential candidates between 1972 and 1988 were male.

*i. 1. Either it will rain in Seattle on November 2, 2004 or 2 + 2 = 6.
   2. It is not the case that 2 + 2 = 6.
   3. It will rain in Seattle on November 2, 2004.

j. 1. Either it rained in Seattle on November 2, 1969 or 2 + 2 = 6.
   2. It is not the case that 2 + 2 = 6.
   3. It rained in Seattle on November 2, 1969.

k. 1. Anyone who is commander in chief of the United States at a certain time is president of the United States at that time.
   2. Bill Clinton was commander in chief of the United States in 1997.
   3. Bill Clinton was president of the United States in 1997.

l. 1. Anyone who is commander in chief of the United States at a certain time is president of the United States at that time.
   2. Colin Powell will be commander in chief of the United States in 2004.
   3. Colin Powell will be president of the United States in 2004.

4. According to the text, two arguments may satisfy the condition for being strong (for a certain person), but one of the arguments may be stronger than the other. How can this happen?

5. Suppose that at one time it is reasonable for you to believe all the premises of a certain argument. You later learn that, despite your evidence, one of the premises is false. So, at this later time you conclude that the argument is not strong (for you). Does it follow that it was not a strong argument for you at the earlier time? Explain.

6. Explain why the following claim is mistaken: A valid argument is not strong for you only if you have good reason to think that at least one of its premises is false.

7. Make up examples of arguments that fit the following descriptions. Your examples should be clear and simple, not highly controversial and overly complicated. Write the arguments out in standard form and state their patterns.
   a. A valid argument that was strong for typical people many years ago but is weak for typical people now.
   b. A valid argument that was weak for typical people many years ago but is strong for typical people now.

II. INDUCTIVE STRENGTH

A. The Definition of Inductive Strength

Although the basic ideas are similar, there are some crucial dissimilarities between induction and deduction that make inductive strength slightly more complicated than deductive strength.

Two elements of inductive strength are analogous to the two elements of deductive strength. To be inductively strong for a person, an argument must be cogent (analogous the requirement of validity for deductive strength) and it must have premises that are justified for the person. The following arguments satisfy these two conditions of inductive strength for most of us.

Argument 6

1. Almost every day in 1994 a car was stolen somewhere in the United States.

2. July 12, 1994, was a day in 1994.

3. On July 12, 1994, a car was stolen somewhere in the United States.

Argument 7

1. Usually an American presidential election has more than 10 million voters.

2. The 2004 election will be an American presidential election.

3. The 2004 election will have more than 10 million voters.

Both arguments are cogent, and for most of us the premises are justified. So the arguments appear to be inductively strong.

However, there is another factor which we must consider before concluding that an argument is inductively strong. To see what it is, let's revisit:

1. Boris is a student at State U.

2. Most of the students at State U. voted.

3. Boris voted.

This looks like a good argument. According to our definition of cogency, it is cogent since (3) is probably true if (1) and (2) are true. Furthermore, assume for the sake of discussion that you know that both (1) and (2) are true. Does it follow that it is a strong argument for you? In other words, does the fact that you are justified in believing both (1) and (2) make it reasonable for you to believe the conclusion? (Try to answer before you read on.)

The answer depends on what else you have reason to believe about the situation. If you have no additional information about the situation–the only relevant information you have is contained in the premises–then it is clear that it is reasonable for you to believe the conclusion. Given just those premises, the argument is a strong one for you.

Suppose, however, that, in addition to knowing that (1) and (2) are true, you have some additional relevant information. Say you are friends with Boris and you happen to know that he was out of town on the day of the election and that no one who was out of town that day would have been able to vote. Under these circumstances, the argument is clearly not a strong one for you since it does not make belief in the conclusion reasonable. Notice that this additional information does *not* show that is not cogent or that its premises are false. The argument is cogent and you know that its premises are true. Still, what the additional information does is undermine the argument for you. It does this because the combination of that additional information and the premises does not support the conclusion.

This is an important point about which it is easy to be confused, so it is worth emphasizing. Before you considered your background information, you concluded that was cogent. Nothing that you learn later changes that result. It definitely conforms to a cogent pattern. Furthermore, your background information does not cast any doubt at all on the truth of the premises. It doesn't show that Boris isn't a student, nor does it show that it is false that most students voted.

What this example shows is that for a cogent argument to be successful in making its conclusion reasonable for a person, not only must the premises be justified, but the argument must not be undermined by any additional information the person has. When you are justified in believing the premises of a cogent argument, those premises provide you with some evidence in favor of the conclusion. But that evidence is not conclusive. If it were, the argument would be valid rather than cogent. Thus, in cogent arguments the premises always leave some room for the falsity of the conclusion. And it can happen that you also have additional evidence showing or suggesting that the conclusion is not true. Whenever you have such evidence, an otherwise good argument is **_defeated_**.

The idea of a defeated argument can be made clearer with the help of the notion of total evidence. When you consider an argument, you often have some background evidence which is relevant to the argument. It can happen, as we just saw, that the premises of the argument by themselves are good reasons to believe the conclusion, but when you consider the relevant background evidence you may discover that the combined evidence does not support the conclusion. This turns what would otherwise be a strong argument into a weak argument.

Thus, a cogent argument is defeated for a person when the combination of the premises of the argument and some additional premise supported by the person's total evidence does not support the conclusion. You know that its premises are true, but you also have as part of your total evidence the fact that Boris was out of town and unable to vote on the day in question. If we add this additional evidence as premises in the argument, we have

1. Boris is a student at State U.

2. Most of the students at State U. voted.

3. No student who was out of town on voting day voted.

4. <u>Boris was out of town on voting day.</u>

5. Boris voted.

Obviously, this is not a cogent argument. Premises (1)–(4) do not provide a good reason to believe (5). In fact, these premises assure that (5) is false. When (3) and (4) are part of your background evidence, is defeated.

The precise definition of "defeat" is as follows:

D2: An argument is *defeated* by a person's total evidence if and only if
1. the argument is cogent;
2. the premises are reasonable for the person to believe; and
3. there is another premise (or premises) that is also reasonable for the person to believe and the the argument formed by adding this additional premise is not cogent.

Another example will help to clarify this idea:

Argument 8

1. Most popular singers are under forty years old.

2. Mick Jagger is a popular singer.

3. Mick Jagger is under forty years old.

This looks like a good argument. If all you knew that was relevant to the situation was that (1) and (2) were true, then you would have a good (but not conclusive) reason to believe (3). But for many people this argument is defeated because they have additional information about Jagger: they know that he's been a popular singer for over thirty years and is almost surely well over forty. With that background evidence added, Argument 8 would not be cogent; (1) and (2) plus the additional information do not make a cogent argument for (3). So Argument 8 is defeated for anyone who has this information about the lead singer of the Rolling Stones. For people who don't have this additional information, the argument is not defeated. For example, if a person knows only that (1) and (2) are true and has no other relevant information, then the argument is a strong one for that person.

We've seen that there are two ways a cogent argument can fail to be strong. It can have premises that are not justified, and it can be defeated. When either of these things happens, the argument is weak. When neither happens, it is strong. Thus, the precise definition of inductive strength is

> **D3:** An argument is *inductively strong* for a person if and only if
> 1. the argument is cogent;
> 2. it is reasonable for the person to believe all the premises of the argument; and
> 3. the argument is not defeated by the person's total evidence.[1]

The final concept to be defined in this chapter is that of a weak argument. A weak argument (for a person) is simply an argument that is not strong (for that person). Thus:

> **D4:** An argument is *weak* for a person if and only if
> 1. the argument is not deductively strong for the person; and
> 2. the argument is not inductively strong for the person.

B. Comments on the Definition of Inductive Strength

Although inductive strength might seem complicated, it is really rather simple. If you are evaluating an argument and you determine that it is cogent, the next step is to

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1. Given the definition of a defeated argument (D2), it may be that clause 3 of this definition implies clauses 1 and 2. Still, it is clearer to separate out these three conditions on inductive strength.

determine if it is strong. Consider the premises. If it is not reasonable for you to believe all the premises, then reject the argument as weak. If all the premises are reasonable, then consider whether something else in your total evidence defeats the argument. If it does, then reject the argument as weak. If the premises are reasonable and the argument is not defeated, then it is a strong argument and you should accept it.

There is no counterpart to defeat in the case of valid arguments. Since the premises of a deductively valid argument *guarantee* the truth of the conclusion, it is impossible for you to have additional information that, when added to those premises, undermines the conclusion. If the premises are true, then the conclusion must be true, no matter what else is true.

By our definitions every argument that you evaluate is either deductively strong for you, inductively strong for you, or weak for you. It must fall into exactly one of these three categories. If an argument is valid and has justified premises, then it is deductively strong. If it is cogent, has justified premises, and is undefeated, then it is inductively strong. All other arguments are weak. (Notice that all ill-formed arguments count as weak.)

Inductive strength, like deductive strength, depends on an individual's evidence, and since this can vary from one person to another, the strength of an argument can vary from one person to another. The premises of an argument may be justified for one person but not another, and an argument may be defeated for one person but not another. The strength of the argument is not a matter of opinion or whim. Whether the premises are justified, and whether the argument is defeated, depends on what evidence one has and what that evidence supports.

We saw earlier in the chapter that there are degrees of deductive strength. The deductive strength of an argument depends on just how reasonable the argument's premises are. The argument counts as deductively strong provided the premises are more reasonable to believe than not. But some arguments just barely meet this condition, while other arguments are extremely strong because their premises are almost certain.

Inductive strength is somewhat more complicated. How inductively strong a cogent argument is depends on more than how reasonable the premises are: it depends upon how cogent the argument is.[2] The strength of a cogent argument also depends on a third factor: how close one's total evidence comes to defeating the argument. It could be that one's total evidence does not defeat an argument but it does weaken it somewhat. We will not attempt to come up with precise measure of how these three factors interact to determine the overall strength of an argument. It is enough to realize that all three factors are relevant.

When an argument is inductively strong for you, then it is reasonable for you to believe its conclusion and unreasonable for you to deny its conclusion. This point is of the utmost importance in argument analysis, and in rational thinking generally. Suppose that there is some proposition that you believe to be true. If you encounter

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2. Recall that that cogency comes in degrees.

an argument against that proposition, then to continue being rational you must either find some basis for rejecting the argument or else abandon your original belief. It can never be reasonable for you to continue believing what you did and also to believe that there is a strong argument against that belief. To reject an argument as weak on a rational basis, you must have some reason to think that it has one of the flaws discussed in this chapter. Such judgments are always fallible, but, as always, the best we can do is to follow our evidence and believe what it indicates.

The following chart summarizes the characteristics of inductive strength.

Inductive Strength

1. Requires cogency, justified premises, and not being defeated by one's total evidence.
2. Can vary from one person to another, depending on the person's evidence.
3. Does not guarantee the truth of the conclusion.
4. Degree of inductive strength depends on how cogent the argument is, how reasonable the premises are, and the effects of total evidence on the argument.
5. When an argument is inductively strong for a person, then it is reasonable for the person to believe its conclusion.
6. Arguments that are not strong for a person are weak for that person.

EXERCISES AND STUDY QUESTIONS

*1. State whether each statement is true or false. Briefly explain your answer.
   a. All inductively strong arguments are cogent.
   b. If an argument is deductively strong for you, then it is also inductively strong for you.
   c. If an argument was inductively strong for you last week, then it must still be inductively strong for you now.
   d. If you evaluate an argument and conclude that it is inductively strong for you, then it is unreasonable for you to reject (disbelieve) the conclusion of the argument.

2. An argument can be inductively strong for a person even though the argument has a conclusion that is actually false. How can this happen? (There are a few importantly different ways it can happen.)

*3. Evaluate the following arguments, using the terms of argument evaluation.
   a. 1. Most Americans cities get more than fifteen inches of rainfall each year.
   2. Tucson is an American city.
   3. Tucson gets more than fifteen inches of rainfall each year.

    b. 1. Almost every state in New England gets more than two feet of snow each winter.
      2. Massachusetts is a state in New England.
      3. Massachusetts gets more than two feet of snow each winter.
    c. 1. Blue is Blythe's favorite color.
      2. Violets are blue.
      3. Roses are red.
      4. Blythe likes violets more than she likes roses.
      (Assume that [1] is true.)
    d. 1. Most Americans have not lived in the White House.
      2. Bill Clinton is an American.
      3. Bill Clinton has not lived in the White House.

4. For many people, the following cogent arguments are defeated. State the information you have that defeats them.
    a. 1. In the 1996 presidential election, most women voters voted for Bill Clinton.
      2. Elizabeth Dole is a woman who voted in the 1996 presidential election.
      3. Elizabeth Dole voted for Clinton in the 1996 presidential election.
    b. 1. Most trees in this neighborhood are deciduous (shed their leaves in the fall).
      2. This pine tree is in my neighborhood.
      3. This tree is deciduous.

5. Make up examples of arguments that fit the following descriptions. Your examples should be clear and simple, not highly controversial and overly complicated. Write the arguments out in standard form and state their patterns.
    a. An argument that is inductively strong for many ordinary people now but was weak for ordinary people years ago.
    b. An argument that is inductively weak for many ordinary people now but was strong for ordinary people years ago.

III. SUMMARY

When evaluating an argument, the first step is to determine whether the argument is well-formed or ill-formed. This trait is purely internal to the argument, depending only on the nature of the connection between the premises and conclusion of the argument. As we saw, there are two kinds of well-formed arguments: valid and cogent. Thus, the outcome of the first step of argument evaluation is a decision that the argument is valid or cogent or ill-formed. If you decide that it is ill-formed, then you can reject the argument. If it is well-formed, you go on to assess the argument for strength.

     When we evaluate arguments, we must evaluate them on the basis of whatever information we have, and this yields an evaluation of arguments analogous to evalu-

ations of individual statements as reasonable or not. Arguments that are successful from this perspective are strong, and those that are unsuccessful are weak. Strength and weakness, like rationality, can vary from person to person and time to time, depending upon the person's evidence at the time. Of course, these characteristics of arguments are not determined by preference or taste. They depend upon what is actually supported by the evidence the person has at the time.

For a valid argument to be deductively strong for you, it must have premises that are reasonable for you to believe. If you can justifiably reject a premise of an argument, or if there is a premise about which it is reasonable for you to suspend judgment, then the argument is not deductively strong for you.

For a cogent argument to be inductively strong for you, it must be reasonable for you to believe the premises, and the argument must not be defeated (undermined) by the rest of your evidence. The argument is defeated when the premises of the argument combined with your total evidence fail to support the conclusion.

The precise definitions of deductive and inductive strength are as follows:

D1: An argument is *deductively strong* for a person if and only if
1. it is deductively valid, and
2. it is reasonable for the person to believe all the argument's premises.

D3: An argument is *inductively strong* for a person if and only if
1. the argument is cogent;
2. it is reasonable for the person to believe all the premises of the argument; and
3. the argument is not defeated by the person's total evidence.

Any argument that does not satisfy the conditions for being deductively or inductively strong is weak.

All arguments that satisfy the conditions in (D1) or (D3) are strong. Some arguments are stronger than others, however. The degree of deductive strength of a valid argument depends on how reasonable the premises are. The degree of strength of a cogent argument depends on how reasonable the premises are, how cogent the argument is, and to what extent one's total evidence weakens (without defeating) the argument.

Our judgments about arguments are typically fallible, just as judgments about individual statements are. It is possible for a strong argument to have a false conclusion. However, the mere possibility of error does not provide any good reason to judge all arguments weak. The best we can do is to accept the strong arguments we encounter and reject the weak ones. Although we will sometimes reach false conclusions, this principle is our best guide to the truth. The flowchart in Figure 1 shows how to apply the concepts developed in this chapter.

Figure 1 Flowchart for Argument Evaluation

Is the argument valid?

YES → Are all the premises reasonable?

YES → **The argument is deductively strong. Accept it.**

NO → **The argument is weak. Reject it.**

NO → Is the argument cogent?

YES → Are all the premises reasonable?

YES → Is the argument defeated by background evidence?

YES → **The argument is weak. Reject it.**

NO → **The argument is inductively strong. Accept it.**

NO → **The argument is weak. Reject it.**

NO → **The argument is ill-formed. Reject it.**

CHECKLIST OF KEY TERMS

- strong argument
- deductively strong argument
- defeated argument
- inductively strong argument
- weak argument

CHAPTER EXERCISES

1. Discuss the following claims.
   a. If two people evaluate the same argument, and one comes to the conclusion that it is strong and the other comes to the conclusion that it is weak, then one of the two people is being unreasonable.

b. Suppose that there are two arguments, argument 1 and argument 2, about unrelated topics. Argument 1 is deductively strong for you and argument 2 is inductively strong for you. Since argument 1 is deductively strong, it must be valid. Argument 2 is merely cogent. Since the premises of valid arguments guarantee the truth of their conclusions, while the premises of cogent arguments do not guarantee the truth of their conclusions, it follows that argument 1 gives you a better reason to believe its conclusion than argument 2 gives you for its conclusion. In other words, from the fact that argument 1 is deductively strong and argument 2 is merely inductively strong, it follows that argument 1 is stronger than argument 2. (This question may require considerable thought.)

2. State whether each statement is true or false.
   a. Some deductively valid arguments with true premises are defeated.
   b. If an argument is deductively strong, then it is also inductively strong.
   c. All deductively strong arguments have true conclusions.

3. Evaluate the following arguments.
   a. 1. All politicians are corrupt.
   2. Al Gore is a politician.
   3. Al Gore is corrupt.
   b. 1. Most Americans are either women or children.
   2. Sylvester Stallone is an American.
   3. Sylvester Stallone is either a woman or a child.
   c. 1. Most days are weekdays (as opposed to weekends).
   2. There will be a day on which the population of the U.S. reaches 300 million.
   3. The day on which the U.S. population reaches 300 million will be a weekday.

4. Suppose that you are uncertain about whether Tricky Dick is an honest person. You decide to ask him, and he says that he is. On this basis, you construct the following argument:

   1. Tricky Dick says that he is honest.

   2. If Tricky Dick says that he is honest, then Tricky Dick is honest.

   3. Tricky Dick is honest.

   Evaluate this argument.

5. Suppose you replace premise (2) in the argument from question 4 with each of the following premises. Evaluate each of the resulting arguments.
   a. Everyone who says that he is honest is honest.
   b. Most people who say that they are honest are honest.
   c. Some people who say that they are honest are honest.
   d. Some people who say that they are honest are not honest.
   e. Whatever Tricky Dick says is true.

6. Could an argument be cogent, have true premises, and be defeated, yet still have a true conclusion?

7. Why doesn't the definition of a deductively strong argument include a "no defeater" clause?

8. Sometimes your background evidence defeats an argument by showing that the conclusion is probably false. This happened in the case of Argument 8. But it is also possible for your background evidence to defeat an argument simply by making the conclusion one that you should suspend judgment about. Give an example illustrating this possibility.

9. Do you think that you can have good reason to believe a statement even if you don't have any strong argument for it? If so, give examples and explain why you don't have any arguments for these reasonable beliefs. If not, explain why not?

10. According to the text, every argument you encounter is deductively strong for you, inductively strong for you, or else weak for you. It can't be in more than one of these categories, and it can't be in none of them. Does that seem right? Do you think that there are any arguments that are exceptions to this rule? What would those arguments be like?

11. Review the material in your argument notebook and look for passages in which people discuss someone else's argument. What terms do they use to evaluate these arguments? Can you restate their points using the terminology you have learned? How good a job of evaluating arguments do they do? Do their comments reveal any confusion about what makes an argument a good one?

ANSWERS TO SELECTED EXERCISES

1a. False
 b. True
 c. True
 d. False
3a. Weak, since we have no idea whether (1) or (2) are true. Since Pas E. Fist is a made-up character, it is very hard to know what to say about the truth value of either premise.
 b. Weak. Since there are additional options beyond the two mentioned in (1), we don't have good reason to think that (1) is true.
 c. Weak. We are not justified in believing the premise. In fact, probably anyone reading this knows the premise to be false.
 d. This is a tricky case, since it is about fictional characters. But if we assume that sentences that accurately describe what goes on in the relevant stories are true, then the argument is weak (for most of us). That's because we know that (1) is false. Lots of superheros have a weakness or two.
 e. Weak, at least for me. I know that (2) is false.
 f. Weak, since (2) isn't reasonable at this point.
 i. Weak, since (2) is unjustified.

1a. True
 b. False
 c. False

   d. True
3a. Cogent, but weak because it is defeated (at least for most of us)
  b. Cogent, strong
  c. Ill-formed (needs a linking premise)
  d. Cogent, defeated

Reconstructing Arguments

This chapter introduces a method for reconstructing arguments you can use to extract an argument in standard form from an essay or other written passage. It can be applied to writing of all sorts, including brief letters to the editor, editorials, and extended essays. However, you can use this method successfully only if you combine it with a careful and sympathetic reading of the material you analyze.

I. ARGUMENT RECONSTRUCTION AND THE PRINCIPLE OF CHARITY

One of the main reasons for going to the trouble of putting arguments into standard form is that arguments in standard form are much clearer and easier to understand. The assumptions behind the argument and the connections between the arguer's ideas are made as explicit as possible. As a result, you will gain a deeper understanding of the argument and find it much easier to evaluate.

Suppose there is some question that interests you. The question could be about virtually any topic. It might concern the behavior of subatomic particles, the causes of earthquakes, the life span of tropical fish, the leading money winners in professional golf, or the morality of abortion. All that matters is that you are genuinely interested in the answer to your question. To find an answer to your question, you

can do a variety of things, depending on the nature of the question and the situation you are in. You might read what others have written about the topic, you might talk to others, you might do experiments of some sort, or you might just think about things for a while. Whatever you do, you will probably come up with some information that will help you arrive at an answer to your question.

The information you have may suggest to you that some particular answer to the question is correct. This answer can be formulated as a proposition. It might be a simple proposition, or it might be a very complex. You can think of the information you've learned as a set of premises in an argument whose conclusion is the proposed answer to your question. If you really are interested in learning whether the proposed answer to your question is correct, then you are, in effect, interested in knowing whether the argument from those premises to that conclusion is a strong one. Since putting the argument into standard form makes evaluation easier, it will help you to learn the answer to your question. This is the value of reconstructing arguments: it helps you to figure out whether the information you have really does constitute a good reason to believe proposed conclusions.

People sometimes think that the main point of learning to analyze arguments is to be able to refute or put down things that other people say. They see an argument as part of a debate, and one of their goals is to win the debate. Thus, they often find it useful to state others' arguments in a way that makes them seem foolish or ridiculous. People who think about arguments this way are similar to the "person of contradiction"; they tend to argue with everything they hear.

The "dogmatist" has a skewed view of arguments as well. Dogmatists are interested only in standing by their previously held views; they are not open to new ideas. They don't see analyzing an argument as a way to help them figure out what to believe. They think they already know what to believe, and their main interest is in finding something critical to say about arguments that have a conclusion they disagree with.

Rational thinkers, however, think about arguments primarily as clear formulations of reasons for believing statements whose truth value is of genuine interest to them. When you think of arguments in this way, you will want to formulate them in the best way possible. If someone gives an argument and there is more than one way to interpret what the person says, you might win the argument by interpreting those words in the way that you can most easily refute. You might be able to defend your previously held point of view by finding some defect in a poor formulation of the argument. However, if you want to know the truth about the topic, if you want to know whether the information provided really does give a good reason to believe the conclusion, then you will want to interpret the arguer's words in the most plausible way. That way, you'll be in the best position to judge what it is reasonable for you to believe about the topic. You may not be able to win the debate as easily, but you will be in the best position to arrive at a real understanding of the question. The method of argument reconstruction and evaluation presented in this text is designed to aid rational thinkers. Although following this method will enable you to refute bad arguments more clearly and decisively, it is not primarily designed for that purpose.

Calvin and Hobbes   by Bill Watterson
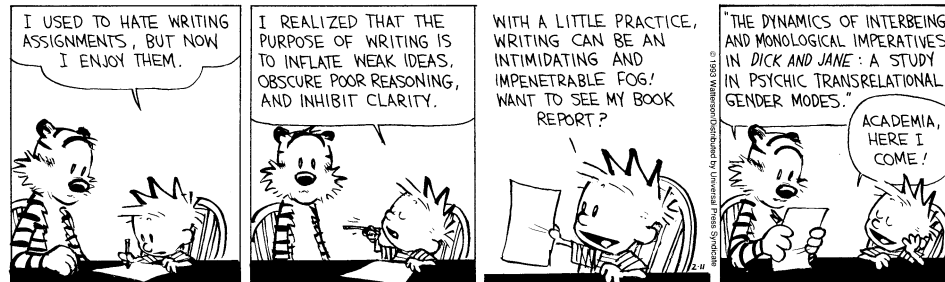
The purpose of argument analysis is understanding rather than refutation. Thus, the fundamental principle governing argument analysis is the "principle of charity" or (PC).

> **PC:** When reconstructing an argument, try to formulate a reconstruction that is well-formed, has reasonable premises, and is undefeated. In other words, make the argument as strong as possible.

We should adhere to (PC) not because it is nice to do so or because people who give arguments need or deserve charity, but because adhering to (PC) leads us to consider the best available arguments and thus to gain the most insight into the issue we are studying.

Exercises and Study Questions

1. Explain in your own words the point of following the principle of charity.
2. We previously distinguished rational strength from rhetorical effectiveness. Does following (PC) require that you interpret arguments in the most rhetorically effective way? Explain.
3. Dogmatists are inclined to abuse the method of argument analysis. Skeptics would also be inclined to misuse the method. What would be the differences in the way dogmatists and skeptics abuse the method of argument analysis?

II. DISTINGUISHING ARGUMENTS FROM NONARGUMENTS

Before you begin reconstructing an argument from a prose passage, you must decide whether the passage contains any argument at all. People write for many reasons other

than to give arguments, and it is important to avoid confusing the various kinds of writing. Two kinds of writing easily confused with argumentative writing are descriptive writing and rhetorical writing.

As its name suggests, *descriptive writing* is writing in which the author merely describes some event or situation. The author makes no attempt to establish the truth of any particular claim, which is the key feature of *argumentative writing*. A typical newspaper article contains primarily or exclusively descriptive writing. The writer attempts to convey to the reader facts about the article's topic. The article describes who did what, when and where it happened, and might give some relevant background information. There is usually little in the way of argument. The author does not attempt to prove or establish that things happened in the way the article describes; he simply says that they happened that way.

Even if the article is on a topic that we argue about, it may not contain an argument.

Example 1

Prosecutors have decided to retry Johnny Penry, a retarded man whose death sentence for a murder and rape was struck down last month by the Supreme Court. Without a retrial, the state would have to commute his sentence to life imprisonment. Penry, 33, was sentenced in 1980 for the slaying of Pamela Carpenter, 22.

The sentence was vacated by the high court, which said jurors should have been told that his history of mental impairment and child abuse might have warranted life in prison instead. Experts say Penry has the reasoning ability of a 7-year-old.[1]

This article simply states some of the facts concerning a specific legal matter. It does not contain an argument for any conclusion about what the prosecutors have decided in this case. It does not give an argument about the merits of applying the death penalty to retarded people. There is a hint in the last paragraph at an argument used by the Supreme Court in deciding the case. One can surmise that the Court ruled that Penry's sentence was improper because the jury had not been told some important information. But so little detail is provided here that it is best to regard this article as a simple description of a situation.

Rhetorical writing is in some ways very much like argumentative writing, since it does express a point of view about a topic. However, it differs from argumentative writing in that it contains nothing designed to show the truth of its point of view. It simply asserts the author's views, perhaps forcefully and emotionally. For example, consider the following excerpt from a letter about a June 1989 Supreme Court ruling that flag burning is a form of political "speech" and is therefore protected by the First Amendment to the Constitution.

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1. "Retarded Man to Be Retried," *Rochester Times-Union*, July 12, 1989, p. 8A. Reprinted with permission from the Associated Press.

Example 2

> Your leftist editorials have often disgusted me, but the latest one on the flag-burning issue was particularly abhorrent. Even after your own survey showed your readers overwhelmingly against the decision, you come up with this ridiculous editorial. . . .
>
> Somewhere we have to draw the line and President Bush has proposed doing just that.[2]

Although the letter from which this example is taken does contain an argument, this passage, by itself, does not. It forcefully reveals the author's dislike of the newspaper's editorial supporting the Supreme Court's decision in this case. However, there is no argument in this passage against the decision. What is noteworthy is the author's selection of words such as "leftist," "disgusted," "abhorrent," and "ridiculous." These are powerful words but they don't express an argument. The fact that the readers of the newspaper overwhelmingly opposed the decision may be part of an argument against the decision, but that argument is not clearly expressed in this passage. (It is expressed in the rest of the letter, which will be considered later in this chapter.)

The differences between argumentative, descriptive, and rhetorical writing are not absolutely clear-cut. Sometimes a passage can plausibly be interpreted in more than one way. Sometimes one essay contains sections that are argumentative and other sections that are descriptive or rhetorical. The key thing to look for is reasons. If the author provides reasons to believe that some statement is true, as opposed to simply asserting that the statement is true or emotionally describing the strength of his belief in the statement or encouraging readers to believe the statement, then the passage contains an argument.

Argumentative writing is not superior to (or inferior to) other kinds of writing. It simply has a different purpose than other kinds of writing. Rhetorical and descriptive writing can be effective, provocative, and important. Consider, for example, this excerpt from the Declaration of Independence:

Example 3

> We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.—That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed,—That whenever any Form of Government becomes destructive of these ends, it is the Right of the People to alter or to abolish it, and to institute new Government, laying its foundation on such principles and organizing its powers in such form, as to them shall seem most likely to effect their Safety and Happiness.

The Declaration of Independence is remarkably powerful and effective. Reading it may convince you that all people do have certain rights. But the passage just quoted

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2. Letter to the editor, Robert Nellist, *Rochester Times-Union*, July 12, 1989, p. 7A.

provides no argument for the conclusion that we do have those rights. Suppose, for example, that someone denied that people were endowed by their creator with the right to pursue happiness. You can't find here any argument for the conclusion that we do have such a right. You find an eloquent assertion that we have such a right. This sort of passage, therefore, does not lend itself to our method of argument analysis.

Other passages powerfully convey purely factual information. The following passage is an excerpt from an article about handguns written by Adam Smith in 1981.

Example 4

Some of the crime statistics underlying the gun arguments are surprising. . . . Some of the statistics are merely appalling: we had roughly ten thousand handgun deaths last year. The British had forty. In 1978, there were 18,714 Americans murdered. Sixty-four percent were killed with handguns. In that same year, we had more killings with handguns by children ten years old and younger than the British had by killers of all ages. The Canadians had 579 homicides last year; we had more than twenty thousand.[3]

Smith goes on in this essay to argue for gun control, but in the passage just quoted he does not present an argument. Nor does he argue for the statistical statements he makes. He makes no effort in this passage to establish the truth of any of these claims. He simply mentions some facts, which he describes as appalling (he doesn't argue that they are appalling; he just says that they are). The statistics Smith mentions are indeed striking. It is hard to avoid thinking that something should be done to change things. But there's no argument here for the conclusion that something should be done. Again, our method of argument analysis does not apply directly to this passage.

One can easily imagine people arguing about topics related to those raised in Examples 1–4. People argue about the merits and constitutionality of executing mentally retarded criminals and of flag burning. People argue about what, if any, natural rights we have. People argue about why there are so many murders in the United States and about what, if anything, could be done to reduce that number. However, the passages quoted in these examples don't contain arguments. Thus, you can't tell by the topic of an essay whether it contains an argument or not. You have to look beyond the topic to the nature of the discussion of that topic. You must look to see if there are reasons given in support of some conclusion. There is an argument in a piece of writing only if it includes reasons.

Let's look next at some brief passages that do contain arguments. The first two passages are extremely simple and the arguments in them will be obvious.

Example 5

While discussing a politician named Ken B. Bribed, Pay Off says, "Ken must be corrupt. After all, he's a politician and all politicians are corrupt."

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3. Adam Smith, "Fifty Million Handguns," *Esquire*, April 1981, pp. 22–24.

Example 6

Gupp E. looks at a fish tank and says, "That ten-gallon aquarium contains forty fish. If that ten-gallon aquarium contains forty fish, then that aquarium is too crowded. Therefore, that aquarium is too crowded."

It is clear that each of these examples contains an argument; that is, there is some point (or conclusion) that the speaker is trying to establish, and one or more reasons (or premises) in its favor are stated. When a passage does contain an argument, then one can begin to reconstruct that argument by identifying its conclusion. It is quite easy to identify the conclusion in these cases. We will discuss identifying conclusions in detail in the next section after briefly looking at one more example.

In some passages there are arguments hidden in the midst of rhetorical or descriptive writing. One example is the entire letter from which Example 2 was extracted.

Example 7

Follow Will of the People

Your leftist editorials have often disgusted me, but the latest one on the flag-burning decision was particularly abhorrent. Even after your own survey showed your readers overwhelmingly against the decision, you come up with this ridiculous editorial.

Can't you see that flag burning is obscene—just as obscene as walking naked down Main Street at noon? Would you defend this as freedom of expression also? You probably would.

Somewhere we have to draw the line and President Bush has proposed doing just that. How can you castigate him for responding to the will of all patriotic Americans and, I am sure, to his own outrage at this decision?

Our office holders have an obligation to follow the will of the people and that is exactly what he is doing.[4]

This letter's author is obviously very angry about the flag-burning decision and the editorial that supported it. Most of the letter merely expresses that anger, without giving reasons to support the conclusion that the decision was wrong. However, two of the paragraphs hint at arguments. The second paragraph suggests an argument whose premise is that flag burning is "obscene" and whose conclusion is that it should be outlawed. The last paragraph also suggests an argument. The conclusion is, perhaps, that people shouldn't be allowed to burn flags and the reason is that this is "the will of the people." So, there does seem to be an argument in the midst of this outburst, and we can apply our method of argument analysis to it.

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4. Letter to the editor, Robert Nellist, *Rochester Times-Union*, July 12, 1989, p. 7A.

EXERCISES AND STUDY QUESTIONS

1. Example 7 was one of several letters written in response to a newspaper editorial on flag burning. Several of the other letters are reprinted below.[5] For each letter, state whether you think the letter is best categorized as primarily descriptive, rhetorical, or argumentative. (If you think that some other category better characterizes any of these letters, explain what that category is.) If you think that part of a letter fits one category and part fits another, say so.

*a. The Elite Have Spoken

The ruling of the U.S. Supreme Court on the flag is incomprehensible because it implies that the violation of a law is a form of free speech guaranteed by the First Amendment. There are many legal ways of protesting a law: speaking, writing, distributing printed matter, demonstrating, all covered by the First Amendment. This ruling could be interpreted to mean that you would be protected by the First Amendment if you refuse to pay your taxes as a protest against actions of the government. . . .

*b. Can't Shout Fire, Either

Wasn't it Justice Oliver Wendell Holmes who said that the right to free speech doesn't give permission for a person to shout "fire" in a crowded theater?

*c. Save Both Flag, Freedom

To protect the flag and freedom of speech, let Congress declare the design of the flag by eminent domain to be the property of the American people. At the same time let Congress copyright the design of the flag and license its display solely to honor our Constitution. Burning or abusing the flag would then be tantamount to defacing government property and would be subject to the same laws that prohibit spray painting the Lincoln Memorial or any act of vandalism on a federal building.

d. Get Down to Business

If our politicians don't stop squabbling over the Supreme Court's decision regarding desecration of the U.S. flag, and get down to the very real business of reducing our high national debt and reversing our immense trade imbalance, we may all wake up some day under a new flag.

*e. There Are Worse Crimes

The issue is not whether flag burning is offensive or even wrong. Rock music, vulgar language and punk hairstyles are offensive to many. And infidelity, deceit and lying are wrong. But it is not the business of government to imprison people for offensiveness or wrongdoing of these sorts. A flag is a piece of cloth. To destroy it (assuming it's your own) harms

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5. Letters to the editor; Paul R. Neuriter (a), A. W. Bruce (b), Arthur S. Beckhofer (c), Jon K. Edwards (d), Robert L. Holmes (e), Scott Henry (f), *Rochester Times-Union*, July 12, 1989, p. 7A.

no one. There are thousands of others and new ones are produced each day. True, that piece of cloth has great symbolic value. But that is precisely why publicly burning it can dramatize a point. . . . Chief Justice Rehnquist argues that prohibiting this mode of expression still leaves people with plenty of others. That's true. But it misses the point. One needn't prohibit all means of expression before one has compromised freedom. If I lock you in a room, it will be of little consolation that you can talk on the phone. . . . We are genuinely free only when we can both hold the views we want and (so long as we harm no one thereby) express them as we choose.

f. Who Cares More?

If an individual citizen chooses to burn a flag to protest corruption, nuclear plant leaks, defense spending, increased disparity between the rich and the poor, environmental exploitation, who are we to say he's wrong? Who cares more about the U.S.A.? Is it the person willing to rock the boat, and work for awareness and change, or is it the two-thirds of Americans who denounce him from their Lazyboys?

2. The following passages about showing executions on television are from an essay appearing in a newspaper.[6] State whether or not each passage contains an argument.

   a. In California, a place that is generally known for its innovations and extremes, a public television station in San Francisco is suing for the right to televise the state's next execution. The station, KQED, promises (in a macabre twist of language) not to broadcast the execution "live." It would be presented as part of a late night forum on the death penalty.

   b. Opponents of the death penalty believe that broadcasting the death of a condemned killer will prove so disturbing to the public that it will turn the tide against sanctioned murder.

   c. Supporters of capital punishment hope that the reality and finality of the penalty will discourage violent crime.

   d. A death row inmate in Virginia named Joseph Savino apparently agrees with . . . [the supporters of capital punishment] since he has requested that his own execution be televised as a deterrent to others.

   e. I can't imagine too many potential murderers turning to PBS for a late-night dose of moral instruction. Opponents of the death penalty have already convinced themselves that it is a brutal and contradictory means of punishment. Why would they choose to torture their sensibilities by watching the real thing?

3. This exercise has been intentionally removed from the text.

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6. Letter to the editor, Cass Canon, *Rochester Times-Union*; August 16, 1990, p. 9A.

III. IDENTIFYING PREMISES AND CONCLUSIONS

Once you have decided that a passage does contain an argument, you can begin to apply the method of argument analysis to it. As we've seen, the two main steps are reconstructing the argument (putting it into standard form) and evaluating it. In the remainder of this chapter, we will examine the steps involved in reconstructing arguments.

A. Identifying Conclusions

The first step in reconstructing an argument is to identify its conclusion. Sometimes you will identify the conclusion of the argument when you are determining whether the passage does contain an argument. At other times, you will be able to tell by the writing style or tone of a passage that it contains an argument without simultaneously figuring out exactly what that conclusion is. Although determining whether a passage contains an argument and determining what its conclusion is are not always done independently, it's best to think of them as separate steps of argument analysis.

There is no secret formula or automatic procedure that you can apply to identify the intended conclusion of an argumentative essay. To a large extent, a careful and sympathetic reading of a passage will make its conclusion clear. In cases like Examples 5 and 6, it is probably easy for you to tell what the conclusions are. In Example 5 the conclusion is:

Ken B. Bribed is corrupt.

The conclusion of the argument in Example 6 is

That aquarium is too crowded.

Although there is no formula for identifying conclusions, the following guidelines can help you:

1. When you read a passage containing an argument, ask yourself what the main point of the passage is. What is the author trying to get at? The conclusion is whatever it is that the author is trying to establish. Reducing the the author's main point to one simple statement can help you identify the conclusion.

2. Any proposition, on any topic, can be a conclusion. People can argue for controversial points and for points on which everyone agrees. People can argue for abstract theoretical claims, for scientific claims, for statements about everyday objects, for claims about morality or religion or politics, and for anything else that they can think about. You can't identify the conclusion of an argumentative passage simply by the subject matter of the individual sentences.

3. In any actual letter or essay, as opposed to some of the artificial examples we've considered, there may be several arguments for several different conclusions. Sometimes an author will argue for one point and then a second point and then use those first two conclusions as premises in an argument for a third conclusion. Sometimes rhetorical and descriptive writing is interspersed with the argument. A useful procedure is to try to outline the essay to show its overall structure. It can also be helpful to mark up the essay by drawing circles or boxes around the key conclusions and premises.

4. Several common words and phrases are used to tell readers that a conclusion just has been, or is about to be, stated. These are ***conclusion indicators***. For example, if an author says something of the form, "From facts *A*, *B*, and *C*, it follows that *D*," you can be confident that *D* is the conclusion of an argument having *A*, *B*, and *C* as premises. The phrase "it follows that" is a conclusion indicator. Many other words and phrases function as conclusion indicators, such as

"hence"
"therefore"
"thus"
"I conclude that"
"So"

Usually the sentences preceding these words and phrases are the premises from which the conclusion is supposed to follow.

Sometimes premises and conclusions are found in the same sentence with an indicator word separating them. For example, "proves" separates the premise and the conclusion in this sentence: "The fact that you can't stop smiling when you say that proves that you are not telling the truth." Words that function similarly are

"implies"
"establishes"
"shows"

Sometimes writers state their conclusion before stating their premises. For example, if I say, "It will rain today since it always rains when I plan a picnic," my conclusion is that it will rain today. The word "since" separates the conclusion from the premise, which is stated second. Some other words and phrases that function similarly are

"follows from the fact that"
"is established by"
"is implied by"
"because"

5. Although writers sometimes identify conclusions for you by using indicator words, they often do not. You can't say that a particular sentence does not express an argument's conclusion simply because it does not contain a conclusion indicator. One thing you can try is to insert conclusion indicators in a passage and see if the passage still reads smoothly and its meaning isn't changed. For example, you could insert the word "so" or "therefore" at the beginning of the second sentence of this paragraph without changing its meaning. This insertion clarifies that the second sentence expresses a conclusion, while the first sentence expresses a premise supporting that conclusion.

6. A conclusion that is stated directly and clearly is known as an ***explicit conclusion***. Unfortunately, writers sometimes neglect to state their conclusions at all; that is, their arguments contain ***implicit conclusions***. Once in a while, a writer will make it clear that the conclusion has not been stated by saying something like, "I leave it to the reader to draw the obvious conclusion." Sometimes, however, the writer thinks that the context makes the conclusion so obvious that it goes without saying. Not stating one's conclusion is usually a bad idea since readers may well misunderstand the intended conclusion. Nevertheless, people do write this way, so you can't be sure that any sentence in an argumentative passage states the author's conclusion. Here is a simple example of an argument with an implicit conclusion:

> **Example 8**
>
> Will I. Getit asks his doctor about the likelihood of his getting a disease that has been spreading through the neighborhood. The doctor responds, "Everyone who is exposed to the virus gets the disease. And, Will, you were exposed to the virus."

In this case, the intended conclusion is not stated, but it is quite obvious:

> Will I. Getit will get the disease.

7. Sometimes a conclusion is stated but in an unclear or indirect way, as in the following:

> **Example 9**
>
> A. Cuse is the prosecutor in a criminal case in which Gil T. is the defendant. She summarizes the evidence and draws her conclusion by saying, "I believe that Gil T. is guilty of the crime. My reasons are that there were several eyewitnesses who said that they saw him in the act, his fingerprints were found at the scene of the crime, he had a motive, and he has no good alibi."

A. Cuse clearly argues for some conclusion here, but what is the conclusion of her argument? At first, you might think that there is an explicit conclusion:

> I (A. Cuse) believe that Gil T. is guilty of the crime.

But the prosecutor is unlikely to argue for this conclusion. The jurors are quite likely to take her word that this is true. They may have little doubt that she *believes* that the defendant is guilty. The evidence she goes on to list is not evidence designed to show that she believes this. Evidence for that would include information such as the fact that she asserted that the defendant is guilty in private conversation and not merely in the courtroom where she had to argue for the guilt of the defendant. However, she doesn't state evidence of that sort at all.

The prosecutor is not arguing for the proposition that she believes that Gil is guilty but rather for the statement

Gil T. is guilty of the crime.

It is this conclusion that she is really interested in getting the jury to accept. This is what her evidence supports. Thus, in this case the conclusion is not stated precisely, although something resembling it is stated.

8. Almost as distressing as the fact that writers sometimes state their conclusions badly or not at all is the fact that writers sometimes get confused about what their conclusion really is. They may say that they are arguing for one thing when in fact they are arguing for another. For example, sometimes people reasoning about a legal and moral issue, such as banning abortions, are unclear about whether their conclusion concerns the constitutionality of banning abortions or the morality or desirability of banning abortions. These are very different issues, since it could be that a law is constitutional even though it is in other respects immoral or undesirable. We will discuss examples of this sort in detail later.

B. Identifying Premises

The next step in argument reconstruction is identifying the premises. While carrying out the previous step, identifying the conclusion of an argument, it is likely that you will have identified at least some of the supporting premises as well. Thus, the second step of argument reconstruction is not entirely separate from the first.

In searching for premises, you look for reasons to think that the conclusion of the argument is true, or for reasons that make the author of the passage think the conclusion is true. As we have seen, reasons for thinking the conclusion is true differ from information about how beneficial, interesting, or exciting it would be if the conclusion were true. Reasons for a conclusion are statements that (allegedly) show that the conclusion really is true.

Much of what we have said about identifying conclusions also applies to identifying premises. To a large extent, identifying premises properly requires a fair and sympathetic reading of a text. There is no formula that will invariably identify a premise for you. However, you should keep the following points in mind as you attempt to identify premises:

1. After reading an argumentative passage and identifying the argument's conclusion, ask yourself, "What are the author's reasons for believing this conclusion? What evidence does the author give to think that this conclusion is true?" The statements that you come up with are (most likely) the premises of the author's argument.

2. Nearly any statement can be offered as a premise. Sometimes people use controversial claims as premises; sometimes they use widely accepted statements. A premise can have any subject matter whatsoever.

3. Any extended essay is likely to have a complex structure, with several arguments mixed in with nonargumentative prose. Understanding the overall structure of the essay can help you identify the premises.

4. Words and phrases marking the occurrence of a premise are ***premise indicators***. The kinds of words and phrases that mark the transition from premises to conclusion or from conclusion to premises, listed previously, can help you find premises. Some other words and phrases that introduce sentences can also signal a premise. For example, after stating a conclusion in one sentence, a writer might begin the next sentence with, "My reason is . . ." or "The evidence for this is. . . ." Other phrases work together to indicate both the premises and conclusion in complex sentences containing both elements, as in, "On the basis of the fact that. . . , . . . I conclude that. . . ."

5. An essay may not include specific premise-indicator words. The context can help you determine which sentences express premises. Sometimes it helps to add a premise indicator to a sentence and see if the passage still reads smoothly. If it does, then it is likely that the sentence does express a premise.

6. Writers rarely state all their premises; that is, an essay may contain an ***implicit premise***. (When a premise does appear in the essay, it is an ***explicit premise***.) We will consider some examples of arguments with implicit premises later in the chapter.

7. Premises can be stated in ways that are obscure. The context can often help you to understand what is intended. Whenever possible, rewrite obscure premises clearly and simply.

To practice identifying premises, let's look again at Examples 5, 6, and 8. We have already identified the conclusion in each of these argumentative passages. First, take Example 5:

> While discussing a politician named Ken B. Bribed, Pay Off says, "Ken must be corrupt. After all, he's a politician and all politicians are corrupt."

Although there is no premise indicator in this example, it is easy to identify the premises. They occur in the sentence beginning with "after all." The complete reconstruction of this argument looks like this:

Argument 5

1. Ken B. Bribed is a politician.

2. All politicians are corrupt.

3. Ken B. Bribed is corrupt.

The form of this argument is

1. *x* is an *A*.

2. All *A*s are *B*s.

3. *x* is a *B*.

Consider next Example 6:

Gupp E. looks at a fish tank and says, "That ten-gallon aquarium contains forty fish. If that ten-gallon aquarium contains forty fish, then that aquarium is too crowded. Therefore, that aquarium is too crowded."

Again, it is easy to identify the premises. The complete reconstruction is

Argument 6

1. That ten-gallon aquarium contains forty fish.

2. If that ten-gallon aquarium contains forty fish, then that aquarium is too crowded.

3. That ten-gallon aquarium is too crowded.

The pattern of this argument can be represented as follows:

1. *x* is an *F*.

2. If *x* is an *F*, then *x* is a *G*.

3. *x* is a *G*.

In this case, *x* stands for "that ten-gallon aquarium," *F* stands for "contains forty fish," and *G* stands for "is too crowded."

Recall next Example 8:

Will I. Getit asks his doctor about the likelihood of his getting a disease that has been spreading through the neighborhood. The doctor responds, "Everyone who is exposed to the virus gets the disease. And, Will, you were exposed to the virus."

The argument here is

> **Argument 8**
>
> 1. Everyone who is exposed to the virus gets the disease.
>
> 2. Will I. Getit was exposed to the virus.
>
> 3. Will I. Getit will get the disease.

The pattern of Argument 8 is the same as the pattern of Argument 5 except the order of the premises is reversed.

EXERCISES AND STUDY QUESTIONS

*1. The following paragraphs present simple arguments. Each paragraph contains at least one indicator word. Rewrite each argument in standard form. State the pattern of argument. Then state whether the argument is valid, cogent, or ill-formed.
   *a. If gas prices go up, then people will drive less. And gas prices will go up. As a result, people will drive less.
   *b. Jones should get an A in that course. This is because he worked hard and everyone who worked hard in that course should get an A.
   *c. If you study hard, then you'll get an A. But you won't study hard, so you won't get an A.
   d. Either we teach our children to work hard or they will be unable to compete on the job market. But we won't teach them to work hard. It follows that they will be unable to compete on the job market.
   e. Elvis is in a Burger King in suburban Detroit only if he is in the state of Michigan. But Elvis is not in a Burger King in suburban Detroit. Therefore, Elvis is not in the state of Michigan.
   f. If you like peaches, then you'll also like nectarines. You don't like peaches, so you won't like nectarines.
*2. The following paragraphs also present simple arguments but contain no indicator words. Rewrite each argument in standard form, using your best judgment about which statements are the premises and which are the conclusions. State the pattern of argument. Then state whether the reconstructed argument is valid, cogent, or ill-formed.
   *a. The conclusion of Smith's argument is true. It is a valid argument and all valid arguments have true conclusions.
   b. Anyone who goes bankrupt has no money. Donald Trump went bankrupt. Donald Trump has no money.
   *c. Most books have some pictures. The telephone book is a book. The telephone book has some pictures.
   d. You'll like nectarines. Everyone who likes peaches also likes nectarines, and you like peaches.

*3. The following paragraphs also contain arguments and some indicator words, but some sentences in some of the paragraphs are not really part of the arguments, and some of the premises and conclusions may not be stated in a particularly clear way. Rewrite each argument in standard form, omitting any information that is not part of the argument and clarifying the statements that are not expressed clearly. State the pattern of the reconstructed argument. Then state whether the reconstructed arguments are valid, cogent, or ill-formed.

 *a. I oppose capital punishment because it might lead to the death of innocent people, and we shouldn't do anything that might lead to the death of innocent people.

 b. I know that most college students drink beer. After all, most college students are male, and most males drink beer.

 c. Smith is the murderer. After a long and difficult investigation, the police showed that either Smith or Jones did it, and I'm sure that it wasn't Jones.

 d. I realize that not everyone agrees with me, but I think that we'd be better off if we made kids go to school twelve months each year. Anything that will make kids learn more will make us better off, and making kids go to school twelve months each year will make them learn more. People who disagree are just afraid to make kids work hard.

 e. The president believes that there will be a recession. We can conclude this from the fact that he said that there would be a recession and he wouldn't say this unless he believed it.

IV. GENERAL AND SPECIFIC PREMISES

Although any proposition can serve as a premise in an argument, premises can be divided into a few categories. Premises that state facts about specific individuals are called ***specific statements***, while premises that state facts about general categories or kinds of individuals are called ***generalizations***.

Argument 5 contains one premise of each type:

1. Ken B. Bribed is a politician.

2. All politicians are corrupt.

3. Ken B. Bribed is corrupt.

The first premise is a specific statement, since it states a fact, or an alleged fact, about a single individual. The second premise is a generalization, since it states an alleged fact about a group or category of things, namely, politicians.

It is common for arguments to contain premises of both types. Generalizations are often crucial premises in arguments, and deciding exactly which generalization to include in an argument is often a key element in reconstructing it.

We use a wide variety of English sentences to express generalizations. To avoid confusion in reconstructions, we put all such general statements into a standard form. This makes it easier to identify the other premises of the argument, and it also makes argument evaluation easier.

The form we will use for these general statements is illustrated by the sentence

All birds can fly.

This is a sentence of the form

All *A*s are *B*s.

Some other sentences of the same form include

All students must take the exam.
All philosophy lectures are boring.
All doctors play golf.

The basic form "All *A*s are *B*s" has many linguistic variations, but they say essentially the same thing. For example, here are some other ways to say "All birds can fly":

Every bird can fly.
If something is a bird, then it can fly.
Anything that is a bird can fly.

Some other sentences also express general claims, although on the surface they may seem quite different. The following example illustrates a case in which the premise is not written in any of the forms listed, but it can be rewritten so that it is.

Example 10

Two students are discussing the surprising success another student has had in a course known for its difficulty. One of them says, "The only people who got an A in that course did it by bribing the professor. I conclude that Dan bribed the professor."

It is easy to identify the premise in this case as

The only people who got an A in that course did it by bribing the professor.

What this premise says can be stated in another form. The following sentences all make the same statement.

All people who got an A in that course bribed the professor.
If a person got an A in that course, then that person bribed the professor.
Anyone who got an A in that course bribed the professor.

For the sake of consistency and uniformity, in reconstructing arguments we will regularly put such statements into the "All *A*s are *B*s" form.

There are other sentences somewhat like the one we've been considering but with other words replacing "All." For example, many sentences follow these patterns:

Most *A*s are *B*s.
Many *A*s are *B*s.
Some *A*s are *B*s.

Any sentence following any of these patterns is a generalization. The words saying how many of the *A*s are *B*s are **quantifiers**. Generalizations containing the word "all" are **universal generalizations**. The other generalizations are **nonuniversal generalizations**. They are similar to statistical statements.

People sometimes use the word "generalization" in a way that gives it a negative connotation. We are told that we should avoid generalizations because they are inaccurate or misleading. However, we are not using the word in this way. Many generalizations, including many universal generalizations, are true. Here are some examples:

All the planets in the solar system revolve around the sun.
All bachelors are unmarried.
All members of the U.S. Senate in 1997 are more than three years old.

It would be a mistake to criticize these statements on the grounds that they are generalizations. They may be generalizations, but they are true, and we all are nearly certain that they are true. There are, of course, many generalizations that are false, and sometimes people assert universal generalizations on the basis of very little information. When people condemn generalizations, they may be thinking of such mistaken or unsupported generalizations.

Explicit premises in arguments often express generalizations. Whenever a premise expresses a generalization, no matter how it is written in the original argument, it is best to rewrite the premise following one of the patterns for generalizations, such as "All *A*s are *B*s" or "Most *A*s are *B*s" and so on. We call these the *standard forms for general statements*. We will see why this practice is useful when we discuss the next step of argument reconstruction.

EXERCISES AND STUDY QUESTIONS

1. Rewrite each of the following statements in the appropriate standard form for general statements. Be sure that you have included the right quantifier.
   *a. If something is a baseball, then it is round.
   b. Anything that can crawl is either a snake or a worm.
   *c. A person is a student only if the person is registered in some school.
   d. If you are registered, then you are allowed to vote.
   e. Every new day brings some surprises.

> ***f.** You can never predict who will win a baseball game.
> ***g.** Sometimes you can predict who will win a baseball game.
> ***h.** If you are a genius, then you can predict the winner of all baseball games.
> **i.** In most cases, honesty is the best policy. (Clue: Substitute for *A* in the standard form for "cases of acting honestly.")
> **j.** Lying is always risky.
> **k.** If something is a universal generalization, then it is false. (Question: Could this statement be true?)
> **l.** Whenever Jones says something, what he says is true.

2. Identify the generalizations in the letters to the editor in Exercise 1 and in Exercises 1–3. Rewrite them in standard form.

V. ADDING IMPLICIT PREMISES

After writing down an author's conclusion and explicit premises, the next step is to look at the argument and decide whether there are any additional premises that the author has not bothered to state. The idea is to fill in the assumptions that connect the stated premises to the conclusion of the argument, and thus make the argument well-formed. This allows us to consider the strongest argument suggested by the author's words.

Most argumentative essays contain implicit premises. Although in some cases it is easy to identify implicit premises, in other cases this is the hardest and most important element of argument analysis. Let us consider some simple examples first; then we will examine some more difficult examples and see why adding implicit premises is both important and difficult.

A. Implicit Premises That Are Not Generalizations

Consider again Example 10:

> Two students are discussing the surprising success another student has had in a course known for its difficulty. One of them says, "The only people who got an A in that course did it by bribing the professor. I conclude that Dan bribed the professor."

We can easily identify a premise and a conclusion, and thereby arrive at a preliminary reconstruction of the argument:

Argument 10

1. All people who got an A in that course bribed the professor.

2. Dan bribed the professor.

This is clearly an incomplete argument. An assumption is needed to get from this premise to the conclusion. Premise (1) by itself doesn't provide any reason at all to think that (2) is true since (1) doesn't even mention Dan. So Argument 10 is plainly ill-formed. What is needed to make it valid is a ***linking premise***, a premise that connects the stated premise to the conclusion. In this case the linking premise must express a fact about Dan that shows that the generalization (1) applies to him: Dan did get an A in that course. The whole argument looks like this:

Argument 10a

1. All people who got an A in that course bribed the professor.

2. Dan is a person who got an A in that course.

3. Dan bribed the professor.

One of the reasons this case is easy is that the premise we are given is the generalization, and all that has to be added is a premise showing that the generalization applies to Dan. Just looking at the pattern of the incomplete argument makes it quite obvious how to fill out the argument. The pattern of the incomplete argument is

1. All As are Bs.

2. x is a B.

It's easy to see that the premise needed is

x is an A.

Many other examples are equally easy to fill out, simply by paying attention to the pattern of the incomplete argument. For example, suppose you reconstruct an argument and see that it has the pattern

1. If P then Q.

2. Q.

It's obvious that the missing premise is P, the antecedent of (1). If the conclusion were $\sim P$, then the missing premise would be $\sim Q$. In the examples we've just looked at, the resulting reconstructions were valid. But sometimes you'll reconstruct a simple argument and find an explicit premise and conclusion of the following form:

1. Most As are Bs.

2. x is a B.

In such a case, the obvious move is to add the implicit premise

x is an A.

We now have a cogent argument. In all these examples, we are simply completing the arguments by adding the premises that make the arguments well-formed in the simplest possible way. In these cases, there is not much choice about how to complete the argument.

EXERCISES AND STUDY QUESTIONS

Add a premise (or premises) to each of the following arguments to make the argument valid or cogent, whichever seems more appropriate. State the pattern of each argument.

*1. a. If you can't stand the heat, then you should get out of the kitchen.
  b. You should get out of the kitchen.

 2. a. Either I'll get an A in this course or I'll get an F.
  b. I'll get an A in this course.

*3. a. Most overweight house sparrows fly poorly.
  b. My pet bird flies poorly.

*4. a. All birds have wings.
  b. Rover is not a bird.

 5. a. All birds have wings.
  b. Rover has wings.

 6. a. Polly Tishin is running for reelection.
  b. Most popular senators who run for reelection win.
  c. Polly Tishin will win.

 7. a. If it rains, then the picnic will be canceled.
  b. If it rains, then we'll go to the movies.

 8. a. If it didn't rain yesterday, then my flowers died.
  b. It did rain yesterday.

B. Implicit Premises That Are Generalizations

When we are adding a generalization to an argument, there are often several choices about how to proceed. This makes things more difficult. Consider the following:

Example 11

Two children see something fly by and they name the thing "Tweety." One of them then says, "Tweety can fly. So he must be a bird."

It is easy to identify an explicit premise and a conclusion here:

Argument 11

1. Tweety can fly.

2. Tweety is a bird.

In Argument 11, the premise and the conclusion state specific facts about Tweety, but there is no generalization linking these specific facts. The argument is incomplete, and several difficulties arise when we attempt to add an implicit general premise to the argument.

There is, obviously, a universal generalization that could be added to the argument to make it valid. The child giving this argument may be assuming that anything that can fly is a bird. We can add that as an implicit premise to the argument:

Argument 11a

1. Tweety can fly.

2. All things that can fly are birds.

3. Tweety is a bird.

Now the argument is deductively valid, but it has a serious problem. The generalization (2) isn't true, and it isn't something anyone is likely to accept after a moment's reflection. After all, airplanes can fly, but airplanes aren't birds. Perhaps, then, it would be better to replace (2) by a different generalization, one that applies only to living things. Maybe the child had in mind an argument like this:

Argument 11b

1. Tweety can fly.

2. All living things that can fly are birds.

3. Tweety is a bird.

It is worth thinking carefully about the pattern of argument in this case. Premise (1) says that Tweety falls into a certain category of things: things that can fly. Premise (2) is a generalization, but not about exactly that category. Rather, it's about a smaller category of things: living things that can fly. If we represent "thing that can fly" by A and "living thing" by B and "bird" by C, we can see that the pattern of argument here is

1. x is an A.

2. All things that are both As and Bs are Cs. (All ABs are Cs.)

3. x is a C.

Using the technique of drawing circles and boxes around the parts of the argument can also highlight the problem with Argument 11b. If you draw a circle around "can fly" in premise (1), then you would need to draw a different shape around "living things that can fly" in premise (2). Premises (1) and (2) don't match up properly in this case. It is clear that this argument is not valid. We must add a premise saying that "x is a B," that Tweety is a living thing, to make premise (2) of Argument 11b apply to Tweety. So let us revise again:

Argument 11c

1. Tweety can fly.

2. Tweety is a living thing.

3. All living things that can fly are birds.

4. Tweety is a bird.

This is a valid argument. Its pattern is

1. *x* is an *A*.

2. *x* is a *B*.

3. All *AB*s are *C*s.[7]

4. *x* is *C*.

Argument 11c may be a valid argument, but it still isn't a strong argument. Premise (3) of Argument 11c is obviously false. Insects are living things that can fly, but they aren't birds.

At this point in our effort to reconstruct the argument from Example 11, we have some choices. We can go on modifying the argument, or we can give up. If we follow the second alternative, we are saying, in effect, that the author of this argument made a mistake. He thought that he could conclude that Tweety is a bird from the mere fact that Tweety can fly (and perhaps some other obvious fact, such as that he is alive), but that conclusion just doesn't follow. If we follow the first alternative, we are reading into the argument far more than is really there. After all, there is nothing in the passage to help us figure out what additional premises to add to improve this argument. We just don't know what the arguer had in mind.

This example shows that there are two different considerations to keep in mind when adding implicit premises. On the one hand, when reconstructing an argument you want to remain faithful to the author's intentions. You want the reconstructed argument to reflect what the author had in mind. We can formulate this idea as a principle governing argument reconstruction. We will call it the "principle of faithfulness":

PF: Add implicit premises that are consistent with the intentions of the author of the argument.

You can often use the context and background information to help determine the author's intentions. In Example 11, however, by adding more premises and making the argument more complex, you construct an argument that has little resemblance

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7. This premise says that all things that are both *A* and *B* are *C*. It does not say that being just an *A* or just a *B* is sufficient for being a *C*.

to anything the author said. You can't be very confident that you are capturing what the author had in mind and thus you are not obeying (PF).

On the other hand, you do want to construct as strong an argument as you can, so you have reason to add additional premises that improve the argument. Often when adding generalizations to an argument, you have a choice of several that will make the argument valid or cogent. The principle of charity in this case suggests adding reasonable generalizations rather than ones known to be false. So, another principle governing the addition of implicit premises is the "principle of charity for implicit premises":

> **PCI:** Add implicit premises that are reasonable to accept rather than implicit premises that are obviously false.

Sometimes it is hard to follow the dictates of both (PF) and (PCI). To add a true premise, you may have to stray rather far from anything the author said. There is no simple and all-purpose solution to this problem. To a large extent, how you solve it depends on the goal you have in reconstructing a particular argument. If your interest is primarily in figuring out whether the author established the conclusion in question, it is best to stay close to the text. If your interest is primarily in figuring out whether the conclusion of the argument is true and whether it is established by considerations along the lines of those raised by the author, then it is acceptable to make a strong argument that strays farther from the original text. It is particularly difficult to complete an argument in artificial examples such as Example 11 since you have no background information to help clarify the author's intentions and construct plausible premises. (In this case, you don't know anything about Tweety, so you don't know what additional premises to add.) In realistic cases, you often will have a wealth of contextual information to help you decide which implicit premises to add.

To illustrate another problem that can arise when adding a generalization as an implicit premise, consider this example:

Example 12

Bar X. Am is a recent law-school graduate who has just been interviewed for a position in a law firm. The interviewer says, "Bar will be a successful lawyer. She's smart and articulate, and she likes to argue."

It is easy to identify the conclusion and premises of this argument and come up with this first attempt at its reconstruction:

Argument 12

1. Bar is smart.

2. Bar is articulate.

3. Bar likes to argue.

4. Bar will be a successful lawyer.

(We could have combined (1), (2), and (3) into one premise. Separating them can be useful if we want to discuss the three points independently.)

To make this argument deductively valid, we have to add a linking premise. This will be some generalization connecting the characteristics of being smart and articulate and liking to argue with being a successful lawyer. Deciding what premise to add turns out to be no simple matter. We might add a premise saying that anyone who is smart, articulate, and likes to argue will be a successful lawyer. The resulting reconstruction is

Argument 12a

1. Bar is smart.

2. Bar is articulate.

3. Bar likes to argue.

4. All people who are smart and articulate and who like to argue will be successful lawyers.

5. Bar will be a successful lawyer.

This argument is valid,[8] but the added generalization, (4), is surely false. There are a lot of people who are smart and articulate and who like to argue but who will not be successful lawyers. They may not be lawyers at all, but talk-show hosts, businesspeople, or philosophers. Obviously, in giving the argument the interviewer is speaking only of lawyers. He is saying that lawyers with those three characteristics will be successful. So reconstructing his argument as in Argument 12a, with the plainly false general premise, violates both the principle of charity for implicit premises (PCI) and the principle of faithfulness, (PF). It would be better to replace (4) with a generalization that is only about lawyers, such as premise (5) in the following:

Argument 12b

1. Bar is smart.

2. Bar is articulate.

3. Bar likes to argue.

4. Bar is a lawyer.

5. All lawyers who are smart and articulate and who like to argue will be successful lawyers.

6. Bar will be a successful lawyer.

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8. If you want to be very picky, you should add a premise saying that Bar is a person.

(Notice that a new premise (4) had to be added to make the revised general premise, (5), applicable to Bar.) Argument 12b is valid, and its general premise is plainly more plausible than the general premise in Argument 12a.

So far in analyzing this argument we have considered two generalizations:

G1. All *people* who are smart and articulate and like to argue will be successful lawyers.
G2. All *lawyers* who are smart and articulate and like to argue will be successful lawyers.

We say that (G2) is a ***narrow generalization*** and that (G1) is a ***wide generalization***. This means that (G1) applies to all the things (G2) applies to and to some other things as well. (G1) applies to all smart, articulate (people) who like to argue. (G2) applies only to all lawyers who are smart and articulate and like to argue. Thus, in this situation (G1) is a comparatively wide generalization and (G2) a narrow one.

We can now say succinctly what is wrong with our first reconstruction of the argument in Example 12: it made use of too wide a generalization; a narrower generalization would be better. (The same thing was true of the argument about Tweety.) Generally speaking, the principle of charity pushes us toward using narrower rather than wider generalizations. Wider generalizations, since they apply to more things, run more risk of being false. So, to be charitable, a narrower generalization is better.

At times, however, there are reasons to prefer wider to narrower generalizations. Look again at the interviewer's words in stating the argument in Example 12. Notice that in stating his argument he uses the pronoun "she" to refer to Bar, indicating that Bar is a woman. We could have made use of this fact in stating the argument. Although it is unlikely, it is possible that the interviewer thinks that it is women who have these traits that become successful lawyers. So the argument could go this way.

Argument 12c

1. Bar is smart.

2. Bar is articulate.

3. Bar likes to argue.

4. Bar is a lawyer.

5. Bar is a woman.

6. All lawyers who are women and are smart and articulate and who like to argue will be successful lawyers.[9]

7. Bar will be a successful lawyer.

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9. There are a variety of ways to word this premise, all of which are equivalent. What the premise says is that all things that have the first five characteristics—being a woman, a lawyer, smart, articulate, and liking to argue—have a sixth characteristic: being a successful lawyer.

This revision also makes the argument valid. Without any context to help clarify the intentions of the author, it is difficult to determine whether Argument 12b or Argument 12c is more faithful to the author's intentions. The arguments seem to be about equally plausible, in that the general premises they contain are about equally reasonable; that is, (5) in Argument 12b is about as reasonable as (6) in Argument 12c. So, (PCI) and (PF) do not give us a basis for choosing among these alternatives.

There is, however, one consideration that makes Argument 12b the better reconstruction: it makes use of a wider generalization when there is no reason to favor the narrower generaliztion. Premise (5) in Argument 12b applies to all lawyers, while (6) in Argument 12c is only about women. There is no particular reason to bring this restriction into consideration in this case, so it is best to make use of the more general premise. Generally, we should not introduce restrictions, limitations, or qualifications into a generalization unless there is reason to do so. We can now formulate another principle concerning the addition of implicit premises, the "generalization principle":

PG: When adding a generalization as an implicit premise in an argument, add a true wide generalization rather than a true narrow one, and add a true narrow generalization rather than a false wide one.

There is one other major decision to be made in reconstructing the argument from Example 12. The reconstructions so far considered all make it into a deductively valid argument. However, they do so by adding universal generalizations that say that all people, or all women, having certain characteristics will be successful. Now, each of those universal generalizations is almost certainly false. Surely some smart, articulate lawyers who like to argue will not make good lawyers. Some of them may not be motivated enough to succeed as lawyers; others may be ineffective in questioning witnesses; and so on. This is something any sensible person is likely to realize, at least after a little thought. So, attributing any of the arguments so far considered to the interviewer in this case violates the principle of charity for implicit premises since it makes the argument weak. It does this by adding a premise that we are not justified in believing.

In addition, anyone who gives an argument like this one most likely realizes that the considerations mentioned in support of the conclusion do not guarantee its truth. In such cases, it is best to reconstruct the argument so that it is cogent rather than valid. This can be done by replacing the universal generalization with a nonuniversal generalization.

An obvious alternative in analyzing Example 12 is to make the general premise say only that most people having the characteristics in question will be good lawyers. Thus, we could reconstruct the argument in this way:

Argument 12d

1. Bar is smart.

2. Bar is articulate.

3. Bar likes to argue.

4. Bar is a lawyer.

5. Most lawyers who are smart and articulate and who like to argue will be successful lawyers.

6. Bar will be a successful lawyer.

This argument is not valid, but it is cogent. It is not valid because it is possible for (1)–(5) to be true and (6) to be false. Bar could be one of the minority of lawyers with the traits in question who is not successful. However, (1)–(5) do provide good reason to believe (6). Moreover, the general premise added here, (5), is fairly reasonable. So, all things considered, this is a better reconstruction. Of course, context and background information could reveal that a different reconstruction was more faithful to the arguer's intentions. But lacking information to the contrary, the principle of charity suggests using Argument 12d as the reconstruction in this case, since it is the best argument of the ones available.

It may seem remarkable that the reconstruction of such a simple argument involves so many options and so much complexity. In ordinary thought and discussion, the generalizations behind our arguments are often left unstated. Knowing that there are so many different ways an argument can be filled out, you can see that there is a great deal of room for misunderstanding. For example, one can imagine someone assuming that the generalization behind the original statement of this argument was a universal generalization and then criticizing the argument on the grounds that the universal generalization is false. Applying our method of argument analysis enables us to get beyond such simplistic criticism and formulate the argument in the best way possible.

Two mistakes people sometimes make in dealing with arguments of the sort we've been considering merit special attention. One mistake is leaving the generalization out of the argument altogether and the other is adding a generalization with a missing quantifier.

Looking at Argument 12d again, we might think that it would be permissible to omit the generalization from the argument, thus reconstructing it this way:

Argument 12e

1. Bar is smart.

2. Bar is articulate.

3. Bar likes to argue.

4. Bar is a lawyer.

5. Bar will be a successful lawyer.

This argument might seem to be cogent. You might think that (1)–(4) of this argument are good reasons to believe (5). However, Argument 12e is an incomplete argument. Our policy is to include background information in reconstructions to make them well-formed. Argument 12e is not well-formed since it lacks a linking premise

connecting the facts stated in the premises to the conclusion. Often people omit linking premises from their reconstructions.

A second problem in reconstructions of arguments like these is that people sometimes state generalizations without using any quantifier. We will say that such sentences have a ***missing quantifier***. Filling in the quantifier in these cases is much like adding an implicit premise to an argument. Suppose someone offers the following argument:

Example 13

We can safely conclude that Michael is tall. He's a professional basketball player, and professional basketball players are tall.

When you reconstruct this argument, you have to decide exactly how to state the generalization. If you just leave it as it is stated in the passage, you get the following:

Argument 13

1. Professional basketball players are tall.

2. Michael is a professional basketball player.

3. Michael is tall.

Premise (1) is a generalization with a missing quantifier. You must complete this sentence before you proceed with your evaluation. You just can't say whether Argument 13 is valid or cogent since you can't assign any specific pattern to it. You can only evaluate it after you have added a quantifier to premise (1).

In this case, you could make the generalization universal, and thereby make the argument deductively valid. The resulting argument would be

Argument 13a

1. All professional basketball players are tall.

2. Michael is a professional basketball player.

3. Michael is tall.

However, premise (1) of Argument 13a is false, so it is probably best to add a quantifier such as "Nearly all" to the generalization. The resulting argument is

Argument 13b

1. Nearly all professional basketball players are tall.

2. Michael is a professional basketball player.

3. Michael is tall.

This argument is cogent and the generalization is true. Moreover, the fact that the original argument said "We can safely conclude" rather than "We can definitely (or surely) conclude" suggests that this reconstruction is faithful to the author's intentions.

The need for the quantifier may seem obvious when the argument is in standard form, but people find it easy to use ordinary English generalizations without quantifiers. Perhaps people unconsciously supply a quantifier to complete the sentence. In any case, when reconstructing arguments it is crucial that you complete all generalizations with missing quantifiers.

EXERCISES AND STUDY QUESTIONS

Each of the following simple passages contains an incomplete argument. Reconstruct the argument and add an implicit generalization to make the argument well-formed. State the pattern of the resulting argument and state whether it is valid or cogent. Briefly explain the reason for your selection of an implicit generalization.

*1. She's a college professor. So, she must have graduated from college.

 2. I think he has a high salary. Look at the expensive car he owns.

*3. He must be in good physical shape. He won the Olympic decathlon.

 4. She's a politician, so she probably went to law school.

*5. He's a bachelor. It follows that he's not married.

 6. He's a bachelor. So, I'll bet his house is messy.

 7. He never socializes and he works all the time. I think he's a bachelor.

 8. E. Z. Marker is too lenient a grader. She gave an A to every one of the 150 students in her class.

 9. It says on the syllabus that there will be a test tomorrow. So there will be a test tomorrow.

10. I don't think that the Lazyboys will win the championship. They are very talented, but they just aren't as well-motivated as the other teams.

11. Hasno Vices will live to a ripe old age. He eats well, he doesn't drink or smoke, and his parents lived to an old age.

12. You won't like that movie. It's violent.

VI. CHEAP VALIDITY

There is an odd fact about adding implicit premises that can lead to confusion when reconstructing very bad arguments. It is *always* possible to add a premise to make an argument valid. This is true no matter what the explicit premises and the conclusion are or whether there is any interesting connection between them.

Suppose that you have an argument of the form

*P*1.
*P*2.
C.

Suppose also that, as far as you can tell, (P1) and (P2) have nothing to do with (C). The argument is hopelessly bad. However, there is a premise you can add to make the argument valid, no matter what (P1), (P2), and (C) happen to be:

If *P*1 and *P*2, then *C*.

Any argument with the following pattern is thus deductively valid.

*P*1.
*P*2.
If *P*1 and *P*2, then *C*.
C.

No matter how many premises there are, you can always add a premise like this one to make any ridiculous argument valid. All you have to do is add a conditional saying that if the premises are true, then the conclusion is true. To do this is to resort to **cheap validity**.

We can apply this recipe for cheap validity in cases in which the result seems silly. Consider this argument:

Example 14

A desperate fan of the Boston Red Sox might argue, "It rained yesterday. Therefore, the Boston Red Sox will win the World Series in 200"

This is plainly ridiculous. Reconstructed, the argument is

Argument 14

1. It rained yesterday.

2. The Boston Red Sox will win the World Series in 2005.

This argument doesn't seem to merit consideration since (1) has nothing to do with (2). One could simply dismiss the argument as invalid. However, following our method suggests adding an implicit premise to make the argument valid. This yields

Argument 14a

1. It rained yesterday.

2. If it rained yesterday, then the Boston Red Sox will win the World Series in 2005.

3. The Boston Red Sox will win the World Series in 2005.

This argument is valid, but it hardly seems any better than its predecessor. Premise (2) of this revision is completely unjustified. So, this revised argument is very weak.

Following our method of argument analysis thus leads us to add absurd premises to make arguments valid. This may seem like a waste of time. However, it isn't so difficult to write out this one revision of the argument and then explain its defect. The fact that you can always add implicit premises to make an argument valid does not somehow make bad arguments into good ones. It does sometimes make an invalid argument into a valid but weak one, but the flaw in the argument just shifts to a different place. In general, it is a good idea to make the flaws in arguments as obvious as possible by including a premise stating the relevant point. Sometimes you may have to refute silly premises like this one, but if you do not write the premise out, you may reject some arguments that are better than they initially appeared.

EXERCISES AND STUDY QUESTIONS

*1. What's wrong with the following claim: "It's a bad idea to use cheap validity when reconstructing an argument. You could turn a terrible argument into a strong one"?

2. What are the missing premises in the argument suggested by the following cartoon?

"My parents taught me that life is full of surprises, so I've always preferred to stay indoors."

VII. SUMMARY

A key part of reconstructing arguments is careful and sympathetic reading of the text in an effort to understand what the author is getting at. This helps you to attain the best understanding of the issues you are looking into. The fundamental principle governing argument reconstruction is the principle of charity:

> **PC:**   When reconstructing an argument, try to formulate a reconstruction that is well-formed, has reasonable premises, and is undefeated. In other words, make the argument as strong as possible.

The following principles govern the addition of implicit premises to arguments.

> **PF:**   Add implicit premises that are consistent with the intentions of the author of the argument.

> **PCI:**   Add implicit premises that are reasonable to accept rather than implicit premises that are obviously false.

> **PG:**   When adding a generalization as an implicit premise in an argument, add a true wide generalization rather than a true narrow one, and add a true narrow generalization rather than a false wide one.

The following is a summary of the steps of argument analysis as described so far. This procedure will be modified and expanded later in the text.

The Steps of Argument Analysis

1. **Decide if there is an argument.**
   Read the letter, editorial, or essay under consideration, carefully focusing on trying to determine its main point. If the author makes an effort to provide rational support for some claim, then the material probably does contain an argument. If so, go on to step 2. If not, stop; there is no argument to analyze.
2. **Reconstruct the argument.**
   a. Identify the conclusion. Look for key words indicating a conclusion. Use your general understanding of the material to help identify the conclusion.
   b. Identify the explicit premises. Look for key words indicating a premise. Use your general understanding of the material to help identify premises. Any statements that support the conclusion, or might be thought by the author to support the conclusion, are premises.
   c. Check the argument to see if it is well-formed. If it is well-formed, then go on to step 3. If it is not well-formed, then go to step 2d.

> d. Add implicit premises as necessary to make the argument well-formed. The implicit premises added to the argument should be reasonable to accept, as required by (PCI); sufficiently general, as required by (PG); and faithful to the intentions of the author, as required by (PF).
> e. In some cases, the principles governing implicit premises will conflict. Your own purposes in reconstructing the argument will often help to determine how to proceed. In discussing or writing about an argument, it is possible to consider several different reconstructions and explain the merits and faults of each.

CHECKLIST OF KEY TERMS

- descriptive writing
- argumentative writing
- rhetorical writing
- conclusion indicator
- explicit conclusion
- implicit conclusion
- premise indicator
- implicit premise
- explicit premise
- specific statement
- generalizations
- quantifier
- universal generalization
- nonuniversal generalization
- linking premise
- narrow generalization
- wide generalization
- missing quantifier
- cheap validity

CHAPTER EXERCISES

1. Reconstruct the arguments in the following short passages. State the patterns of the reconstructed arguments.
   a. I realize that people usually say that the United States is a democracy, but the fact is that the United States is not really a democracy. The reason is that in a democracy everyone has a real say about what the government does.

b. As a college student you can't tell what you'll be interested in twenty years from now. So my advice is don't overspecialize in college.

c. Everything that happens has a cause. This includes your own behavior. Therefore, you don't have free will.

d. I'm pretty sure that Robinson has taken some math classes. After all, he's a physics major.

e. You ask whether the universe was created by an intelligent being. I can tell you this. Everything that is extremely complex was created by an intelligent being. And the universe is extremely complex.

f. Students should get a liberal education since they don't know what particular career they will want to follow when they get out of school.

g. This burger comes from Burger Palace. It will be greasy and overcooked.

h. Either the Mets will win or the Dodgers will win the National League championship this season. But the Dodgers won't win since their best hitter is out for the season.

i. "RightWriter is not the same as a human editor. It does not understand the actual meanings of words or the exercise of literary license. It does not have a human ear to judge how writing sounds. Of course, RightWriter will not argue with you like a human editor. It never gets busy or bored."[10] (RightWriter is a computer program that checks the grammar and writing style of written documents.)

j. We shouldn't require children to get vaccinated since some people die as a result of reactions to vaccinations.

k. "One success skill is the ability to communicate—to read, to write and to speak in a coherent manner. Writing and speaking are just a reflection of thought; therefore, people who can't write or speak coherently, can't think coherently."[11]

2. Explain how the principles that govern the selection of implicit premises can be in conflict. How do you decide what to do in cases of conflict?

3. Look at the letters to the editor in a newspaper. Distinguish the letters that contain arguments from those that don't. Try a few different newspapers or magazines to see if any source contains arguments more regularly than any other.

4. Find several incomplete arguments in the material you have collected so far. Reconstruct those arguments, paying special attention to the addition of implicit premises.

5. Review the argumentative essays and letters that you have collected so far. Pick the half-dozen arguments that strike you as the most interesting and effective. Reconstruct those arguments.

6. Reconstruct the arguments in the argumentative paragraphs from questions 1 and 2.

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10. *RightWriter User's Manual* (Que Software, 1990), pp. 1–3.

11. Charley Reese, "Individual Attributes, Not race, Matter," *Rochester Democrat and Chronicle*, June 26, 1997, p. 14A.

NSWERS TO SELECTED EXERCISES

1a. Mainly descriptive, with some arguments suggested
 b. Rhetorical
 c. Descriptive or rhetorical
 e. Argumentative

1a. 1. If gas prices go up, then people will drive less.
    2. Gas prices will go up.
    3. People will drive less.

    1. If *P* then *Q*.
    2. *P*.
    3. *Q*.

    Valid
 b. 1. Jones worked hard in that course.
    2. Everyone who worked hard in that course should get an A in that course.
    3. Jones should get an A in that course.

    1. *x* is an *A*.
    2. All *A*s are *B*s.
    3. *x* is a *B*.

    Valid
 c. 1. If you study hard, then you will get an A.
    2. You won't study hard.
    3. You won't get an A.

    1. If *P* then *Q*.
    2. ~*P*.
    3. ~*Q*.

    Ill-formed
2a. 1. Smith's argument is valid.
    2. All valid arguments have true conclusions.
    3. Smith's argument has a true conclusion.

    1. *x* is an *A*.
    2. All *A*s are *B*s.
    3. *x* is a *B*.

    Valid

 c. 1. Most books have some pictures.
    2. The telephone book is a book.
    3. The telephone book has some pictures.

    1. Most *A*s are *B*s.
    2. *x* is an *A*.
    3. *x* is a *B*.

    Cogent
3a. 1. Capital punishment might lead to the death of innocent people.
    2. We shouldn't do anything that might lead to the death of innocent people.
    3. We shouldn't do (or use) capital punishment.

    1. *x* is an *A*.

2. All *A*s are *B*s.
3. *x* is a *B*.

x = capital punishment; *A* = things that might lead to the death of innocent people; *B* = things we should not do

Valid. Notice that the conclusion is not "I oppose capital punishment."

1a. All baseballs are round.
 c. All people who are students are registered at some school.
 f. All baseball games are things whose winner cannot be predicted.
 g. Some baseball games are things whose winner can be predicted.
 h. All geniuses are people who can predict the winners of all baseball games.

1. Add: You can't stand the heat.
    1. If *P* then *Q*.
    2. *P*.
    3. *Q*.
3. Add: My pet bird is an overweight house sparrow.
    1. Most *A*s are *B*s.
    2. *x* is an *A*.
    3. *x* is a *B*.
4. Add: Rover does not have wings.
    1. All *A*s are *B*s.
    2. *x* is not a *B*.
    3. *x* is not an *A*.

1. 1. She is a college professor.
    2. Almost all college professors have graduated from college.
    3. She graduated from college.

    Cogent

3. 1. He won the Olympic decathlon.
    2. All winners of the Olympic decathlon are in good physical shape.
    3. He's in good physical shape.

    Valid

5. 1. He's a bachelor.
    2. All bachelors are not married.
    3. He's not married.

    Valid

1. By using cheap validity you will make an argument valid, but the premise you add will not be reasonable. So, the argument will still not be a good one. It will be weak, even if it is well-formed.

Details of Argument Reconstruction

When you are reconstructing an argument, it is best to begin by writing out a reconstruction whose premises and conclusion closely match the words of the original informal presentation of the argument. You then revise and improve this preliminary reconstruction until you have a clear and concise version of the argument that states the argument in the best possible way. This process is called *fine-tuning a reconstruction*.

Three specific problems frequently arise in reconstructing arguments. Failing to deal adequately with these problems is often the difference between coming up with a reconstruction that is only a rough approximation of the best argument to extract from a passage and coming up with a reconstruction that reflects the best argument in that passage. The three problems are as follows: improperly worded reconstructions, reconstructions with missing premises, and, reconstructions with unnecessary premises included. In this chapter we will describe these problems and illustrate their consequences. We will then describe some additional essential steps of argument analysis that reduce the chances of making these mistakes.

I. IMPROPER WORDING

Details about word choice can make a big difference in reconstructing arguments. To understand why, let's look at an example in which there is a harmless shift in wording and then at an example in which a slight shift in wording is crucial.

Example 1

A company announces a new policy regarding health insurance for its employees: married employees are entitled one benefit plan (Plan M) and employees who are not married are entitled to a different plan (Plan S). Upon hearing about this policy, one of the employees, Hasno Spouse, reasons as follows: "All employees who are not married get Plan S. I am a single employee. Therefore, I get Plan S."

This seems to be a good argument. How should it be reconstructed? If you stick very close to Hasno's words, you come up with this reconstruction:

Argument 1

1. All unmarried employees get Plan S.

2. I (Hasno Spouse) am a single employee.

3. I (Hasno Spouse) get Plan S.

If (1) and (2) are true, then, it seems that (3) must be true as well. Surely (1) and (2) do provide excellent reason to believe (3). Hasno is quite reasonable in believing (3) provided his belief in (1) and (2) are reasonable. Still, there is a question about whether the generalization in (1) of Argument 1 applies to Hasno as he is described in (2). Notice that (1) refers to "unmarried employees," whereas (2) says that Hasno is a "single employee." There is a shift from "unmarried" to "single."

If you think that "single" and "unmarried" mean the same and therefore the second premise really does say that the generalization in the first premise applies in this case, you would conclude that Argument 1 is valid. Recall, however, the revised definition of validity. There we said that arguments that depend on the assumption that two different terms are the same in meaning are not valid. Those arguments need a linking premise to connect the two terms.

In the case of the argument about Hasno Spouse, we can better reconstruct the argument this way:

Argument 1a

1. All employees who are not married get Plan S.

2. I (Hasno Spouse) am an employee who is not married.

3. I (Hasno Spouse) get Plan S.

(One could equally well have used the word "single" in both premises.) There is no doubt that this follows a valid pattern and that the generalization in (1) applies to Hasno. The pattern in this case is

1. All As are Bs.

2. x is an A.

3. x is a B.

In Example 1 the shift in wording is relatively harmless, and nothing would go seriously amiss if you accepted Argument 1 instead of switching to Argument 1a. However, since (2) in Argument 1a surely expresses what was meant and Argument 1a explicitly follows a valid argument pattern, it is best to rewrite the argument in this revised form.

In general, it is a good idea to make the wording exactly the same in the two premises so that the argument definitely follows a valid pattern because subtle changes in wording can significantly affect the merits of an argument. For example, consider the following:

Example 2

Knowing that there is considerable scientific evidence that cigarette smoking causes lung cancer, you might argue as follows: "Anyone who is a heavy smoker of cigarettes is likely to get lung cancer. My Uncle Harry has smoked regularly for forty years. So he is likely to get lung cancer."

It is fairly easy to come up with a preliminary reconstruction of this argument, since two premises and a conclusion are stated clearly.

Argument 2

1. Uncle Harry smoked cigarettes regularly for forty years.

2. Anyone who smokes heavily for forty years is likely to get lung cancer.

3. Uncle Harry is likely to get lung cancer.

If you look carefully at premise (2) of this argument, you'll notice that it speaks of smoking "heavily." But premise (1) says that Uncle Harry smoked "regularly." Presumably, there is a difference between smoking heavily and smoking regularly. People who smoke several cigarettes every day may be regular smokers but they are not heavy smokers. People who smoke a lot of cigarettes every day but smoke varying numbers daily are heavy smokers but not regular smokers. Thus, Argument 2 is ill-formed.

There are two ways to revise Argument 2 to make it valid. You could change premise (1) to make the generalization in it applicable to Uncle Harry or you could change premise (2) to make it apply to (1) as currently formulated. The options are thus

Argument 2a

1. Uncle Harry smoked regularly for forty years and did not get lung cancer.

2. Anyone who smoked regularly for forty years is likely to get lung cancer.

3. Uncle Harry is likely to get lung cancer.

Argument 2b

1. Uncle Harry smoked heavily for forty years and did not get lung cancer.

2. Anyone who smoked heavily for forty years is likely to get lung cancer.

3. Uncle Harry is likely to get lung cancer.

When you evaluate these arguments, you'll note that, unlike Argument 2, each of them is valid. But each has a premise that is changed from the original argument, and it may be that the revised premises are less reasonable than the ones they replaced. It may be that your evidence about Uncle Harry supports that he smoked regularly but not heavily. The evidence available about the effects of smoking suggests that heavy smoking is more dangerous than regular light smoking, so premise (2) in Argument 2b is better supported than (2) in Argument 2a.

We need not to come to a definitive evaluation of Arguments 2a and 2b to realize how important it is to use the right words in reconstructing arguments. Slight shifts in wording can seriously affect the point and the merits of an argument. While in Example 1 the shift from the word "unmarried" to "single" is not crucial, the shift from "heavy" to "regular" in Example 2 definitely is. To avoid dealing improperly with the arguments in which these shifts are important, it is best to adopt the policy of using uniform wording throughout arguments whenever possible. Usually, that will lead to well-formed reconstructions. Of course, the resulting arguments may still be weak, but at least they are well-formed. The best way to avoid improper wording in arguments is to make an argument conform to one of the standard patterns of argument.

A large percentage of the arguments we confront follow one of these basic patterns, and often one or more of the general principles behind the argument is left unstated. Thus, the logic of ordinary reasoning tends to be simple. You need not learn an enormous number of complex patterns of argument to deal with most of the reasoning you will encounter. If you come across an argument that doesn't fit one of the common patterns, work hard at understanding just what the argument says. Often, you will be able to reword it to make it fit one of these patterns.

There are, of course, many common patterns of argument that we have not discussed. There are even more not so common patterns of argument. However, a great many of the arguments you encounter will conform to one of the patterns mentioned or some combination of them. Sometimes you will find a complex argument containing two subarguments, each of which conforms to one of these patterns.

The best way to identify patterns of argument is to look for words, phrases, or whole sentences that are repeated in an argument. Once you find these, you can often easily identify the pattern of the argument. Although this process may be difficult at first, it becomes much easier with practice. Using the technique of drawing circles and boxes around recurring elements in an argument can help you to spot cases in which there are slight shifts in wording.

EXERCISES AND STUDY QUESTIONS

Each of the following short paragraphs contains a simple argument. Reconstruct the arguments paying close attention to the wording of your premises and conclusions. State the pattern of each argument.

*1. All parents should read to their children frequently. Bill is a father. It follows that he should read to his children often.

2. Elected officials are not permitted to get large fees for giving speeches. Jones is the mayor. So he is not allowed to charge a lot for giving a speech.

*3. All new mountain bikes have fat tires. Greg has a new bike. So it has fat tires.

4. Most wealthy people own yachts. Donald is a multimillionaire. Therefore he owns a yacht.

5. Almost all the male news reporters on TV are good-looking guys with blow-dried hair. Nose Nothing is a reporter for Channel 10.

II. MISSING PREMISES

A second common error made in reconstructing arguments is to leave out a premise that is necessary to make the argument well-formed.

Example 3

Some advocates of gun control propose that there be laws requiring all owners of guns (or perhaps guns of specific kinds) to register their guns with the police. Opponents of gun control object to this proposal on a variety of grounds. One argument that is sometimes offered holds that gun registration laws are unconstitutional on the grounds that they violate the Second Amendment's prohibition on laws infringing on the right to keep and bear arms.

The Second Amendment to the Constitution reads as follows: "A well regulated militia, being necessary to the security of a free state, the right of the people to keep and bear arms shall not be infringed." There is considerable controversy about the proper interpretation of the Constitution on this topic, but let us bypass that controversy for the moment.

One might reconstruct the argument against gun registration laws in a very simple manner, along the following lines:

Argument 3

1. All laws infringing on the right of people to own guns are unconstitutional.

2. All gun registration laws are unconstitutional.

Discussions of arguments such as this one often focus on difficult issues concerning the interpretation of the Constitution. Some say that premise (1) is false because it overlooks the first clause in the amendment, which refers the need for a militia (a citizen army). These critics contend that the point of the amendment is to prohibit laws restricting the formation and arming of the militia. They claim that this has no bearing on the right of a private citizen to own a gun except as part of the militia. Defenders of premise (1) take the amendment more at face value, arguing that it prohibits all restrictions on gun ownership.[1]

If we apply our method of argument analysis to Argument 3, the first observation to make is that the argument is, as stated, ill-formed. There is no premise linking the generalization in (1) to the gun registration laws mentioned in (2). To make the argument valid, one must add a linking premise such as the one in the following argument:

Argument 3a

1. All laws infringing on the right of people to own guns are unconstitutional.

2. All gun registration laws infringe upon the right of people to own guns.

3. All gun registration laws are unconstitutional.

With this premise added, the argument is valid. Its pattern is

1. All As are Bs.

2. All Cs are As.

3. All Cs are Bs.

At this point, our method calls for the evaluation of the premises. The crucial point is that it is rather easy to evaluate this argument without getting into the complex constitutional question raised by (1). This is because (2) is a highly questionable premise. Merely requiring that people register their guns is not infringing on their right to *own* a gun. To infringe on the right to own a gun, one would have to in some way limit who can own a gun. Mere registration does not do that.[2] Thus, this argument fails at this premise, regardless of the truth value of (1).

This example illustrates how failure to include a premise in a reconstruction can seriously affect your subsequent evaluation of that argument. Leaving (2) out of this reconstruction might cause you to focus only on (1) in your evaluation, and that is the more difficult premise to criticize. If you decide that (1) is true and omit (2), you

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1. Of course, few people really accept the idea that there can be no laws at all against gun ownership. Nearly everyone agrees that young children, convicted criminals, and certain others should not be allowed to own guns.

2. Some people think that registration would inevitably be accompanied by restrictions.

would then accept this argument. However, it is a weak argument because (2) is unreasonable. It is not uncommon, especially in complex arguments, for a person to omit a crucial premise. However, as in this case, that missing premise may be highly questionable, and the evaluation of the argument may go seriously amiss if that premise is not discussed.

Another problem can arise from failing to include all premises in a reconstruction. Suppose you are reconstructing an argument from a long essay and that the author has stated and explained a five reasons that together support some conclusion. It might be that the five reasons together are strong reasons to accept the conclusion, but that no four of them by themselves are very good reasons. In such a case, leaving out one of the premises would seriously alter your evaluation of the argument. You could by this omission make a good argument look bad. (Example 6, later in this chapter, shows how omitting a premise can weaken an argument.)

Leaving a premise out of a reconstruction can lead to serious misevaluations of arguments. When you turn to the evaluation of the premises themselves, you will fail to evaluate the premise you have omitted in your reconstruction. If the other premises are justified, but this missing premise is not justified, then you will mistakenly conclude that the argument is strong. It is your omission of this premise that leads to your mistaken evaluation. Omitting a premise can also lead to rejecting arguments that are good ones. The principles of charity and faithfulness require include all an author's reasons as premises for a conclusion, not just some of them. The combination of reasons may be far stronger than any subset of them is.

Making an argument conform to a standard pattern is a good way to avoid omitting premises. As a further aid in dealing with the problem of missing premises we will add a new guideline to our procedure for reconstructing arguments. Each line in a reconstructed argument must fit one of the following three categories:

1. A line can be an explicit premise of an argument.

2. A line can be an implicit premise of an argument.

3. A line can (allegedly) follow from some previous lines of the argument.

In fine-tuning our reconstructions, we should state which category each line of the reconstruction falls into, and if it is in category (3), we should state which previous lines it (allegedly) follows from. This step of argument reconstruction is known as ***stating a justification*** for each line in the argument.

We have already discussed implicit and explicit premises. For each premise, simply write "(EP)" after it if it is an explicit premise or "(IP)" if it is an implicit premise. At times it will be difficult to decide whether a premise is implicit or explicit. For example, if a person states a premise in an obscure or indirect way, in your reconstruction you will revise the words significantly. Should you call the resulting premise explicit or implicit? The best thing to do in such a case is to indicate the uncertainty. You might write "(EP?)" to indicate that the premise may be an explicit premise. This uncertainty, however, will not interfere with your evaluation of the argument.

The conclusion of an argument will always (allegedly) follow from some previous lines of the argument. Sometimes an argument will have a slightly more complex structure than the examples we have looked at so far.

Example 4

Hardly Works is thinking about the consequences of the fact that she isn't doing the work for her courses. She reasons: "I didn't study for the test. If I didn't study for the test, then I won't pass it. If I don't pass the test, then I won't pass the course. If I don't pass the course, then I won't graduate on time. Therefore, I won't graduate on time."

A preliminary reconstruction of this argument is as follows:

Argument 4

1. I didn't study for the test.

2. If I didn't study for the test, then I won't pass the test.

3. If I won't pass the test, then I won't pass the course.

4. If I won't pass the course, then I won't graduate on time.

5. I won't graduate on time.

To understand the structure or pattern of this argument, notice that (1) and (2) combine to establish that

I won't pass the test.

This sentence serves as an ***intermediate conclusion*** in the argument. It follows from some previous steps and is used to justify subsequent steps. This intermediate conclusion then combines with (3) to yield another intermediate conclusion:

I won't pass the course.

This intermediate conclusion, in turn, combines with (4) to establish (5). A complete reconstruction with each line labeled looks like this:

Argument 4a

1. I didn't study for the test. (EP)

2. If I didn't study for the test, then I won't pass the test. (EP)

3. Therefore, I won't pass the test. (1), (2)

4. If I won't pass the test, then I won't pass the course. (EP)

5. I won't pass the course. (3), (4)

6. If I won't pass the course, then I won't graduate on time. (EP)

7. I won't graduate on time. (5), (6)

Argument 4a is a **compound argument** since it consists in several subarguments. It follows this pattern:

1. *P.*

2. If *P* then *Q.*

3. Therefore *Q.*

4. If *Q* then *R.*

5. Therefore *R.*

6. If *R* then *S.*

7. *S.*

Including justifications for each step in an argument can help ensure that you have included all the premises that you need. If you check each step carefully, to be sure that it really does follow from the previous steps, you may realize that you need a premise that you hadn't noticed the need for previously.

Including justifications can also help you to notice the presence of premises that are not needed. If an argument contains a premise that is not used to justify any later line of the argument, then that premise is not needed.

EXERCISES AND STUDY QUESTIONS

Arguments 1–8 are ill-formed. Add a premise (or premises) or reword a premise to make them conform to one of the patterns of well-formed arguments. State the pattern of argument in each case.

*1. 1. If Jones is a student, then Jones studies hard.
2. Jones studies hard.

2. 1. All students are eligible to vote.
2. Smith is not a student.

*3. 1. Most famous actors are wealthy.
2. Clint Eastwood is famous.
3. Clint Eastwood is wealthy.

4. 1. You can't judge a book by its cover.
2. You can't judge *Reason and Argument* by its cover.

*5. 1. If you watch the movie, then you'll be up very late.
2. If you don't get enough sleep, you'll be grouchy tomorrow.
3. If you watch the movie, then you'll be grouchy tomorrow.

  6. **1.** Everybody likes to do well in sports.
      2. Jones will be happy if she does well at tennis.
  7. **1.** Jim Fixx had a heart attack while jogging.
      2. Jogging isn't good for you.
  8. **1.** Houseplants need to be watered every day.
      2. Your cactus needs to be watered every day.

Arguments 9–12 have their explicit premises labeled, but the justifications for the intermediate and final conclusions are omitted. Add those justifications.

  *9. **1.** All monkeys are mammals. (EP)
      2. All mammals eat meat. (EP)
      3. All monkeys eat meat.
 10. **1.** If it snows and you drive too fast, then you will get into an accident. (EP)
      2. If the barometer falls, then it will snow. (EP)
      3. The barometer will fall. (EP)
      4. It will snow.
      5. You will drive too fast. (EP)
      6. You will get into an accident.
*11. **1.** Either the American League team will win or the National League team will win. (EP)
      2. If the Yankees play, then the American League team will not win. (EP)
      3. The Yankees will play. (EP)
      4. The American League team will not win.
      5. The National League team will win.
 12. **1.** If an argument is strong, then it has justified premises. (EP)
      2. Argument X is strong. (EP)
      3. If Argument X has justified premises, then Jones has made a serious mistake. (EP)
      4. Argument X has justified premises.
      5. Jones has made a serious mistake.

Arguments 13–15 are valid and contain one intermediate conclusion. State justifications for each line of each argument. If a line is not a conclusion (intermediate or final), label it as "(EP)."

*13. **1.** All members of the debate team have fun.
      2. Anyone who works too hard won't have any fun.
      3. Jones is a member of the debate team.
      4. Jones has fun.
      5. Jones does not work too hard.
 14. **1.** Either the president is at the White House or he is on vacation.
      2. The president is not working.
      3. If the president is at the White House, then he is working.
      4. The president is not at the White House.
      5. The president is on vacation.

15. **1.** All lawyers know how to argue.
2. All mountain climbers have lots of energy.
3. Anyone who knows how to argue and has lots of energy is able to get a good deal on a new car.
4. Alan is a mountain climber.
5. Alan is a lawyer.
6. Alan knows how to argue.
7. Alan has lots of energy.
8. Alan is able to get a good deal on a new car.

III. INCLUDING UNNECESSARY PREMISES

A third problem that can occur in reconstructing arguments is including unnecessary premises. An ***unnecessary premise*** is a premise that is not needed to justify the conclusion. You might think that if you include all the author's reasons supporting some conclusion and add some other premises as well, you can only make the argument better. However, as the following example illustrates, including too many premises in the reconstruction of an argument can cause faulty evaluations.

Example 5

Senator Hawk and Senator Dove are debating the merits of a proposed new weapons system, the BX fighter plane. Senator Dove has argued against the system, claiming that he is an expert on these matters as a result of his experience as a pilot in combat during a previous war. Senator Hawk responds as follows: "Senator Dove is an experienced combat pilot, but his experience came in an earlier war. Times have changed and the BX is absolutely essential to our national defense. Our other planes are not adequate to avoid our enemy's detection systems and to escape their antiaircraft systems."

When reconstructing this argument you are likely to include premises stating Senator Hawk's claims about the defects of our current planes and the advantages of the BX. However, if you follow his words closely and include everything he said as premises, then you might begin your reconstruction as follows:

Argument 5

1. Senator Dove is an experienced combat pilot.

2. Senator Dove opposes the BX plane.

3. Our current planes are not able to avoid detection by enemy antiaircraft systems.

4. The BX can avoid detection by enemy antiaircraft systems.

We will not concern ourselves with the rest of Argument 5.

Suppose that when it comes time to evaluate this argument, you consider all the facts you know to be relevant to the matter. As it happens, you've just read an authoritative article conclusively establishing that Senator Dove has exaggerated his record in the war. In fact, he was a baggage handler at an airport during the war. He was never a pilot at all and was never in combat of any kind. On this basis, you reject premise (1) and conclude that Senator Hawk's argument is unsound.

You've rejected Argument 5 on the basis of the falsity of premise (1). However, the fact that Senator Dove does not have the background he claims to have does not weaken Senator Hawk's argument. It would be a mistake to reject Hawk's argument for the BX missile because Senator Dove distorted his war record. The sentence stating that Dove is an experienced pilot isn't part of Hawk's argument for the BX missile.

This example illustrates an important fact about argumentative writing. When people write about a controversial topic, they often make concessions to the opposition. They say that their opponents are sincere, intelligent, or well-meaning. Perhaps they really mean these things, but they may also say them just to catch the opposition off guard. It's a way to soften up opponents for the attack that is about to come. These remarks are not part of the author's reasons for the conclusion. They are not evidence that the conclusion is true, and thus they don't belong in the reconstructed argument. By including them in your reconstruction, you can end up debating these points that are not strictly relevant to the argument. You might reject a good argument because its reconstruction contains unnecessary premise that happens to be false.

Unnecessary premises are not limited to kind words for the opposition. Sometimes people include factual claims that are not relevant to their conclusions. Furthermore, in longer essays people often discuss a variety of points and only some of the information presented is part of the argument for a specific conclusion. The other points may be part of an argument for a different conclusion, or they may not be part of any argument. They may simply be part of a descriptive section of the essay, for example.

The presence of unnecessary premises in an argument can divert your attention from what really matters in the argument to issues that are irrelevant to it; at best, you will waste your time on these irrelevancies; at worst, you will reject what really is a good argument on the basis of the falsity of an unnecessary premise.

Stating a justification for each line in an argument makes it easy to identify unnecessary premises. After completing a reconstruction and writing the justification for each line, check to see if every line is used to justify the conclusion. A premise can justify the conclusion either directly or indirectly. A premise offers ***direct justification*** for a conclusion if it appears in the list of steps justifying the conclusion. For example, in Argument 4a, premises (5) and (6) directly justify the conclusion of the argument. A premise offers ***indirect justification*** for a conclusion when it justifies some other premise that itself either directly or indirectly justifies the conclusion. For exam-

ple, in Argument 4a, premises (1) and (2) do not directly justify the conclusion, but they do justify (3), which in turn justifies (5) which in turn justifies the conclusion. So the conclusion of the argument does depend on (1) and (2), and they are not unnecessary premises.

Whenever you find an unnecessary premise in an argument, you must revise the argument in one of two ways. One way is simply to omit the unnecessary premise, as we did in Example 5. The other way is to revise the argument so that the previously unnecessary premise is used in the argument. This second possibility arises because you may have failed to make use of some premise that really was important. For example, consider this argument about whether City Council should pass a law banning smoking on elevators in public buildings. In thinking about this example, focus only on the issue concerning the inclusion of unnecessary premises.

Example 6

City Council is discussing a proposed law banning smoking on elevators in public buildings. One member of the Council, Klee Nair, argues in favor of the ban. He says: "Smoking on elevators is harmful to others. Moreover, most people support the ban. If most people support the law banning smoking on elevators, then we should follow the will of the people and pass the law."

In our preliminary reconstruction of Nair's argument, we assume that the unstated conclusion is that the proposed law should be passed.

Argument 6

1. Smoking on elevators is harmful to others (i.e., the nonsmokers on the elevator).

2. Most people support a ban on smoking on elevators.

3. If most people support a ban on smoking on elevators, then we (City Council) should pass a law banning smoking on elevators.

4. We (City Council) should pass a law banning smoking on elevators.[3]

Notice that (4) follows from (2) and (3) alone. In this argument, (1) is not needed to derive the conclusion. When the justifications are added, the argument looks like this:

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3. In this reconstruction the line about following the will of the people is omitted. A more complete reconstruction would make use of it.

Argument 6a

1. Smoking on elevators is harmful to others (i.e., the nonsmokers on the elevator). (EP)

2. Most people support a ban on smoking on elevators. (EP)

3. If most people support a ban on smoking on elevators, then City Council should pass a law banning smoking on elevators. (EP)

4. City Council should pass a law banning smoking on elevators. (2), (3)

The pattern of argument here is

1. *P.*

2. *Q.*

3. If *Q* then *R.*

4. *R.*

Notice that *P*, the first premise, does recur in the argument.

Since (1) is not used to justify a later line in Argument 6a, following the rule for omitting unnecessary premises, we would drop (1) from the argument. This would leave the simpler argument

Argument 6b

1. Most people support a ban on smoking on elevators. (EP)

2. If most people support a ban on smoking on elevators, then City Council should pass a law banning smoking on elevators. (EP)

3. City Council should pass a law banning smoking on elevators. (1), (2)

This is a deductively valid argument following the pattern affirming the antecedent. Evaluation of it would properly focus on premise (1), whether majority opinion on this topic really does support the ban, and on (2), whether City Council should follow public opinion on this issue. This isn't a bad reconstruction of Nair's argument. However, he did mention the fact that smoking is harmful to others and that does seem to be a fact that City Council should take into consideration. So it may weaken the argument to omit it. A better reconstruction would revise the argument to make this fact relevant to the derivation of the conclusion. A possibility is

Argument 6c

1. Smoking on elevators is harmful to others (i.e., the nonsmokers on the elevator). (EP)

2. Most people support a ban on smoking on elevators. (EP)

3. If most people support a ban on smoking on elevators and smoking on elevators is harmful to others, then City Council should pass a law banning smoking on elevators. (EP)

4. City Council should pass a law banning smoking on elevators. (1), (2), (3)

Premise (1) is used in Argument 6c because it is needed to derive (4). The conditional, (3), has a two-part antecedent, and (1) and (2) each assert that one of the two parts is true. The form of this argument is

1. *P.*

2. *Q.*

3. If *P* and *Q*, then *R.*

4. *R.*

Thus, Argument 6c is the better reconstruction because it does bring in all the facts of the original argument.

Example 6 illustrates an argument with an unnecessary premise. Stating the justifications for the lines in the argument helped to make it apparent that the first reconstruction, Argument 6a, had an unnecessary premise. Arguments 6b and 6c illustrated the two ways to revise the argument: *(a)* dropping the unnecessary premise and *(b)* making use of the premise. In this case, the better reconstruction was 6c since it is a stronger argument than 6b; that is, the premises provide a stronger reason to believe the conclusion.

EXERCISES AND STUDY QUESTIONS

*1. State whether each statement is true or false.
   a. All arguments with unnecessary premises are ill-formed.
   b. If you find an unnecessary premise in an argument, you should always revise the argument by eliminating that premise.
   c. Any premise of an argument that does not appear in the justification for the conclusion of the argument is an unnecessary premise.

Add justifications to each of arguments 2–7. If there is an unnecessary premise, revise the argument either by deleting the unnecessary premise or by adding or revising a premise so that the previously unnecessary premise is now used in the argument. State the pattern of the final version.

*2. 1. All students are eligible to vote.
   2. No faculty member is eligible to vote.
   3. Professor Corey is a faculty member.
   4. Professor Corey is not eligible to vote.

 3. 1. If you work too hard, then you'll be tired.
   2. If you play too hard, then you'll be tired.
   3. You will work too hard.
   4. You will be tired.

4. **1.** If oil prices go up, then there will be a recession.
   2. If there is a war, then oil prices will go up.
   3. If there is a recession, then the president will not be reelected.
   4. The president wants to be reelected.
   5. If the president wants to be reelected, then he will try to prevent a war.
   6. The president will try to prevent a war.

5. **1.** Most students voted.
   2. Stew Dent is a student.
   3. All students are eligible to vote.
   4. Stew Dent voted.

6. **1.** If you don't have an abortion, you'll be sorry.
   2. If you have an abortion, you'll be sorry.
   3. You will have an abortion.
   4. You'll be sorry.

7. **1.** Most regular exercisers stay healthy until they are rather old.
   2. Jones is a regular exerciser.
   3. Jones is a nonsmoker.
   4. Jones will stay healthy until he is rather old.

IV. SUMMARY

Three common problems arise in reconstructing arguments: The reconstructed arguments are only approximations of well-formed arguments, often because of subtle shifts in wording; they do not include all the premises they should; and they include unnecessary premises. To avoid these problems, it is useful to make reconstructions conform to standard patterns of argument. Making reconstructions conform to standard patterns helps to avoid problems raised by subtle shifts in wording that can affect the quality of an argument. Sometimes these shifts are crucial, and adjusting the argument will show that it is a bad argument. In other cases, the shift in wording is not a defect, but the reconstruction is clearer and simpler if the argument is revised to adhere more closely to the standard pattern.

In addition to making arguments conform to standard patterns, it is useful to state the justification for each line in the argument. Each line must either be an explicit premise (EP) or an implicit premise (IP) or follow from previous lines in the argument. Stating the justification for each line can help you to see more clearly the connection between lines and may enable you to see the need for additional premises.

Stating justifications can also help you spot an unnecessary premise in a reconstruction. A premise is unnecessary when it does not play a role in the justification of the conclusion. A premise does play a role in the justification of the conclusion if either it directly justifies the conclusion or it justifies some later line in the argument that directly justifies the conclusion. If a premise in a reconstruction is unnecessary, then you should delete it or revise the argument to make use of the premise. Your final reconstruction should contain no unnecessary premises.

The steps in argument analysis can thus be expanded to include a third main step incorporating these points.

The Steps of Argument Analysis

1. **Decide if there is an argument.**
   Read the letter, editorial, or essay under consideration carefully focusing on trying to determine its main point. If the author makes an effort to provide rational support for some claim, then the material probably does contain an argument. If so, go on to step 2. If not, stop; there is no argument to analyze.
2. **Reconstruct the argument.**
   a. Identify the conclusion. Look for key words indicating a conclusion. Use your general understanding of the material to help identify the conclusion.
   b. Identify the explicit premises. Look for key words indicating a premise. Use your general understanding of the material to help identify premises. Any statements that support the conclusion, or might be thought by the author to support the conclusion, are premises.
   c. Check the argument to see if it is well-formed. If it is well-formed, then go on to step 3. If it is not well-formed, then go to step 2d.
   d. Add implicit premises as necessary to make the argument well-formed. The implicit premises added to the argument should be reasonable to accept, as required by (PCI); sufficiently general, as required by (PG); and faithful to the intentions of the author, as required by (PF).
   e. In some cases, the principles governing implicit premises will conflict. Your own purposes in reconstructing the argument will often help to determine how to proceed. In discussing or writing about an argument, it is possible to consider several different reconstructions and explain the merits and faults of each.
3. **Fine-tune the reconstruction.**
   a. Clarify the wording of the argument, and, if possible, make the argument conform to one of the standard patterns of argument.
   b. Add justifications for each line in the argument. For each line state whether it is an explicit premise or an implicit premise, or which previous lines of the argument it follows from.

CHECKLIST OF KEY TERMS

- fine-tuning a reconstruction
- stating a justification
- intermediate conclusion
- compound argument

- unnecessary premise
- direct justification
- indirect justification

CHAPTER EXERCISES

1. Could adding an unnecessary premise to an argument lead you to say that the argument is a strong one when it really isn't? If so, how? If not, why not?
2. Could omitting a premise from an argument lead you to say an argument is a strong one when it really is not? If so, how? If not, why not?
3. Could imprecise wording ever help an argument? If so, how?

Reconstruct the arguments in passages 4–11.

4. Some people say that watching violent TV programs causes people to behave violently themselves. I don't think that they are right. My nephew watches lots of violent programs, but he never behaves violently. The opponents of these shows probably just don't want to admit that they like them themselves.
5. I'm tired of listening to the arguments of the pacifists. They may have good intentions, but they are just afraid to stand up for their country. My point is that we should have a strong military. Our country might not survive without one.
6. If you pick up a pocket watch and look at the mechanism, you will immediately come to think that someone designed the watch. The universe and all its parts also fit together like a well-crafted machine.
7. You may think you have free will. But you are just a physical organism subject to the same physical and biological laws as anything else. Choice is an illusion.
8. You don't really know anything. No matter what you believe, you could be wrong.
9. Students who come to school under the influence of drugs are disruptive and interfere with the education of other students. Students have a right to a quality education and the school board must not permit some students to interfere with the education of others. So we should test students to see if they are using drugs and the drug users should not be permitted to attend school.
10. If the deficit isn't controlled now, the United States will slowly lose its capacity to respond to public needs. Living standards will fall and so will our stature in the world. Unfortunately, Congress doesn't have the courage to get our budget under control.
11. Since people can do what they want to with their own bodies, a pregnant woman can get an abortion.
12. Continue to collect argumentative writing on your main topics of interest.
13. Select several arguments on each of your main topics of interest. Reconstruct those arguments, making sure that your reconstructions conform to the rules for fine-tuning reconstructions described in this chapter. If you have already reconstructed those arguments, you need only fine-tune your reconstructions.

ANSWERS TO SELECTED EXERCISES

1. 1. All parents should read to their children frequently.
    2. Bill is a parent.
    3. Bill should read to his children frequently.

    1. All *A*s are *B*s.
    2. *x* is an *A*.
    3. *x* is a *B*.

    Notice that premise (2) uses "parent" rather than "father."
3. 1. Greg's bike is new.
    2. Greg's bike is a mountain bike.
    3. All new mountain bikes have fat tires.
    4. Greg's bike has fat tires.

    1. *x* is an *A*.
    2. *x* is a *B*.
    3. All *AB*s are *C*s.
    4. *x* is a *C*.

1. Add: Jones is a student.
    1. If *P* then *Q*.
    2. *P*.
    3. *Q*.
3. Add: Clint Eastwood is an actor.
    1. Most *AB*s are *C*s.
    2. *x* is an *A*.
    3. *x* is a *B*.
    4. *x* is a *C*.
5. Add: If you are up very late, then you won't get enough sleep.
    1. If *P* then *Q*.
    2. If *Q* then *R*.
    3. If *R* then *S*.
    4. If *P* then *S*.
9. 3. All monkeys eat meat. (1), (2)
11. 4. The American League team will not win. (2, 3)
    5. The National League team will win. (1, 4)
13. 1. (EP)
    2. (EP)
    3. (EP)
    4. (1), (3)
    5. (2), (4)

1a. False
 b. False
 c. False
2. Premise (1) is unnecessary. Premises (2) and (3) justify (4).
    1. No *A*s are *B*s.
    2. *x* is an *A*.
    3. *x* is not a *B*.

Evaluating Arguments

In this chapter we will introduce some general rules governing the evaluation of arguments. In the first section we will discuss the basic rules of argument evaluation. In the second section we will examine some of the issues that arise in evaluating premises of several frequently encountered kinds. Last, we will look at how problems concerning the meaning of words affect argument analysis.

I. BASIC RULES OF ARGUMENT EVALUATION

A. Don't Criticize an Argument By Denying Its Conclusion

You've learned that a reconstructed argument provides a clear statement of reasons to believe its conclusion. There are only two basic ways an argument can go wrong: either the proposed reasons are not properly connected to the conclusion and the argument is ill-formed; or the proposed reasons themselves are not worthy of our acceptance (or, in the case of cogent arguments, the argument is defeated by our other evidence). Our method of argument reconstruction encourages you to add additional premises to ill-formed arguments to make them well-formed. As we have seen, it is always possible to add premises to make an argument well-formed, although sometimes the added premises are plainly ridiculous. Thus, in most cases, when you analyze an argumentative passage, you will end up with a valid or cogent reconstruc-

tion. If you don't, the problem is usually that you have not done a good job in fine-tuning your reconstruction.[1]

A well-formed argument is one whose premises provide good support for the conclusion. Deductively valid arguments have premises whose truth guarantees the truth of the conclusion. So, when you grant that an argument is valid, you are saying that if the premises are true, then the conclusion is true as well. Once you grant that an argument is valid, the only legitimate criticism you can make of the argument is that it has at least one premise that is not reasonable to believe (or is false). You can't legitimately criticize the argument by objecting to the conclusion itself. And if the argument is valid, there is no other way the argument can fail to be strong other than by having premises that are not all justified.

The situation is similar for cogent arguments, though slightly more complicated. Inductively cogent arguments have premises whose truth makes it probable that the conclusion is true. So, when you grant that an argument is cogent, you are saying that if the premises of the argument are true, and the argument is undefeated, then the conclusion is at least probably true. As a result once you grant that an argument is cogent, the only legitimate criticisms you can make must be directed at the premises or designed to show that the argument is defeated.[2]

The key point is that you cannot legitimately criticize an argument by simply objecting to its conclusion. Good criticisms must be designed to show that the argument is ill-formed, defeated, or has an unjustified premise. Once you have done a good job of reconstructing arguments and made them well-formed, most of your attention will be devoted to evaluating the premises of those arguments. The remainder of this chapter explores the grounds on which you can rationally reject a premise.

Remember that the fundamental purpose of argument analysis is to gain understanding, to find out what it is reasonable to believe and what it is not reasonable to believe. The goal is not to find reasons, even clever reasons, to deny what others have said or to defend points of view you currently hold. It is easy enough to deny another's argument; that is, you can always say, "I don't accept your premise." However, just saying something like that doesn't show that there is a reason not to accept the premise or that the argument is weak. Our goal here is to identify the features of good criticisms of the premises of an argument, criticisms that show that the argument really does not merit acceptance.

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1. The exceptions are cases in which the writer has made an outrageous logical blunder and the argument is quite explicit in the passage. In such cases, it is best simply to point out that the argument is ill-formed and stop evaluating the argument. Such cases are relatively rare.

2. Recall that only cogent arguments can be defeated. The notion of defeat does not apply to valid arguments.

B. Don't Accept an Argument Simply Because You Believe the Conclusion

People sometimes seem to think that they must accept every argument for a conclusion they believe to be true. However, that is surely a mistake. There can be bad arguments for true conclusions.

Argument 1

1. All professional athletes are male.

2. Bob Dylan is a professional athlete.

3. Bob Dylan is male. (1), (2)

This is a valid argument and it has a true conclusion. Nevertheless, it is a weak argument. Both its premises are obviously unjustified. In evaluating this argument you should say that it is valid but weak. You should not accept the argument, or say that it is strong, just because you know that the conclusion is true.

While Argument 1 is obviously weak and no one is likely to accept it, people sometimes do accept arguments simply because they already accept the conclusion. For example, if you think that some controversial practice such as abortion ought not be permitted, you may feel as if you must defend every argument against abortion. But you needn't. One strong argument for a conclusion is enough to make it rational to believe that conclusion. You need not accept other arguments for that same conclusion unless those arguments are also strong.

There are at least two practical reasons to avoid accepting arguments simply because you think, or even know, that their conclusions are true. One is that you may be tempted to accept other similar arguments and thus come to accept their conclusions when you shouldn't, since the arguments are really no good. Another reason is that you will appear to others to be a more reasonable, careful, and discriminating thinker, and thus one whose views are worthy of consideration.

C. Direct Criticisms at Individual Premises

If you think that there is something wrong with the premises of an argument, that error must attach to one of the premises. There is no such thing as a "general criticism" of the premises of an argument. When you state a criticism of an argument, be specific. Say, "Premise X is false because. . . ." Always make it clear which premise you are criticizing.

Sometimes you will find that you are certain that there is something wrong with a well-formed argument but you aren't sure exactly what it is. You know that you have a criticism of some premise but can't tell which one. If this happens, it means you haven't yet fully grasped the premises or the criticism to tell which premise the criticism applies to. It must apply to one of them.

This is an extremely important point. When we examine different kinds of arguments and identify exactly where various kinds of criticisms apply. For now, just remember the general rule, that all criticisms of premises must apply to individual premises.[3]

D. Make Your Criticisms of Premises Substantial

The rule to make your criticisms of premises substantial is just an application of the principle of charity. If someone has given an argument for a conclusion and you are analyzing that argument, it is only reasonable to reject the argument on the basis of a substantial criticism. An *insubstantial criticism* is one that may appear to be significant but actually fails to identify a real flaw in the argument. We will briefly examine some criticisms that are not substantial in this section.

One fairly common sort of insubstantial criticism goes like this. In criticizing a universal generalization, "All *A*s are *B*s," someone says, "Maybe there are some *A*s that are not *B*s." A comparable insubstantial criticism of a premise that makes a specific claim about an individual is, "Maybe that's not true." Such expressions of the mere possibility that a premise is false simply are not adequate criti-

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Sidebar: Facts and Opinions

Many people think that it is important to draw a distinction between facts and opinions. There are a variety of ways to try to spell out just what the distinction amounts to, and it is interesting to try to figure out if there is any clear distinction that people have in mind when they use these terms. One reasonably careful discussion of this matter can be found in a short essay by Richard Paul and Linda Elder, *Three Categories of Questions: Crucial Distinctions*.[4] Paul and Elder say that "it is essential when thinking critically to clearly distinguish three different kinds of questions": The three kinds of questions, with examples, are as follows:

1. Those with one right answer (factual questions fall into this category).
   - What is the boiling point of lead?
2. Those with better or worse answers (well reasoned or poorly reasoned answers).
   - How can we best address the most basic and significant problems in the nation today?
3. Those with as many answers as there are different human preferences (a category in which mere opinion does rule).
   - Which would you prefer, a vacation in the mountain or one at the seashore?

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3. There are some unusual cases that may be exceptions to this rule. See "The Lottery Paradox."

4. At the time of this writing, the essay is available at the World Wide Web site of the Center for Critical Thinking at http://www.sonoma.edu/cthink/.

A little thought about this three way distinction yields a lot of confusion. Try to categorize the following questions: *(a)* Which would Madonna prefer, a vacation in the mountains or one at the seashore? *(b)* How tall are you? It seems as if there is one right answer to the first question, although most of us would be hard pressed to figure out what it is. This makes it a factual question, according to their classification. But what is the important difference between this question and their example of an opinion question? Why should these questions be classified differently? It's very hard to tell.

There are lots of different answers to "How tall are you?" depending on whom you ask. But a person's height seems to be a clear instance of a fact. The only reason Paul and Elder's example of an opinion question seemed to admit many answers is that it contains the word "you." As a result, that question can be asked of each different person, who might have a different answer. (Of course, there aren't as many answers to that question as they say. There seem to be two possible answers, or maybe a third if "I have no preference" is a possible answer.) It's hard to see why this question should go in a different category than their example of a factual question.

In the end, it is difficult to come up with a clear distinction between the things people classify as facts and the things they classify as opinions. Some related distinctions are often made, however. For example, there is a distinction between beliefs for which a person has good reasons and beliefs for which that person lacks good reasons. There is also a distinction between facts that are about what particular people, or groups of people, like or dislike and facts about other sorts of things. A fact about likes and dislikes might be that most children don't like to eat broccoli. A fact not about likes and dislikes might be that broccoli contains certain amounts of vitamins. There are lots of facts of these kinds. One might have good reasons to believe them, but one might lack evidence for them. The same is true for nearly any other fact one can think of.

The alleged distinction between facts and opinions turns out to be a rather confused one. It would probably be best to forget about it, and focus instead on the distinctions just mentioned.

cisms of the premise. Criticisms must include reasons to think that the premise really is false, or reasons to think that suspension of judgment is the proper attitude to take toward the premise. The simple assertion that it might be false is insubstantial.

Another insubstantial criticism is to say that the proponent of an argument has not "proven" that all the argument's premises are true. The question to ask, when analyzing an argument, is whether or not it is reasonable to believe that the premises of the argument are true. Given everything you know, including what is said in the passage containing the argument, are the premises reasonable ones? It is not necessary for defenders of arguments to prove the truth of all their premises. In fact, that task would be impossible, since those proofs would just be more arguments with more premises, which would need proof themselves. A casual "not proven" is not a substantial criticism of a premise.

Argument stoppers represent an especially troublesome type of insubstantial criticism. As their name suggests, argument stoppers have the effect of cutting off ratio-

nal discussion. They are especially likely to be used in response to arguments that are about values—what's right or wrong, good or bad—and in response to arguments that use language that is vague or obscure. Examples of argument stoppers are rhetorical questions such as "Who's to say that that's true?" or "Where do you draw the line between this and that?" Other remarks that have a similar effect include "That's just a matter of opinion" and "That's a subjective judgment." These and other argument stoppers are often used instead of clear and effective criticisms of arguments. People who make such remarks may have some more specific criticism in mind, perhaps only dimly, but the effective criticisms are not satisfactorily expressed in these ways.

To illustrate the negative effects of argument stoppers, suppose we are discussing the effects of violence on TV and you argue that watching violent programs causes people to behave violently. Your argument appeals to some research results that apparently supports your conclusion and to some widely accepted facts about human behavior. Suppose, further, that this is a point which you care about quite a bit and that you have put a lot of thought into the matter. If I respond with a remark like "Who's to say what causes people to behave the way they do?" or "Well, it's just your opinion that the research you describe is accurate," you have legitimate grounds to be dissatisfied with my response. By saying those things I am refusing to take your argument seriously. I am not thinking about your reasons for your conclusion and responding to them. Rather, I am ignoring them. Such a reaction is not a criticism of your argument. It does not show that there is any defect whatsoever in any of your arguments. Moreover, if I am at all interested in the topic, I should think more carefully about what you've said. It may be that your argument is a good one and that it is now reasonable for me to believe your conclusion. My argument stoppers do not provide any reason at all to reject your argument.

A good way to tell whether a criticism you have raised is substantial is to consider how a reasonable defender of the argument would respond to it. If you think that such a person would acknowledge that the criticism is a good one, and would give up or modify the argument as a result of hearing the criticism, then the criticism probably is a good one. However, if the criticism you are raising is so obvious that no one is likely to overlook it, then it probably isn't a good criticism of the intended argument. Most likely, a defender of the argument could easily respond by clarifying or slightly revising the argument. In that case, you should state the clearer or better version of the argument in the first place.

E. Don't Accept Competing Arguments

When one argument has a statement as its conclusion and another argument has the denial of that statement as its conclusion, the two arguments are ***competing arguments***. There are some facts about the relations between competing arguments that are important to keep in mind when evaluating them.

It is impossible for two competing arguments to both be strong for you. Although arguments on opposing sides of some question can appear fairly convinc-

ing, both of those arguments can't really succeed. If both arguments were strong for you, then both conclusions would be reasonable for you to believe. That is not possible. When two arguments compete, you can be sure that there is something wrong with at least one of the arguments.

Sometimes, perhaps in a misguided attempt to be fair, people say that there are strong arguments on both sides of a question. That can't be. There can be interesting and provocative arguments on both sides of a question. There can be competing arguments that, at least at first glance, look quite convincing. However, they can't both be strong for you.

It does not follow, however, that if you think that an argument for one conclusion is strong, you can then reasonably disregard or ignore all competing arguments. It may be that considering such an argument will lead you to reevaluate some argument that you previously thought to be strong. You might realize that you had incorrectly taken some premise to be true. If you can't identify a flaw in either of two competing arguments, then it is generally best to suspend judgment about both.

Although two competing arguments cannot both be strong, two competing arguments can both be weak. They can both be ill-formed or have false or unjustified premises. In fact, this happens quite often in the case of especially controversial issues. One of the reasons that an issue is controversial may be that there are no good arguments that settle the issue. For example, in debates about the effects of some chemical or the causes (or effects) of some kind of behavior or the merits of various social policies, there may not be any strong arguments on either side of these issue. All the available arguments may have defects. Some arguments may have some initial plausibility, but once you consider all the available information, the arguments turn out to be weak.

F. Don't Object to Intermediate Conclusions of Compound Arguments

We previously noted that some arguments are compound arguments consisting of two or more subarguments. One example we considered was Argument 4a:

1. I didn't study for the test. (EP)

2. If I didn't study for the test, then I won't pass the test. (EP)

3. Therefore, I won't pass the test. (1), (2)

4. If I won't pass the test, then I won't pass the course. (EP)

5. I won't pass the course. (3), (4)

6. If I don't pass the course, then I won't graduate on time. (EP)

7. I won't graduate on time. (5), (6)

This argument consists of three smaller arguments linked together. There is one valid argument from (1) and (2) to (3), a second valid argument from (3) and (4) to

(5), and a third valid argument from (5) and (6) to (7). Since the overall argument is valid, legitimate criticisms must be directed at its premises. But it wouldn't be appropriate to criticize premise (3) because it is the conclusion of a valid argument. Criticism relevant to (3) must focus on (1) or (2). Similar considerations apply to the other intermediate conclusion, (5). Thus, since Argument 4a is a valid compound argument, the only legitimate criticisms are those that attach to its basic premises, (1), (2), (4), and (6). Either there is something wrong with one of them, or the argument is strong.

In general, when dealing with compound arguments one can only justifiably criticize them as ill-formed or as having an implicit or explicit premise that is not worthy of acceptance. It is never legitimate to criticize an intermediate conclusion directly. To criticize an intermediate conclusion one must show that there is some flaw in the argument leading to it.

EXERCISES AND STUDY QUESTIONS

*1. Evaluate the following claim: Sometimes when you evaluate an argument you may be aware of some relevant information that the person who gave the argument did not know about. But it isn't fair for you to reject someone else's argument on the basis of information that person didn't know about. Therefore, you should only take into account what the author of argument did know about.

 2. What is wrong with criticizing an argument by saying that its premises have not been proven to be true? Explain clearly what would happen if this sort of criticism were permitted.

*3. Suppose that there are 1,000 people in a room. Nine hundred of them are politicians who are members of the Republican party. The remaining 100 people are reporters, and most of them are members of the Democratic party. Assume that Jimmy Olsen is a reporter in the room. Against that background, evaluate the following arguments.

Argument A

1. Most of the people in the room are Republicans.

2. Jimmy Olsen is a person in the room.

3. Jimmy Olsen is a Republican. (1), (2)

Argument B

1. Most of the reporters in the room are Democrats.

2. Jimmy Olsen is a reporter in the room.

3. Jimmy Olsen is a Democrat. (1), (2)

4. Consider the following argument and criticism:

1. All senators are politicians. (EP)

2. All politicians are male. (EP)

3. Therefore, all senators are male. (1), (2)

4. No males know what it is like to have a baby. (EP)

5. No senators know what it is like to have a baby. (3), (4)

Criticism: (3) is false. Neither of the senators from California (in 1997) is male.

The critic here has made a mistake. What is it?

5. Suppose you are considering some controversial claim. You find one interesting argument supporting the claim and one interesting argument against the claim. Upon analysis, you conclude that the first argument is strong. What can you conclude about the second argument at this point?

II. EVALUATING SPECIFIC TYPES OF PREMISES

In this section we will briefly examine several different types of premise and ways to criticize them effectively.

A. Specific Factual Claims

One kind of premise is a specific factual claim. These premises typically assert that some specific object has some (possibly complex) property. For example, in Argument 1, the premise that says that Bob Dylan is a professional athlete is a specific factual claim. Any premise attributing some property to some individual is a specific factual claim.

In general, you evaluate specific factual claims (and all other premises as well) in the light of all the relevant information you have. Your own observations and sensory experiences, as well as your memories and the things you have heard or read, may be relevant to your assessment of a premise. All the considerations mentioned about evidence and evidential support apply. If it is reasonable for you to believe a premise given the total body of evidence you have, then accept the premise. Reject it or suspend judgment if your evidence justifies one of those attitudes. In many cases, after you have reconstructed an argument you will have nothing more to go on than the author's testimony in evaluating a specific factual claim.

It is important to avoid taking a simplistic rejectionist approach. It is not an effective criticism of a specific factual premise to say that it may not be true or that

it is not proven to be true. Your aim is to determine how well-supported the premise is by the information available. In stating your reasons for rejecting a specific factual premise, it is useful to explain clearly just what your reasons are for rejecting the premise and to explain, if possible, why the author of the argument may have mistakenly thought the premise was true.

B. Generalizations

Arguments often contain premises that are generalizations. We previously distinguished universal generalizations from nonuniversal generalizations. Criticism of universal generalizations is straightforward. To effectively criticize a universal generalization saying "All *A*s are *B*s," one need only come up with one example of an *A* that is not a *B*. An example of this sort is a ***counterexample*** to a generalization.

Suppose you are evaluating an argument that has as a premise the universal generalization

1. All students in the class have completed the assignment.

You can criticize (1) by describing a student in the class who has not completed the assignment. If, for example, you know that one of the students, Hardlee Works, has not completed the assignment, then you can refute the premise by describing the case of Hardlee. The case of Hardlee Works is a counterexample to the generalization. It is not an effective criticism of a premise such as this one merely to say that some students *might* not have completed their assignments or that it is possible that one didn't complete it. Effective criticisms must be more specific and more developed than that.

In some circumstances, however, pointing out that there are possible counterexamples to a generalization can be part of a substantial criticism. If you know that in most classes there are some students who don't complete their assignments, and you have reason to believe that the class in question is not unusual, then there is reason to doubt (1). Whether this is an effective criticism depends entirely on the details of the particular situation in which (1) is asserted. If the teacher of a class asserts (1) immediately after recording all the grades in her grade book, then this criticism is not a good one because the teacher is in a position to know about any student who hasn't completed the assignment. If a student in the class with no particular knowledge about the assignment asserts (1), then the criticism is a reasonably good one (provided you do have reason to accept the claim that in most cases some student does not turn in an assignment). In short, although a clear and specific counterexample is the best criticism of a universal generalization, pointing out that there is no evidence supporting a generalization and that there are counterexamples to relevantly similar generalizations can be a good criticism.

Criticism of nonuniversal generalizations is more difficult. A single counterexample is not sufficient to refute a nonuniversal generalization. Consider the premise

Most of the students at State U. voted.

Since "most" means "more than half," to describe a few students who did not vote is not an effective criticism of this premise. To criticize it effectively you must provide reasons to think that it is not even true that most students voted. Unless there are very few students, a few counterexamples will not suffice as a criticism of this premise.

Analogous considerations apply to criticizing other generalizations. If a generalization says that *nearly all A*s are *B*s, then a few counterexamples would be significant. If the generalization says merely that *some A*s are *B*s, then a criticism must show that this minimal claim is not true. A few counterexamples are obviously not satisfactory.

EXERCISES AND STUDY QUESTIONS

*1. Each of the following sentences expresses a universal generalization. If the generalization is not stated in standard form, rewrite it in standard form for universal generalizations and then present an objection to the generalization. In some cases, to state a counterexample to the generalization will require knowledge of some specific topic. Don't bother going to great lengths to look up the relevant information if you don't already know it. In some cases, thinking carefully about the topic will enable you to come up with real or potential counterexamples.

*a. Every Democratic vice presidential candidate has been male.

*b. Every time you make a false statement, you tell a lie.

c. All universal generalizations are false.

d. If someone has a brother, then that person is male.

e. All universal generalizations are true.

f. When an argument is valid, it is also strong.

g. All good criticisms of arguments are objections to specific premises.

h. All rational beliefs are true.

i. If two arguments are competing arguments, then one of them is strong and one is weak.

2. Some generalizations use the word "some," as in "Some students major in philosophy." Logicians often interpret the word "some" to mean "at least one." How do you think people typically use the word?

*3. Suppose Jones reasons as follows: "Patrick is a professional basketball player, so I conclude that he is over six feet tall." Smith reconstructs Jones's argument as follows.

    1. Patrick is a professional basketball player. (EP)

    2. All professional basketball players are more than six feet tall. (IP)

    3. Patrick is more than six feet tall.

Smith then gives a couple of counterexamples to (2) and on that basis rejects Jones's argument. Has Smith done a good job of argument analysis?

4. In logic courses, the most commonly discussed quantifiers are "all" and "some." Some other common quantifiers are "a few," "several," "many." What would it take to show that generalizations using these quantifiers are false? Find and discuss some passages in which these quantifiers are used.

5. When discussing generalizations, people sometimes speak of "the exception that proves the rule." What might they mean by this?

C. Compound Sentences

Compound sentences are formed by combining two or more simpler sentences. Among the most commonly encountered compound sentences are conjunctions, disjunctions, and conditionals. We briefly discussed these kinds of sentences earlier and identified some of the common patterns of argument in which they occur. Several issues arise when we evaluate arguments having conjunctions, disjunctions, and conditionals as premises.

C1. Conjunctions

Conjunctions combine two (or more) simpler sentences with the word "and." Suppose you come across an argument with a premise of the form

P and Q.

You can criticize the premise by criticizing *P* or *Q* individually. Consider, for example,

2. Boris voted and Boris wrote his paper.

This statement has two component sentences, or conjuncts, each of which makes a specific factual claim. You can criticize either conjunct in the normal way and thereby criticize (2).

No special problems arise in evaluating conjunctive premises. Criticism in almost all cases takes the form of criticism of one conjunct, and that criticism proceeds in whatever manner is appropriate for that particular statement. The main point to remember is that conjunctions are adequately criticized by showing that one conjunct is false or unreasonable.

C2. Disjunctions

Disjunctions are "or" statements. Evaluation of disjunctions is a little trickier than the evaluation of conjunctions. One source of difficulty for evaluating disjunctions is that there is some dispute about exactly what the word "or" means. Disjunctions take the form

P or Q.

Sidebar: The Lottery Paradox

In some cases you can criticize a conjunction without criticizing any particular premise. These are typically cases in which the various individual conjuncts can't all be true, or are unlikely to be true together, even though the individual conjuncts are each quite reasonable. The most intuitively obvious case of this concerns lotteries. Examples of this sort present a difficult puzzle for philosophers. The puzzle is sometimes called the lottery paradox. The puzzle (or paradox) arises if we accept a rule that says that if it is reasonable to believe each of two propositions, then it is reasonable to believe their conjunction.

Suppose a million tickets are sold in a very large lottery. If we consider the proposition "Ticket 1 will not win," it seems reasonable to believe that proposition. Similarly for the proposition "Ticket 2 will not win." But if we apply the conjunction rule repeatedly to propositions of this sort, we then get a very long conjunction in which each conjunct is quite reasonable. But as the conjunction gets longer, it becomes less and less reasonable to believe. Eventually, when the conjunction covers all the tickets, we can be sure that the conjunction is false. This example leads many epistemologists to think that the conjunction rule is false. Others think that it can never be reasonable to believe the individual statements about the lottery tickets. Still others don't know what to think about this puzzle.

Fortunately for us, the arguments we are likely to encounter will typically not involve premises like the ones that enter into the lottery paradox. For the most part we can conjoin the premises of the arguments we consider without harm.

Some people think that a disjunction is true if at least one of the disjuncts is true. By this view, the disjunction is true if both disjuncts are true, as well as if only one of them is true. This is called the *inclusive interpretation* of disjunctions. Other people think that disjunctions are true if and only if exactly one disjunct is true. If both disjuncts are true, then the disjunction is false. This is called the "exclusive interpretation" of disjunctions. By the inclusive interpretation, "P or Q" might be expressed as:

P or Q or both.

By the exclusive interpretation, "P or Q" might better be expressed as

P or Q but not both.

Still others think we use disjunctions sometimes in the first way and sometimes in the second.

It is clear that people often use disjunctive sentences when they think that only one of the disjuncts is true. If two teams, the Winners and the Losers, are playing a baseball game, might I say:

3. Either the Winners will win or the Losers will win.

Here it is obvious that I think that only one of the teams will win: that is, I think that only one disjunct of (3) is true. If (3) as I use it by itself implies that at most one of its disjuncts is true, then this is an example of an exclusive use of "or." However, it is not obvious that (3) itself implies that only one of its disjuncts is true. This may just be a further thought I have. Thus, (3) may contain an exclusive "or," but it is not clear that it does.

Other disjunctions clearly require the inclusive interpretation. Suppose the Winners are the best team and they are playing two games against the worst team, the Losers. Suppose further that the Winners need to win only one more game in order to make it certain that they will finish the season in first place. With this in mind, I say that I am very confident that they will finish first, since:

4. Either the Winners will win the first game or the Winners will win the second game.

In saying (4) I don't mean to rule out the possibility that the Winners will win both games; I mean to say that the Winners will win at least one of the games. Here, it seems that what I claim to be sure of is true if one of the disjuncts is true but it's also true if both of them are true. So this statement seems to be an example of the inclusive use of "or."

Fortunately, we need not resolve this dispute about the use of the word "or." This difference in interpretation does not affect the vast majority of common arguments containing disjunctive premises. Such arguments are known as *arguments by elimination*, and they follow this pattern:

1. *P* or *Q*.

2. *~P*.

3. *Q*.

Arguments by elimination are valid no matter how we interpret "or." Either way, if one of the two disjuncts is false, it follows that the other one is true.

Consider the following example:

Example 2

You and a friend arrive at your house and see an old green Volvo parked in the driveway. There are only two people that your friend knows, Inda House and Ouda Town, who own old green Volvos and who might be at your house. He reasons: "Either Inda House or Ouda Town is at the house. But Ouda Town is away on vacation in Antarctica and couldn't be there. Therefore, Inda House is at the house."

The initial reconstruction might look like this:

Argument 2

1. Either Inda House or Ouda Town is in the house.

2. Ouda Town is not in the house.

3. Inda House is in the house. (1), (2)

There are several ways this argument could be refined. You could display the reasoning leading up to (1), based on the limited number of owners of old green Volvos who are likely to be at the house. We will ignore that part of the argument for now. One could state the reasoning leading up to (2), since in the example you infer (2) from another premise. We will ignore that as well since our interest is really in (1).

Argument 2 is valid. Criticism must therefore focus on its premises. Let us assume there is no dispute about (2). The way to criticize (1) is to show that there is a reasonable chance that neither of its disjuncts is true. The best way to show that would be to identify a reasonable alternative. In this case, to undermine (1) you could do one of two things. If you know of another person with an old green Volvo that is reasonably likely to be parked in the driveway, then you could point out that there is such a person. If you know that there are lots of old green Volvos around—perhaps there is convention of owners of old green Volvos in town—you could point that out. In each case, you are pointing out that there is reason not to be confident that (1) is true. There is adequate reason to think that another possibility obtains, so it is no longer reasonable to accept (1).

Notice that in this criticism you are not disproving (1); you are not giving a counterexample to it or proving that it is false, since you are not proving that neither Inda House nor Ouda Town is there. Rather, you are showing that this premise is not adequately justified and that you are justified in suspending judgment about it. (Perhaps, more than this, you could show that disbelieving (1) is the justified attitude, if you show that one of these other alternatives is quite probably true.) Thus, in the typical case when you criticize a disjunctive premise of an argument by elimination, you show that the argument is weak by showing that it is not reasonable to believe one of the premises. But you often do not show that it is reasonable to disbelieve that premise. In other words, you show that the argument is weak without showing that it is unsound.

Although Example 2 is somewhat artificial, many realistic arguments follow this pattern and are subject to the sort of criticism just described. One context in which this occurs is reasoning about social policies, as in the following example:

Example 3

While arguing about the need for a new missile system, D. Stroy argues:
"Either you support the BX missile or you are not for a strong defense.
Surely, you are for a strong defense."

It's rather easy to reconstruct this argument:

> **Argument 3**
>
> 1. Either you support the BX missile or you are not for a strong defense.
>
> 2. It's not the case that you are not for a strong defense.
>
> 3. You support the BX missile.

There may well be another alternative: you are for a strong defense but you think that there are better ways to achieve a strong defense than through the BX missile. If so, then (1) is unjustified.

The general pattern in weak arguments by elimination is for someone to state an argument with a disjunctive premise. One disjunct is the one the person wants to establish. The other disjunct is some ridiculous statement that can easily be disproved. The argument seems to establish the preferred alternative by ruling out the ridiculous option. In these cases, the objectionable part of the argument is the disjunctive premise. When confronted with such arguments, a good way to proceed is to ask yourself the question "Are the options in that disjunction the only options? Are there other reasonable alternatives?" Whenever there are other reasonable options, you can explain what they are and reject the argument on the grounds that it is a weak argument because it contains an unjustified premise.[5]

Sidebar: Conjoining the Premises of Arguments

Some arguments by elimination are weak because the conjunction of premises is unreasonable to accept, even though each premise by itself is fairly reasonable. This point is similar to the one made in the discussion of the lottery paradox. Suppose that there are three candidates, *A*, *B*, and *C*, for some award and each candidate is equally likely to win. Now, consider this argument:

1. Either *A* will win or *B* will win.
2. It is not the case that *A* will win.
3. *B* will win.

This is a valid argument by elimination. Given the equal chances of the three candidates, (1) is more likely to be true than not; and (2) is also more reasonable than not. But the conjunction of (1) and (2) is not reasonable to believe. So this argument is weak. No individual premise is rejected as unreasonable; rather, it is the conjunction of the premises that is unreasonable. This sort of unusual case is an exception to the otherwise correct rule requiring that criticisms be directed at individual premises.

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5. The other options must be reasonable options. Pointing out some ridiculous alternative isn't an effective criticism because the existence of a ridiculous alternative does not show that it is unreasonable to believe the original disjunctive premise.

EXERCISES AND STUDY QUESTIONS

Reconstruct and evaluate the arguments in passages 1–6.

*1. Either we will impose the death penalty on vicious murderers or we will let them go free. But we don't have the guts to impose the death penalty.

2. Either you are part of the solution or you are part of the problem. People who mind their own business are part of the problem.

*3. Either we have free will or we don't. But we can't control the color of our eyes or the way we grow. So we don't have free will.

4. Either we control the deficit now or we pay the penalty later. It's clear that Congress will not control the deficit now.

5. Somebody in the family ate the last piece of cake. It couldn't have been Junior, because he was asleep at the time. It couldn't have been Mom, because she was upstairs. It must have been Dad. (There's no need to evaluate the premises of this one.)

6. A fetus is either a person with rights or a mere bundle of cells. If it is a mere bundle of cells, it is morally similar to a wart or a mole. But nobody thinks a fetus is like a wart or a mole.

7. When given a choice between two options, people typically say, "I can do this *or* I can do that." For example, when choosing between going to the movies or staying home and studying, one might say, "I can go to the movies or I can stay home and study." Think carefully about this claim. Does it adequately express what a person in this situation means to say?

C3. Conditionals

The final compound premises we will consider in this chapter are *conditionals*, or "if–then" sentences. These are sentences of the form

   If *P* then *Q*.

The first part of a conditional, the "if" clause, is its *antecedent*, and the second part, the "then" clause, is its *consequent*.

   Conditionals raise several difficult issues. Some of them are discussed in great detail in courses on logic and the philosophy of language. For our purposes, it is not necessary to go into these details. The question we must ask ourselves is this: Under what conditions should a conditional premise be accepted and under what conditions should a conditional premise be rejected?

   There are several possible situations you could find yourself in when you evaluate a conditional. The three main possibilities for us to consider are *(a) Q* must be true if *P* is true; *(b) Q* is probably true if *P* is true; and *(c)* there is no connection between *P* and *Q* (*P* doesn't even make *Q* probable).

Some arguments that you encounter may contain premises such as the following:

C1. If John is a brother, then John is male.
C2. If John is in Washington, D.C., then John is in the United States.

In these cases the consequent must be true if the antecedent is true.[6] There is no possibility that John is a brother but not male. Similarly, you are sure that if the antecedent of (C2) is true, then the consequent is also true. Conditionals such as these should be accepted.

Notice that the actual truth value of the antecedent is irrelevant to the truth value of the conditional. (C1) does not imply that John is a brother. It merely says that *if* he's a brother, then he is male. That is surely true. Similarly, John's actual location is irrelevant to the truth value of (C2). (C2) is true no matter where John is. If you get confused about this point, recall the fact that you knew that (C1) and (C2) were true without knowing anything about John. John could be a female only child living in Minneapolis. Still, (C1) and (C2) would still be true.

Another way to think about this sort of conditional is in terms of necessary conditions and sufficient conditions. One proposition, *A*, is a ***sufficient condition*** for another, B, just in case if A is true, then *B* must be true as well. In other words, the truth of *A* is enough to ensure the truth of *B*. For example, the proposition that Pat is a mother is a sufficient condition for the proposition that Pat is a parent. One proposition, *A*, is a ***necessary condition*** for another, *B*, just in case if *B* is true, then *A* must be true as well. For example, the proposition that Pat is a parent is a necessary condition for the proposition that Pat is a grandparent.[7] Notice that if *A* is a sufficient condition for *B*, then *B* is a necessary condition for *A*. Thus, "John is a brother" is a sufficient condition for "John is male" (the first is enough to ensure the second) and "John is male" is a necessary condition for "John is a brother" (the truth of latter requires the truth of the former). When the antecedent of a conditional is a sufficient condition for the consequent, then the conditional is true. This holds in the case of (C1) and (C2).

The second possibility for the way the antecedent and consequent of a conditional can be related is that the antecedent of the conditional makes the consequent *probable*, as in these examples:

C3. If Jordan is a professional basketball player, then Jordan is more than six feet tall.
C4. If Smith is a U.S. senator running for reelection, then Smith will be reelected.

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6. There is, however, an important difference between these two conditionals. Although you might be sure that both are true, (C1) must be true simply because of the meanings of the words "brother" and "male." It is true by definition. In contrast, even though you can be sure that (C2) is true, it is not true by definition. If Washington, D.C., were to secede from the United States, then (C2) would be false.

7. In addition to saying that one proposition is a necessary or sufficient condition for another, people also say that one property or characteristic is a necessary condition for another. For example, being a mother is a sufficient condition for being a parent.

Given information generally available to us, these statements seem to be true. However, there is a real, though small, chance that their antecedents are true and their consequents false. They are not like (C1) and (C2) in this respect. In neither case is the antecedent by itself a sufficient condition for the consequent.

To see how to deal with these kinds of conditionals when they occur in arguments, consider the following:

Example 4

You know that your colleague, Wood Worker, spends almost all his Saturday afternoons working in his shop in the basement, but you also know that once in a while he does something else. You need to contact him about an important problem. As you think about where to try to reach him, you might reason: "If it is Saturday afternoon, then Wood Worker is in his basement. It is Saturday afternoon. Therefore, Wood Worker is in his basement."

The obvious reconstruction of this argument is

Argument 4

1. If it is Saturday afternoon, then Wood Worker is in his basement. (EP)

2. It is Saturday afternoon. (EP)

3. Wood Worker is in his basement. (1), (2)

Given no other relevant information about the situation, it is reasonable to accept this argument. The premises of Argument 4 do make the conclusion reasonable for you. It is reasonable for you to accept (1) even though you know that Wood Worker is not always in his basement on Saturday afternoons.

There's a better way to reconstruct this argument, however. The first premise could be replaced by a generalization. Of course, given the information supplied in the example, it would be inappropriate to replace (1) with

All Saturday afternoons are times that Wood Worker is in his basement.

A better premise would be

Almost all Saturday afternoons are times that Wood Worker is in his basement.

Replacing (1) in Argument 4 with this premise yields the following cogent argument:

Argument 4a

1. Almost all Saturday afternoons are times that Wood Worker is in his basement. (EP?)

2. This is a Saturday afternoon. (EP)

3. This is a time that Wood Worker is in his basement. (1), (2)

You can often replace conditionals with generalizations, and in many cases this eliminates the confusion that arises in thinking about conditionals. People are sometimes inclined to reject conditionals when the antecedent is not a sufficient condition for the consequent. This would lead them to reject Argument 4. But in fact the argument intended in this example is a strong argument. It is therefore a good policy to replace conditionals by generalizations in your reconstructions when you can. Although Arguments 4 and 4a are both acceptable reconstructions, you may find it easier to evaluate Argument 4a.

You may find yourself evaluating a conditional in which it seems that, in general, when that antecedent is true, or when antecedents like it are true, the consequent is also true, but you have additional information suggesting that the consequent is false in the particular case under consideration.

Example 5

The situation is the same as in Example 4, but you remember that Wood told you earlier in the week that this Saturday afternoon he was going out to the lumberyard to get a year's supply of wood.

What should you now say about Arguments 4 and 4a? It is clear that the arguments are not strong for you; they do not provide you with a good reason to accept the conclusion. So, it must be the case that it is reasonable for you to reject the conditional in Argument 4.[8] The problem is clearer with respect to Argument 4a. The premises of that argument are true, and you still have reason to believe them. However, the argument is defeated by your new information; that is, if you add to the premises of Argument 4a the fact that Wood said that he would not be home this Saturday afternoon, then you no longer have a cogent argument for the conclusion. In this situation, Argument 4a is defeated.

Thus, the results of our evaluations of Arguments 4 and 4a are the same, but it may be a little easier to see just why we get these results in the case of Argument 4a than in the case of Argument 4. Thus, Argument 4a is the preferable reconstruction in this case and illustrates why replacing conditionals by generalizations is often a good idea.

The final possible situation in which you may have to evaluate a conditional is when you come across a conditional in which, as far as you can tell, the antecedent doesn't even make the consequent probable. An example might be

C5. If there is a blue book on my desk, then most monkeys like bananas.

You are not especially likely to encounter many conditionals such as this, but if you do you can reject them. Even if it happens that the antecedent and the consequent are both true, if you see no connection between them, then there is no reason for you to accept the conditional. Arguments containing such conditionals do not make their conclusions reasonable.

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8. No other defect is possible. The argument is valid and premise (2) is surely true.

EXERCISES AND STUDY QUESTIONS

*1. Often, when we assert a conditional, it is backed up by a generalization, as in this statement:

> If Jordan is a professional basketball player, then Jordan is more than six feet tall.

A plausible generalization linking the properties of being a professional basketball player and being more than six feet tall would be

> Nearly all professional basketball players are more than six feet tall.

State plausible generalizations that back up the following conditionals.
   a. If you are a brother, then you are male.
   b. If Pierre is in Toronto, then Pierre is in Canada.
   c. If an incumbent runs for reelection, then he or she will win.
   d. If you work hard, then you'll succeed.

2. Suppose Moe D. Lawn says to his daughter, "If you mow the lawn, then I will give you five dollars." Being independently wealthy, his daughter chooses not to mow the lawn. Being an old softy, Moe gives her five dollars anyway. Did Moe fail to keep his word? What does this tell us about the truth value of conditionals?

Reconstruct the arguments in passages 3–6. Then evaluate the objection immediately after the paragraph. Formulate the objection precisely, and then explain whether the objection is a good one. Add your own evaluation of the argument.

*3. If you read a lot, then you will improve your vocabulary. If you improve your vocabulary, then you will have a good chance of getting the job you want. Since you are taking an English literature course, you will read a lot.
Objection: Some jobs don't require a good vocabulary.

*4. If abortion is made illegal, many women will choose to have illegal abortions rather than have no abortion. If many women choose to have illegal abortions, then the number of abortions won't go down significantly. So making abortion illegal won't solve the abortion problem.
Objection: Not every woman who would have had an abortion if abortions remain legal would have one if they became illegal.

5. Jones reads the newspaper every day. If you read the newspaper every day, then you must be well-informed.
Objection: He reads only the astrology column and the comics.

6. If Margaret Thatcher is the prime minister of Great Britain, then Margaret Thatcher is male. Margaret Thatcher is the prime minister of Great Britain, so Margaret Thatcher is male.
Objection 1: Margaret Thatcher is a woman.
Objection 2: Some prime ministers are not male.
Objection 3: "Margaret" is a woman's name.

7. Any two characteristics must be related in one of the following ways: (a) the first is a sufficient but not a necessary condition for the second; (b) the first is a necessary but not a sufficient condition for the second; or (c) the first is a necessary and sufficient condition for the second; or (d) the first is neither a necessary nor a sufficient condition for the second. State which relation holds for each of the following pairs.

 a. father, parent
 b. sibling, sister
 c. Californian, American
 d. male parent, father
 e. brother, male
 f. tall, professional basketball player
 g. uncle, brother

8. The following cartoon suggests an argument for the conclusion "Damned." Reconstruct that argument and state its pattern.

This asset is intentionally omitted from this text.

III. ARGUMENT ANALYSIS AND PROBLEMS OF MEANING

A. Arguments and Meaning

Successful argument analysis often requires clarifying the meaning of some word or phrase used in the argument. When you are analyzing an argument, it is your job to state as clearly as possible what those words or phrases mean and to explain how different possible interpretations affect your evaluation of the argument. The following example will illustrate how this works.

Example 6

Whenever the school board rules that some textbook may not be used in classrooms, it is acting as a censor. The school board has recently ruled that a certain biology book cannot be used because it does not give equal coverage to theories of evolution and divine creation. That's censorship and I'm against it.

In this passage, the author first argues that a certain ruling is a case of censorship. The author goes on to express opposition to cases of censorship, although no argument about the merits of censorship is expressed here. We'll confine our attention to the first part, the argument purporting to establish that the ruling was a case of censorship. A plausible reconstruction of this argument is

Argument 6

1. All cases in which a school board rules that some textbook may not be used in classes are cases of censorship. (EP)

2. The school board's recent ruling is one which it has ruled that a certain biology textbook can not be used in classes. (EP)

3. The school board's recent ruling is a case of censorship. (1), (2)

The pattern here is

1. All *A*s are *B*s.

2. *x* is an *A*.

3. *x* is a *B*.

Premise (2) simply reports the facts of the case and is thus true. You might think that premise (1) of Argument 6 is true by definition, that the word "censorship" applies to all cases in which governmental bodies make any ruling about the use of books.

However, this premise requires closer scrutiny. It seems to be based on a definition of "censorship" according to which any action that prevents anyone from

using or reading a book is a case of censorship. We can write out this definition as follows:

Censorship: Any action that prevents any person from reading a book, seeing a movie, and so on.

If the definition is correct, then being an action of the specified sort is a sufficient condition for being a case of censorship: that is, if an action meets the condition, then it is a case of censorship. If the definition is correct, then being an action of that sort is also a necessary condition for being a case of censorship; if an action is a case of censorship, then it is a case of preventing someone from reading a book, seeing a movie, and so on. In other words, if the definition is correct, then being a case of preventing someone from reading a book seeing a movie, and so on, is both necessary and sufficient for being a case of censorship. In other words, by this definition the word "censorship" applies correctly to all and only actions of the specified kind. The definition is incorrect if there are cases of censorship that don't satisfy the condition or if there are cases that do satisfy the condition that are not cases of censorship.

A little reflection on this definition shows that it is incorrect. The condition specified is not sufficient for censorship. For example, suppose an author submits a manuscript to a publisher, and the publisher decides that the manuscript isn't very good and chooses not to publish it. All other publishers do the same thing. That isn't censorship. It's merely editorial judgment. Still, it can have the effect of preventing potential readers from ever reading the book. Or consider a public library that has a limited budget. It must select some books to buy, but not others. The librarians will take into consideration the quality of the books and the interests of the patrons. It would be a mistake to regard cases in which books were not selected as cases of censorship, even if some library patrons are unable to read the books as a result. Finally, in a case closer to the topic of the argument of Example 6, consider a math professor who chooses one textbook for her course rather than another. She's not censoring the unselected text; she's just not using it. Still, her choice may prevent her students from reading the unselected text. All these examples show that the proposed definition of censorship is far too broad. It fails to distinguish mere selection from censorship.

What, then, is censorship? Consulting a dictionary gives us a more precise definition:

Censorship: an act of removing from circulation or prohibiting the publication of something considered obscene, libelous, or politically objectionable, etc.[9]

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9. Adapted from the definition found in *Webster's New World Dictionary*, 3rd college edition (Cleveland, Simon & Shuster; 1988).

This definition says censorship occurs when something is restricted for reasons having to do with obscenity or political offensiveness and so on. With this understanding of the term, it is rather easy to produce counterexamples to premise (1) of Argument 6. Whenever a school board chooses against a particular text on the basis of its quality or cost, rather than for reasons of the sort just mentioned, it is not acting as a censor. So, cases in which a school board rules that a book may not be used are not necessarily cases of censorship. Such examples are counterexamples to premise (1). Once we see this, we can see that Argument 6 is a weak argument.

It may be, of course, that more information would lead us to revise and improve the argument. Perhaps there is evidence that in the case under consideration the school board was out to suppress some unpopular ideas. Evidence of that could lead to the formulation of a new and better argument for the same conclusion. Still, Argument 6 itself is a weak argument.

Notice that in this case, by thinking carefully about the meaning of a word we were led to a good objection to the argument. In every case when you are analyzing an argument that turns on the meaning of a word, you should say what the word means and show what implications that has for the argument. Following this procedure may help show that a particular premise is mistaken. It is up to you, as the person discussing an argument, to say as clearly as you can what the various terms mean. In effect, if you use the words of another, then you are taking them as yours. If you don't understand what they mean, then say so. If necessary, you can explain what the words might mean and how the argument works out given those various meanings. But it is your job to take responsibility for the clarity of the words you use in your reconstructions.

EXERCISES AND STUDY QUESTIONS

1. The following arguments depend on definitions (or at least proposed necessary conditions) of knowledge. Reconstruct the arguments and then evaluate them, paying particular attention to the premise having to do with what it means to know something.

   *a. No matter how sure you feel about the claim that the sun goes around the earth, you don't *know* that it is true. This is because it is not true.

   b. Even though it is extremely unlikely, you could be wrong about what your name is. Therefore, you don't know what your name is.

*2. Consider the following exchange:

   Lay Z. Kid: I got up early today, about 9:00 A.M.

   Mr. Kid: That's not early. Getting up early is getting up before 6:00 A.M.

   Lay Z. Kid: Well, I think it was early, I usually don't get up until after 11:00.

Think carefully about what "get up early" means. Does it have more than one meaning? How does its meaning affect the truth value of Lay Z. Kid's statements and Mr. Kid's statements.

3. It is likely that successful analysis of the following argument and the proposed objections that follow it depends on being clear about the key terms used in the argument. Reconstruct the argument. Then formulate its terms precisely and discuss the objections that follow.

I found that movie to be interesting and thought-provoking, but my friend fell asleep during it. Since we reacted so differently to the movie, it follows that it does not have one definite meaning. Its meaning depends on the individual.

Objection 1: Maybe your friend was just tired.
Objection 2: How we react depends both on the meaning of the movie and our own prior experiences and beliefs. So our different reactions don't show that the movie does not have one definite meaning.

4. In the Spring of 1997 many members of a group known as "Heavens Gate" committed suicide. In the ensuing discussion of this tragedy, considerable attention was paid to whether or not this group was a "cult." In the passage here, Pico Iyer considers several proposed definitions and suggests that there is something problematic with each. State the various definitions and the objections to them. Are all the definitions shown to be unacceptable by these objections?

Our Days of Judgment

One man's heartthrob is, notoriously, his neighbor's nightmare: What could he possibly see in her, we ask ourselves, watching the tawdrily dressed, flaky and obsequious woman on his arm (and unable, by definition, to see what he sees in her—and with her—when alone)? And one man's faith is no less impossible for a nonbeliever to fathom: in recent days, millions were celebrating the idea that a man actually rose from the dead, while another doubtless felt that he was committing a holy act that would gain him a place in heaven when he strapped a bomb to his body and entered a Tel Aviv restaurant. The leap of faith is—and has to be—a plunge into the unrational (which to skeptics seems "unreasonable"), and by its nature it is a move that leaves the rest of us behind. Every religion is a different language that, to those outside it, makes as little sense as Mandarin dialogue or Cyrillic characters do to me.

When we heard of the strange cyberdoctrines of the Heaven's Gate group last week, the easiest thing in the world to do was to mock them for their unapologetic embrace of UFOS, "Human Evolutionary Levels" and even a StarTrekky Kingdom of Heaven—to mock them, in fact, for defying our belief as they embraced their own. Their very name, we tell ourselves cosily (as we painted Easter eggs and watched outlandishly dressed icons waving golden, human-shaped statuettes), sounded like an *X-Files* version of a Californian healthfood store. It mattered little that unlike the members of Aum Shinrikyo in Japan, say, or that Tel Aviv terrorist, they seemed to

have kept mostly to themselves and been principally guilty of credulity and self-delusion.

Yet who is to determine when a "cult" becomes a religion, especially in a land where freedom of religion is sacrosanct? My Random House unabridged dictionary defines cult as "a particular system of religious worship" and then, seven lines later, as "a religion or sect considered to be false, unorthodox or extremist." A cult, in other words, is a religion and isn't one, depending on who's looking.

So what will our criteria be? Is a cult defined by the smallness of the congregation? Then what of those who follow Emerson or Whitman in observing a religion of one? Is it characterized by a lack of ancient scriptures? Then why does an Internet index call the old and established faith of Zoroastrianism a cult? Is it a function of a group's distance from orthodoxy? Then what of Jesus or Buddha or Muhammad—all of them heretics in their day?

"Every religion," as the great scholar of the world's belief systems, Huston Smith, points out, "mixes universal principles with local peculiarities," and the latter, he goes on, "are not easy for outsiders to comprehend." Sun Myung Moon's Unification Church was more often described as a "cult" before it took over 375 organizations (and Jim Jones' People's Temple is sometimes considered a church that devolved into a cult). As Scientologists do battle with the government in Germany, they could point out that religion apparently comes from the Latin *religare*, or "to bind;" *cult* comes from the Latin *cultus*, meaning "worship."

In the wake of last week's tragedy, some reflexively pointed their fingers at California, where belief is famously privatized, and reality, as in some dumbed-down version of Emerson, is often regarded as a vanity plate to be custom-made. In the privileged town of Santa Barbara, California, where I sit, the hills are alive with the sound of mantra—from John-Roger, the Texan guru of Arianna Stassinopolous Huffington, down the road; from the New Age preacher Marianne Williamson, closer to downtown; and even from the radio station on which I heard last week a minister speak rabidly of the Second Coming and Foxe's *Book of Martyrs*.

But to concentrate on spiritually orphaned, Internet-lonely California is to miss the point, when mass suicides confront us in Canada, in South Korea, even in placid Switzerland. And to focus too much on the millenarian climate is to ignore the fact that even in Shakespeare, comets mark "change of times and states" (as he writes in the first sentence of *Henry VI, Part 1)*. When prodigies break out in the fourth act of a Shakespearean tragedy, it is a sign that the time is out of joint: some fundamental link between man and his environment, as intrinsic as the link between parent and child, is broken.

To look beyond the eccentricities of Marshall Applewhite's creed is not to condone their odd assumptions—any more than one condones by saying, "I don't know how she could marry that spacey pagan." It is simply to acknowledge ignorance. "There is no one alive today," Arnold Toynbee once said, "who knows enough to say with confidence whether one religion has been greater than all others." And though the Heaven's Gaters' doctrine may

seem as weird to us as ours apparently seemed to them, the wider tragedy of the cruel suicides would be if our own faith prevented us from lavishing at least as much sympathy on the group as curiosity.[10]

5. The argument in the essay that follows turns in part upon the meaning of a word. Is the issue addressed just about the meaning of "volunteer," or is there some other issue under discussion here?

When Volunteerism Isn't Noble

Engraved in stone over the front entrance to my old high school is the statement, "No Man Is Free Who Is Not Master of Himself." No surprise for a school named Liberty.

But in 1991, the Bethlehem school board turned its back on the principle for which my school was named when it began requiring students to perform community service or other volunteer work. Students would have to show that they had done 60 hours of such service, or they would not receive their high school diploma.

That forced me to make a decision. Would I submit to the program even though I thought it was involuntary servitude, or would I stand against it on principle? I chose principle, and was denied a diploma.

Bethlehem is not alone in requiring students to do volunteer work to graduate. Other school districts around the country have adopted such policies, and in the state of Maryland, students must do volunteer work to graduate.

Volunteerism is a national preoccupation these days. Starting Sunday, retired Gen. Colin Powell, at President Clinton's request, will lead a three-day gathering in Philadelphia of political and business leaders and many others. General Powell is calling for more people to volunteer. That is a noble thought.

But what President Clinton has in mind goes far beyond volunteering. He has called for high schools across the country to make community service mandatory for graduation—in other words, he wants to force young people to do something that should be, by its very definition, voluntary.

That will destroy, not elevate, the American spirit of volunteerism. I saw firsthand how many of my classmates treated their required service as a joke, claiming credit for work they didn't do or exaggerating the time it actually took.

Volunteering has always been important to me. As a Meals on Wheels aide and a Girl Scout, I chose to give hundreds of hours to my community, at my own initiative.

While my family and I fought the school's mandatory service requirement, I continued my volunteering, but I would not submit my hours for credit. Two of my classmates joined me in this act of civil disobedience. At the same time, with the assistance of the Institute for Justice, a Washington legal-policy group, we sued the school board.

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10. Pico Iyer, "Our Days of Judgment," *Time*, April 7, 1997, p. 94.

As graduation neared, a school official pulled me aside and said it was not too late to change my mind. That day, I really thought about giving in. Then he asked the question that settled it for me. "After all," he said, "what is more important, your values or your diploma?"

I chose to give up my diploma, eventually obtaining a graduate equivalency degree instead. The courts decided against us and, unfortunately, the Supreme Court declined to hear our case. The school has continued the program.

Volunteering is important. But in a country that values its liberty, we should make sure that student "service" is truly voluntary.[11]

B. Ambiguity and Arguments

B1. The Nature of Ambiguity

Many words have more than one meaning. Consider how the word "bank" is used in the following sentences:

5. She put her money in the bank.
6. We paddled the canoe over to the river bank and got out.
7. There is a bank of elevators in the next corridor.

In these sentences, the word "bank" is used to mean "financial institution," "side (or edge)," and "set of matched things arranged in a row." Words with more than one meaning are said to be ***ambiguous***. Sentences containing such words often inherit ambiguity from the words they contain. When a sentence is ambiguous, it can be used to make two or more different statements, depending on which meaning the ambiguous word or phrase is given. Thus, sentence (5) could be used to make the statement that she put her money in the financial institution or that she put her money in the side of a river.

A sentence can be ambiguous even if there is little or no danger of misunderstanding it. If, for example, my colleague uses sentence (5) after I ask her what she did downtown during the lunch hour, I would have no trouble realizing that she put her money in the financial institution, not in the riverside. Similarly, if you tell me that your canoe is on the bank, I know that it is at the riverside and not on top of the financial institution. Still, sentences (5)–(7) are ambiguous because they do have these different possible meanings.

Sometimes people use the word "ambiguous" in a more limited way. They say that something is ambiguous only when there is a significant chance of misunderstanding, when we can plausibly ascribe more than one of the possible meanings in the situation at hand. This is also a legitimate use of the word "ambiguous" and shows

11. Lynn Steirer, "When Volunteerism Isn't Noble," *New York Times*, April 22, 1997, p. A21. Copyright © 1997 by the New York Times Co. Reprinted by permission.

that the word "ambiguous" is itself ambiguous. On our usage, however, ambiguity is more widespread, but only some ambiguities are troublesome or likely to lead to misunderstandings.

It is remarkable just how widespread ambiguity is. A great many common words have two or more different meanings. When something is described as "dry," it typically means "not wet." But "dry" also means "not sweet" (as in "I'd like a dry white wine") and "plain or unexciting" (as in "That was a rather dry lecture"). It has several other meanings as well. As a result, a sentence containing the word "dry" is ambiguous and can be used to make many different statements, although we typically can determine which meaning of "dry" is intended by the context of use.

Sidebar: Syntactic and Semantic Ambiguity

There are two different ways in which phrases and sentences can be ambiguous. When a sentence contains a word (or more than one word) that is ambiguous and has different meanings depending on how that word is used, the sentence is said to have "semantic ambiguity." In other cases the ambiguity does not depend on the meaning of any individual word. Consider these sentences:

    A. Bruiser likes football more than his wife.
    B. Those who run frequently have sore legs.

The two meanings of sentence (1) can be seen by considering two different ways it could be expanded:

    A1. Bruiser likes football more than his wife likes football.
    A2. Bruiser likes football more than Bruiser likes his wife.

Similarly, (B) can mean either

    B1. If you run frequently, then you have sore legs.
    B2. If you run, then you frequently have sore legs.

    Sentences (A) and (B) exhibit syntactic ambiguity. They are ambiguous because the words can be combined in different ways to form sentences with different meanings. The ambiguity in (A) arises because "likes more than" can be used to make two different comparisons. In (B), "frequently" can modify two different things.

B2. Arguments with Ambiguous Premises

The mere presence of an ambiguous term is not a flaw in an argument. Ambiguity is a problem only if the argument in some way exploits that ambiguity. As we will see, there are cases in which an argument is ill-formed or weak but an ambiguous term conceals its defects.

It should be obvious that the mere presence of an ambiguous term in an argument does not show that there is a defect in the argument. If it did, nearly every argument would be defective, since nearly every term is ambiguous. Even when an argument contains a word or sentence that is likely to be misunderstood because of

This asset is intentionally
omitted from this text.

its ambiguity, the argument need not be defective. To see whether the argument succeeds, we must consider the effects on the argument of the various interpretations of the ambiguous parts.

To see the main way in which an argument can go wrong as a result of an ambiguous term, consider the following example. Although this example is not very realistic, it illustrates a pattern that can be found in realistic examples.

Example 7

Two lawyers are discussing judge James E. Hannan, before whom they are about to try a case. One of the lawyers says that all the reports and evaluations about Judge Hannan say that he is honest and impartial and that he listens carefully to arguments of both sides and makes reasonable

decisions on the basis of the evidence presented. He is a fair judge. The second lawyer says that he is concerned about the fact that Judge Hannan is fair, since he doesn't like to try cases before mediocre judges.

In this example, the second lawyer makes an inference from the premise that the judge is fair to the conclusion that the judge is mediocre. Let's reconstruct this argument.

Argument 7

1. Judge Hannan is fair. (EP)

2. Judge Hannan is mediocre. (1)

Obviously, there is a missing premise here. If we add the likely candidate, we have

Argument 7a

1. Judge Hannan is fair. (EP)

2. All fair judges are mediocre judges. (EP)

3. Judge Hannah is mediocre. (1), (2)

This looks like a valid argument, following one of our familiar patterns. However, it should be clear that something has gone wrong.

The problem concerns the word "fair." It has two different meanings. The first meaning of "fair" is "impartial" or "unbiased." The second is "no better than average" or "mediocre." Having noted this ambiguity, the next step is to look at how the word is used in the argument. Suppose we use "fair" in its first sense in both premises of Argument 7a. In that case, premise (1) is true. (We can assume this is true for the sake of discussion.) But now premise (2) makes the same statement as

All unbiased judges are mediocre judges.

This is plainly false. Some unbiased judges are excellent and some are terrible. So, when "fair" is used in this way, the second premise is plainly false.

Now consider what happens when we use "fair" in its second sense throughout the argument. The second premise is true, but the first premise says that the judge is no better than average. That surely isn't the premise that the first lawyer asserted and the evidence provided does not support this premise at all. Interpreted this way, the argument is valid but the first premise is false. With each interpretation, then, we have found a premise to reject.

There is a third possible interpretation of the argument to consider. We can find a way to make each premise true, but this requires switching the meaning of "fair" from one premise to another. If we interpret the two premises this way, then the argument can be restated as follows:

Argument 7b

1. Judge Hannan is unbiased. (EP)

2. All judges who are no better than average are mediocre. (EP)

3. Judge Hannan is mediocre. (1), (2)

This argument is plainly ill-formed. The two premises together provide no support whatsoever for the conclusion. The pattern here is

1. x is an A.

2. All Bs are Cs.

3. x is a C.

In sum, there are three possible interpretations of the argument. If the word "fair" is given a consistent interpretation throughout the argument, then the argument is valid but one premise or the other is false. When the interpretation shifts so that the premises are both true, then the argument is ill-formed. Thus, there is no interpretation of the argument in which it is strong.

No one is likely to be fooled by Argument 7. However, the sort of error illustrated by this argument does mislead people from time to time. When the shift in meaning of a term is not so obvious, we can fail to notice that the plausibility of the premises of the argument relies on this shift. Here is an example of a more subtle shift:

Example 8

The fundamental claim of the Declaration of Independence is that all men are created equal. However, people are created very different from one another in many ways. They differ in size, strength, intelligence, and other ways. Many of these differences result from genetic factors that are present from the time they are created. So it is not true that all men are created equal. It follows that the fundamental claim of the Declaration of Independence is false.

This example is somewhat more puzzling than the previous one. It may even seem to present a good argument. However, problems arise when we reconstruct the argument.

Argument 8

1. People differ at the time they are created in many ways, including genetic factors that contribute to size, strength, and intelligence. (EP)

2. If (1) is true, then it is not true that all people are created equal. (IP)

3. It is not true that all people are created equal. (1), (2)

4. If it is not true that all people are created equal, then the fundamental claim of the Declaration of Independence is false. (EP)

5. The fundamental claim of the Declaration of Independence is false. (3), (4)

The problem concerns the meaning of "equal." This word has several different meanings, two of which concern us here. According to one definition, to say that two things are equal is to say that they are alike in quantity or measure. It is some meaning along these lines that makes (2) true: differences in size and intelligence show that people are not created (so that they will turn out to be) alike in these quantitative respects. Of course, the Declaration of Independence didn't intend to say that people are alike in these ways. So, if being created equal requires being created in a way that will result in being the same size or having the same intelligence, then (4) is false. It wasn't a fundamental claim of the Declaration of Independence that all people are created in ways that will result in their being alike in these ways. This point can clearly be seen by replacing "equal" in (4) with the definition currently being considered:

4a: If it is not true that all people are created in such a way that they will come out being alike in size, strength, intelligence, and so on, then the fundamental claim of the Declaration of Independence is false.

Premise (4a) is plainly false.

Another meaning of "equal" is "having the same privileges, status, and rights." This is what the authors of the Declaration of Independence had in mind when they said that all men are created equal. With "equal" understood this way, (4) is true, but (2) is plainly false. If we replace "equal" in (2) with this definition, it says:

2a: If people differ at the time they are created in many ways, including genetic factors that contribute to size, strength, and intelligence, then it is not true that all people are created with the same privileges, status, and rights.

Premise (2a) is also plainly false. There is no reason at all to think that these physical differences make people have different rights. (It may be true that people do have different rights or status, but that is not the issue here; the issue is whether the premise as stated is true.)

Thus, if we interpret "equal" consistently throughout the argument, then either premise (2) or (4) is false. Either way, the argument is weak. It is possible to shift the interpretation of the argument so that both premises are true, but then the argument is ill-formed. "Equal" must be given one of the two meanings in (3). If it means "having the same in privileges, status, and rights," then (3) doesn't follow from (1) and (2). If (3) means that all people are created in a way that will cause them to have the same traits, then (5) doesn't follow from (3) and (4). Thus, there is no interpretation of Argument 8 that can make it strong.

This example illustrates the way in which ambiguity can affect an argument. People sometimes do get confused by arguments that contain ambiguous words, so it is important to be careful to avoid illegitimate shifts in meaning when analyzing argu-

ments. However, it is also important to avoid insubstantial criticisms of arguments. Ambiguity is only a problem when it affects an argument in the way just illustrated.

EXERCISES AND STUDY QUESTIONS

It is plausible to think that there are ambiguities involved in the following arguments. Reconstruct and evaluate the arguments, paying particular attention to ambiguities.

*1. The decision to have an abortion is an important personal decision. But if a decision is a personal one, then no one else should interfere. Therefore, no one should interfere with a woman's decision to have an abortion.

2. People say that the United States is a free country. But we are not allowed to drive more than 55 miles per hour on some of our highways.

*3. A person is justified in doing something when doing that thing is beneficial to himself and hurts no one else. Believing that you'll succeed, even when your evidence does not support that claim, is sometimes beneficial to you and doesn't hurt anyone else. So, sometimes a person is justified in believing something not supported by his evidence.

4. To display true altruism, a person must behave in a way that is harmful to herself and beneficial to others. Evolutionary theory tells us that people, since they are the product of evolution, always act in ways to maximize their chances for survival. So they always act selfishly. Thus, people never display true altruism.

*5. If people are able to lift something, it follows that the thing is liftable. Similarly, if people do desire something, then it is desirable. If something is desirable, then it is good. So, if people do desire something, then it is good.

6. The Declaration of Independence says that all men are created equal. Women aren't men. So what the Declaration of Independence says doesn't apply to women.

7. According to the text, only arguments can be valid. However, the law holds that people are allowed to drive only if they have a valid driver's license. Since a driver's license isn't an argument, the text is wrong.

8. You may think that Mary is generous, but she is really quite selfish. Sure, she does lots of work for charities, but she only does it because it makes her feel good about herself.

C. Vagueness and Arguments

C1. The Nature of Vagueness

Some words have imprecise meanings. Consider the word "sleepy" in the following sentence:

8. Needza Nap is sleepy.

There are some situations in which it is perfectly clear what truth value this statement has. If Needza has just completed a brisk walk on a cool day and he is as alert and invigorated as a person could be, then (8) is false. If Needza is sitting through a boring lecture in a hot and stuffy auditorium and is barely able to keep his eyes open, then (8) is true. But there are other situations in which it is much harder to say whether it is true. For example, if Needza is sitting through an important but unexciting meeting, his mind might wander a bit and he may be less than fully alert. In such a case, (8) is neither clearly true nor clearly false; it is a borderline case.

Words that have borderline cases of application are *vague*. The clearest examples are words that apply to all the things that are near one end or the other of a continuous scale. "Tall" and "rich" are good examples. They clearly do apply to things at one end of the scale, they clearly don't apply to things at the other end, and it is unclear whether they apply to things in the middle. There seems to be no precise cutoff point or line of demarcation between the things to which they apply and the things to which they don't apply. Other examples of vague words are color words, such as "red" and "blue," since (at least in ordinary use) there is no precise boundary between the things to which they do apply and the things to which they don't apply. It is often difficult to decide whether a sentence containing a vague word expresses a truth.

Our inability to decide whether a vague sentence expresses a truth need not result from our ignorance of the facts of the situation. You might be unable to tell whether "Needza Nap is sleepy" expresses a true statement because you don't know anything about Needza's situation. In that case, vagueness has nothing to do with your problem. However, it is also possible that you know all there is to know about her situation. Perhaps you've just checked her physical condition with a "nap-o-meter" and you know exactly how sleepy she is. Still, if she is in some intermediate condition, you might be unsure whether the statement is true. In this case, the problem is that there is no precise cutoff between being sleepy and not being sleepy. In other words, your uncertainty results from the fact that "sleepy" is a vague word and not from your ignorance of her condition.

A remarkable, and troubling, fact is that nearly every word is vague. Consider the word "chair." It may not seem vague, but there are some borderline cases, such as stools, benches, seats in automobiles, and boxes used for sitting. There is some vagueness in almost every word, except possibly mathematical expressions and some rigidly defined scientific terms. Of course, there are important differences among vague words. For some words, there are a great many borderline cases and few cases of clear application or nonapplication. For other words, borderline cases are rather rare.

C2. Vagueness and Ambiguity

Vagueness and ambiguity are different characteristics of terms. A word is ambiguous provided it has two different meanings. It could be that each of those meanings is perfectly precise. A word is vague when its meaning is imprecise, when it admits of borderline cases. In fact, it would be better to say that a certain *meaning* of a word is vague, rather than that the word itself is vague. Indeed, it is possible for a word to have two different meanings, one of them vague and one not. Consider, for example,

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Sidebar: Vagueness and Truth

Vagueness may introduce a genuine problem for one aspect of the objective theory of truth. Suppose that someone points to Needza Nap and says:

He is sleepy.

Suppose that he is in the intermediate state, on the border between being sleepy and not being sleepy. What, then, should we say about the truth value of this proposition? It would be a mistake to think that there must be some precise defining conditions for being sleepy and that either Needza Nap satisfies those conditions or he doesn't. To say that the term "sleepy" is vague is to deny this. It is to say that there really are borderline cases. But if this is right, then this proposition is neither definitely true nor definitely false. This conclusion seems to contradict the "one truth value principle."

The idea just suggested is that vague sentences sometimes express propositions that are neither true nor false. They are indeterminate in truth value. The idea isn't that they have a definite truth value but we aren't able to figure out what it is. Nor is the idea that the truth values of these propositions are somehow a matter of opinion. Rather, the objective fact about them is that they are indeterminate.

There is considerable controversy about whether this is the right way to deal with vagueness. If it is, then we must revise (OTV). We can no longer assert that every proposition must be either true or false. If there are vague propositions, then we should say that every determinate (nonvague) proposition must be either true or false, and that vague propositions can be indeterminate in truth value.

Notice, however, that even if (OTV) must be revised in this way, the truth value of a proposition is still an objective fact about the proposition. If there are vague propositions, then it is an objective fact about them that they are indeterminate. A proposition's status as indeterminate, rather than true or false, is no more dependent on our thoughts and feelings than is its status as true or false. So, to account for vagueness we may have to revise (OTV) slightly, but we do not have to abandon the central idea, which is that whether a proposition is true, false, or indeterminate depends not on what we think about it but rather on whether or not it correctly describes the world.

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the word "square." According to one meaning of this word, its meaning in geometry, it means "closed plane figure having four equal sides and four right angles." This meaning is quite precise. Either a thing satisfies this condition, and is a square, or it doesn't, and it isn't a square. The word "square" also has a slang or colloquial meaning, according to which it means something like "not stylish" or "not up to date." This meaning surely has some vagueness. Although some people clearly are square and others clearly aren't, there are quite a few who are somewhere in between. So, one meaning of "square" is not vague and the other is vague.[12]

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12. Of course, we sometimes apply the word "square" to things that are only approximately square in the strict geometrical sense. To account for this usage, we have to assume that either *(a)* strictly speaking, such assertions are false or *(b)* there is yet another sense of the word "square" that means something like "plane figure (or surface) having four sides that are nearly equal in length and four angles that are nearly right angles."

C3. *Arguments with Vague Premises*

As is the case with ambiguous premises, the presence of vague premises in an argument does not make the argument defective. Vagueness is only a problem when the argument improperly takes advantage of vagueness. This could happen if, somehow, the argument seems to provide good support for a conclusion when it in fact doesn't and this false appearance is the result of vague terms it contains.

Some mistaken criticisms of arguments are based on the observation that some part of the argument is vague. Consider the following:

> **Example 9**
>
> Sents R. Ship argues that pornographic books and movies should be banned on the grounds that the availability of such materials contributes to violent behavior such as rape. In response, a critic asks, "Where do you draw the line between what's pornographic and what isn't?"

We can reconstruct Ship's argument along the following lines:

> **Argument 9**
>
> 1. Allowing people to have pornographic books and movies leads to violent behavior such as rape.
>
> 2. We shouldn't allow things that lead to violent behavior such as rape.
>
> 3. We shouldn't allow people to have pornographic books and movies. (1), (2)

For now, our concern is with replies such as "Where do you draw the line between what's pornographic and what's not?" or "Who's to say what's pornographic and what's not?"

Both "Where do you draw the line?" and "Who's to say?" are often used in response to arguments containing some vague term. It is true that the term "pornographic" is vague, since there are many borderline cases of pornography. However, these rhetorical questions do not amount to effective criticisms of Argument 9. Rather, they tend to be argument stoppers. They don't show that there is anything wrong with either premise. The mere fact that there is some vagueness in premise (1) doesn't show that it is false. Many claims containing vague terms are undeniably true, such as "Wealthy people typically have more money than poor people." Perfectly good premises can contain vague terms. To respond to Argument 9 by complaining about the vagueness of the word "pornographic" is to engage in insubstantial criticism and avoid confronting its central point.

There are, of course, legitimate questions to raise about Argument 9. One might wonder whether pornography really does have the consequences attributed to it, and one might consider whether or not allowing people to have pornographic materials is the best way to deal with the problem. To consider these issues is to address the argument in a serious way. It is also true that the vagueness of the term "pornographic"

suggests that there will be a problem implementing any policy that prohibits pornography. One will have to find a way to determine exactly which things are prohibited. This may be a serious enough problem to make it best not to adopt any such policy.

There are, then, serious questions to consider when evaluating arguments such as Argument 9. However, merely pointing out that there is some vagueness in the term "pornographic" is not a way of raising those issues and is not an acceptable way to criticize the argument. Pointing out that some term in an argument is vague is not a substantial criticism of an argument. Our requirements that criticisms of premises be substantial and that they be directed at specific premises help to minimize the use of poor criticisms like this.

There are some unusual but interesting arguments in which vagueness really does lead to problems. These arguments make use of principles or statements of policy that seem to be right, but which lead to puzzling results. Consider, for example, the following "Soak-the-rich principle":

> **SRP:** If a person is rich and one cent is taken from that person, the
> person is still rich.

This principle expresses the extremely plausible idea that reducing a person's wealth by one cent can never make the person go from being rich to not being rich. Now, imagine a very rich person with $1 billion. According to (SRP), if one cent were taken from this person, he'd still be rich. But imagine repeated applications of this principle. It tells us that after each decrease of one cent in wealth, the person remains rich. Now, that probably seems to hold true for quite a while. But after 100 billion applications of the principle, we get the result that if he had nothing he still would be rich.

This reasoning can be formulated as an argument. The argument is a little easier to state if we reword (SRP) slightly. What the principle says, in effect, is that one cent can never make the difference between being rich and not being rich. In other words, if a person with X dollars is rich, then a person with X dollars – $.01 is also rich. This will be the main premise of our argument. Thus we have the following:

Argument 10

1. A person with $1,000,000,000 is rich.

2. For any number of dollars, X, if a person with X dollars is rich, then a person with X dollars – $.01 is rich.

3. A person with $99,999,999.99 is rich. (1), (2)

4. A person with $99,999,999.98 is rich. (3), (2)

5. A person with $99,999,999.97 is rich. (4), (2)

. . .

100,000,000,001. A person with $.01 is rich. (100,000,000,000), (2)

100,000,000,002. A person with $.00 is rich. (100,000,000,001), (2)

This very long argument is valid. It is a compound argument containing an enormous number of intermediate conclusions. As we saw earlier in this chapter, when you criticize a compound argument that is valid, your criticisms must be directed at one of the basic premises rather than at one of the intermediate conclusions. The Soak-the-rich argument is a valid argument with only two basic premises, (1) and (2). So we must either reject one of these premises or accept the conclusion of the argument.

You might have the feeling that something has gone wrong here. Surely something has. The conclusion of this argument is definitely not true, but the argument is valid and the premises seem just fine. There is no plausibility in denying (1), and no point in denying it anyway. It could be replaced by a premise mentioning an even larger amount of money, but the logic of the argument would remain the same. We are left with denying (2). The problem with (2) arises because it contains the vague term "rich." The reason (2) seems true is that there is no definite cutoff, no precise boundary, between being rich and not being rich. That's why one cent can never make the difference. Contrast this with a precise term like "millionaire." If you keep taking one cent away from a millionaire, there is a precise point at which the person ceases being a millionaire.[13] But vague words like "rich" are not like that. Thus, we are forced to say that the general principle expressed in (2) is not true. This is not to say that specific instances of the soak the rich principle are not true. Premises (4) and (5) of the argument, for example, are still true. It's just that, after a while, you get to premises that are borderline.[14]

Unusual arguments like the soak-the-rich argument do involve an underlying flaw, and the flaw arises because they exploit a vague term. It is legitimate to criticize an arguments like this one on the grounds of vagueness, but it is an odd argument. And the defect is not simply that it contains a vague term, but, rather, that it exploits the vagueness of that term through repeated application of the soak-the-rich principle.

EXERCISES AND STUDY QUESTIONS

1. Look up a few common words in a dictionary. Are they vague? Are they ambiguous?
2. Would it be a good thing to banish vague words from our language? Why or why not?
*3. Suppose that a sentence is ambiguous. Does it follow that it can be used to express two different statements, one of which is true and the other false?
*4. Consider the following sentence:

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13. This assumes that the value of the person's assets at each moment is precise.

14. Vagueness can present enormous difficulties. In this argument, for example it doesn't seem right to say that there is a specific step that would be the first borderline one. So the boundary between the steps in the argument that are true and the steps that are borderline is itself vague. The more you think about these matters, the more puzzling they become. Fortunately, such issues don't often affect the real-world arguments that are the focus of this text.

The number of people (excluding fetuses) who lived on the island of Manhattan at noon on January 25, 1652, was even.

Since we have no idea whether the number of people was odd or even, does it follow that this sentence is vague?

5. Consider the following simple argument:

Lotsa Cash is a well-paid president of a large American corporation. Therefore he can afford to buy a new car.

Reconstruct the argument. Then evaluate the following criticisms of the argument.

Objection 1: Who's to say what counts as well-paid?
Objection 2: Some wealthy people spend their money as quickly as they make it. So Cash may be out of cash.
Objection 3: Cash might not want to spend his money on a car.

6. Consider the following "early vacation principle":

EVP: Missing one class will not make the difference between doing well in a course and not doing well in that course.

Students rationalizing their decision to leave campus a few days before a vacation begins often invoke (EVP). Is (EVP) a reasonable general principle?

D. Arguments with Incomplete Premises

There are at least two ways in which the sentences used in informal statements of arguments can be *incomplete sentences*. In these sentences an important element of the sentence goes unstated. To know just what proposition the sentence expresses, you must fill in the missing component.

D1. Incomplete Sentences: Missing Quantifiers

Suppose that I walk into my study and say:

9. The books in that bookcase are philosophy books.

An argumentative listener might criticize my claim on the grounds that there is a dictionary in the bookcase and that it is not a philosophy book. Does this show that the proposition I expressed when I uttered (9) was false?

The answer depends on exactly what proposition I expressed using (9). My listener took me to be making the statement:

9a. *All* the books in that bookcase are philosophy books.

But I might defend myself by saying that what I meant was something like one of the following:

9b. *Nearly all* the books in that bookcase are philosophy books.
9c. The *typical* book in that bookcase is a philosophy book.

The same sort of conflict might arise if I were to say:

10. Cats like to chase mice.

A critic might dispute my claim by describing her old and feeble cat who doesn't like to chase mice and prefers to sleep on an old blanket. Most likely, however, we would not accept this criticism on the grounds that what was intended by (10) was something like one of these statements:

10a. *Most* cats like to chase mice.
10b. *All normal* cats like to chase mice.

The fact that the critic's old and feeble cat doesn't like to chase mice does not refute (10a) or (10b). When a person says (10), it is unlikely that she is unaware of the fact that there are some sick or peculiar cats who don't like to chase mice. Most likely, she means to say something like (10a) or (10b) but is speaking somewhat unclearly.

All of the sentences we've considered here are generalizations. Typical generalizations take these forms:

All *A*s are *B*s.
Most *A*s are *B*s.
Some *A*s are *B*s.

Each of these generalizations contains a quantifier, such as "all," "most," or "some." The striking thing about sentences (9) and (10) is that they look like generalizations but contain no quantifier. As a result, they are incomplete sentences. For a sentence expressing a generalization to be complete, it must contain a quantifier; it must say how many of the *A*s are *B*s. Sentences (9) and (10) are incomplete because they are generalizations that lack a quantifier, or have a *missing quantifier*.

The incompleteness of sentences such as (9) and (10) causes confusion when we are attempting to decide whether they express truths or not. Until a quantifier is added, the sentences don't express any definite propositions. When we hear such sentences, usually we automatically add a quantifier to form complete statements. But one person may complete such a sentence using one quantifier, while another person completes it using a different quantifier. As a result, one person takes the sentence to express one proposition and the other person takes it to express a different proposition.

When arguments contain premises that are missing quantifiers, it is impossible to evaluate them. Consider the following argument:

Argument 10

1. Cats like to chase mice.

2. Felix is a cat.

3. Felix likes to chase mice.

Is this argument valid? cogent? ill-formed? Try to answer before reading on.

If you said that the argument is valid, you must have assumed that (1) meant that *all* cats like to chase mice. If you said that it is cogent, you must have assumed that (1) said that *most, or nearly all*, cats like to chase mice. If you said that it is ill-formed, you probably assumed that (1) said only that *some* cats like to chase mice. But the fact is, as worded, Argument 10 doesn't say any of these things. It has an incomplete premise. You can only evaluate the argument if you supply a quantifier in (1).

Arguments with premises that lack quantifiers are thus improperly stated arguments. They are not yet ready for evaluation. Therefore, when you reconstruct any argument, you should make sure that there are no premises with missing quantifiers. If you are reconstructing an argument from a written passage in which the author has stated a generalization but has not supplied the quantifier, it is your job to supply the quantifier. It is not acceptable to leave the premise without a quantifier and then criticize on the grounds that it is incomplete. If you are evaluating one of your reconstructions and you find that it contains a premise with a missing quantifier, then you have not done a good job of argument reconstruction. You improve on that reconstruction by supplying a quantifier. You should follow the principle of charity when you do this: supply the quantifier that makes for the strongest argument. If it is unclear what the correct quantifier is, you can discuss each of the most plausible alternatives.

D2. Incomplete Sentences: Implicitly Relative Sentences

Some incomplete sentences omit terms that are part of a comparison. Consider the following sentences:

11. Junior is above average in height.
12. Fido is below average in weight.

People use and understand sentences like these all the time. However, there is a way in which they are obviously incomplete. To say that something is above or below average in height or weight is to compare that thing to the average of some group. Sen-

tences (11) and (12) don't mention any comparison group. Typically, when we say something like (11), we mean:

11a. Junior is taller than the average child of his age.

And when we say (12), we usually mean:

12a. Fido weighs less than the typical dog of his species.

Of course, we don't have to use (11) and (12) to make just these comparisons. If Junior is trying out for the school basketball team, we might use (11) to say that Junior is taller than the average person trying out for the team. And we might use (12) in a context in which we are comparing Fido to the dogs in the Chubby Dog Society.

Sentences like (11) and (12) express comparisons or relations, but they don't make explicit the terms of comparison. Such sentences are ***implicitly relative***; they make comparisons or describe relations between one thing and some unspecified comparison group or reference class. These groups or classes are made explicit in (11a) and (12a). When you hear or read a sentence such as (11) or (12), most likely you automatically identify the appropriate reference class and understand the sentence perfectly well. The situation or context in which the sentence is used usually enables us to complete the sentence and thus understand the statement it expresses.

Implicit relativity is a common linguistic phenomenon. It occurs in each of the following sentences:

13. Grandma is a fast runner.
14. Larry is tall.
15. Sparky is intelligent.

If you hear these sentences, their contexts might make it clear that they are to be completed along the following lines:

13a. Grandma is a fast runner for a person over sixty-five.
14a. Larry is tall for a professional basketball player.
15a. Sparky is intelligent for a dog.

Since we often understand the comparison intended, it is not necessary in ordinary conversation to make explicit the intended reference class. In fact, it would probably be annoying people if you always did make it explicit. However, the context does not always make reference classes clear, and at times people misidentify the reference class intended by the speaker. When arguments contain premises that are implicitly relative, it is easy to misinterpret those premises and thus evaluate an argument other than the one intended by an author. Once again, the best thing to do is to be careful and charitable in your interpretations.

EXERCISES AND STUDY QUESTIONS

1. Point out the ways, if any, in which the following sentences are ambiguous, incomplete, or vague.
  *a. The vice president is in the White House.
  *b. Jones is smart.
  *c. Ralph is tall.
  *d. Shooting is a dangerous activity.
  e. I am tired.
  f. 2 + 6 = 8.
  g. Jones ate eight apples.
  h. His hair is longer than hers.
  i. Professional basketball players are tall.

2. Reconstruct the following argument and then discuss the criticism.

> It is important for the future of our nation that all Americans have the opportunity to attend college. Therefore, we should provide scholarships to needy students.

> *Criticism*: Who's to say which students are needy?

3. Look through the editorials, opinion columns, and letters to the editor of a newspaper. Try to find examples of sentences with missing quantifiers. Is it obvious in all cases how to fill in the quantifier? Are there any cases in which the author seems to make a good point, but once you fill in the quantifier the point is less plausible or less interesting?

IV. SUMMARY

Usually, when you reconstruct an argument, you will revise and modify the argument until it is well-formed. As a result, much of your evaluation will focus on the premises themselves. If you find that the premises are all reasonable to believe, then it is reasonable for you to believe the conclusion as well. (The exceptions to this are defeated cogent arguments.)

The principle of charity is the overriding principle governing the evaluation of arguments. It requires that you be fair and reasonable. There are four main guidelines to follow. First, you cannot criticize an argument by objecting to its conclusion. Rather, you must show that there is something wrong with the argument. Second, you should not accept an argument simply because you think that its conclusion is true. Even if the conclusion is true, the argument may be weak; argument analysis requires careful evaluation of the premises of arguments. Third, criticisms must be directed at specific premises. There is no such thing as a general criticism

of premises. Finally, criticisms of premises should be substantial. Avoid the use of argument stoppers.

Competing arguments are arguments whose conclusions conflict or compete with one another. Although it is possible for competing arguments to be interesting and initially plausible, the conclusions of competing arguments cannot both be true and the arguments cannot both be strong for you. Competing arguments can both be weak, since there can be bad arguments on both sides of a question.

In evaluating premises, it is always acceptable to make use of any relevant information that you have. The premises of arguments fall into three main categories: specific factual claims, generalizations, and compound statements. Specific factual claims are statements about individuals that typically ascribe some property to a person or object. Generalizations are typically criticized by means of counterexamples. A universal generalization is false if there is one counterexample to it. Nonuniversal generalizations are not refuted by the existence of a single counterexample. Effective criticism of this kind of generalization requires showing that there are enough counterexamples to refute the generalization. How many that is depends on the sort of generalization in question.

Compound statements include conjunctions, disjunctions, and conditionals. Conjunctions assert the truth of both conjuncts and are refuted by information that shows either conjunct to be false. You can also reasonably reject a conjunction when you have information showing that the conjuncts cannot be true together. Disjunctions assert the truth of one or the other (or both) of two (or more) statements. They are refuted by information showing that neither disjunct is true. Arguments by elimination are the most common arguments that make use of disjunctions. An argument by elimination can plausibly be rejected as weak when there are plausible alternatives to the disjuncts included in its disjunctive premise. Thus, to criticize an argument by elimination it is not necessary to show that its disjunctive premise is false.

With "if–then" statements, if you have reason to believe that the consequent of the conditional must be true if the antecedent is true, then you should accept the conditional. If you have reason to think that the consequent is usually true when the antecedent is true, then you should also accept the conditional unless you have reason to think that the situation you are in is one of the atypical cases in which the consequent would be false even if the antecedent were true. If there is no connection between the antecedent and the consequent, or you have reason to think that the consequent is probably or definitely false if the antecedent is true, then you should reject the conditional. You can often rewrite conditionals as generalizations. It is usually good to do so, because generalizations are somewhat easier to understand and evaluate than conditionals.

Argument analysis often requires clarifying the meaning of the terms used in the argument. When analyzing an argument, you need to make the words and phrases you use in your reconstructions as clear as possible. This is often done by means of definitions that state necessary and sufficient conditions for the application of key terms.

Words and sentences are ambiguous when they have more than one meaning. Vague words are words that have imprecise boundary conditions; although there may be clear cases in which vague terms do apply and clear cases in which they don't apply, there are borderline cases as well. The mere presence of an ambiguous (or vague) term in an argument is not adequate grounds for rejecting the argument. Some arguments exploit ambiguous terms, and such arguments are weak When an argument exploits an ambiguous term, there is no interpretation of the argument that makes it strong. Whatever interpretation is given to the term, one premise or another is unjustified or the argument is ill-formed. Although people often criticize arguments on the grounds that they contain a vague premise or a vague conclusion, this is not a good criticism. Vagueness is only a problem when the argument exploits this vagueness, as in some odd arguments that include repeated applications of principles involving vague terms.

Incomplete sentences are sentences that omit some important feature. Sentences such as "Mice like to chase cats" are incomplete because they are missing a quantifier. To complete the sentence one must add a quantifier, such as "some" or "all." It is impossible to assess an argument for validity or cogency when it contains steps with missing quantifiers. Thus, in a good reconstruction there are no steps with missing quantifiers. Implicitly relative sentences are also incomplete. These sentences, such as "Jones is tall," implicitly express a comparison. The context often makes it clear what the intended comparison is. Thus, when someone says, "Jones is tall," it is often clear that the person means "Jones is tall for an adult male" or "Jones is tall for a teenager." In argument analysis is best to make these comparisons explicit in order to avoid misunderstandings.

The steps in argument analysis can now be expanded to include fourth and fifth steps.

CHECKLIST OF KEY TERMS

- insubstantial criticism
- argument stoppers
- competing arguments
- counterexample
- compound sentences
- sufficient condition
- necessary condition
- ambiguous
- vague
- incomplete sentence
- implicitly relative sentence

The Steps of Argument Analysis

4. Evaluate the argument.
   a. When you reach this stage of argument analysis, you will usually have a well-formed argument. If the argument is ill-formed and there is no plausible way to modify it to make it well-formed, then reject the argument.
   b. If the argument is valid, then the only acceptable way to criticize the argument is to criticize one or more of its premises (or their conjunction). To reject the argument, you must have reason to believe that one or more of the premises is false or it must be reasonable for you to suspend judgment about one of the premises (or their conjunction).
   c. If the argument is cogent, then you can reasonably reject the argument only if there is a premise that you have reason to believe is false or about which it is reasonable for you to suspend judgment or if it is reasonable for you to think that the argument is defeated.
   d. Criticisms of premises must be directed at specific premises and must be substantial. Avoid the use of argument stoppers. All relevant information that you have should be considered. Look for counterexamples to generalizations. Evaluate specific factual statements and compound statements on the basis of whatever information you have.
   e. It is never acceptable to criticize an argument by objecting to its conclusion.

5. Evaluate your evaluation.
   a. Make sure that you have reconstructed the argument properly and fairly. Be sure you have not omitted any important information that is present in the original argument.
   b. Make sure that your criticisms are fair and clear. The only good criticisms of an argument show that it is ill-formed or that there is a false or unjustified premise or that it is defeated.
   c. Ask yourself how a defender of the argument would respond to your criticism. If your criticism is so simple that anyone would have been aware of it, consider the possibility that your reconstruction is incorrect rather than that the author of the argument missed an obvious point.
   d. It is acceptable to be uncertain. If you don't know whether an argument is strong or not, say so and explain why. State what further facts a final evaluation depends on.

CHAPTER EXERCISES

1. Analyze the arguments in the following letter.

Tuition Credits Are No Subsidy

The Aug. 28 editorial "Tuition Credits and Civil Rights" misleadingly says the effect of the President's proposed tuition tax credit legislation—the Educational Opportunity and Equity Act of 1982—will be to aid the flight from public schools.

> For most Americans, public schools have been and will continue to be the classroom of first choice. Yet we know that not all children learn under the same system of instruction and that not all children's educational and spiritual requirements can be met by the same form of schools. There will always be children who need educational alternatives to prosper academically but whose parents can ill afford under the present system of school finance to choose private education.
>
> Allowing these parents to spend some of what they now earn on their children's education, instead of owing the same money to the Internal Revenue Service, neither undermines the public schools nor subsidizes private ones. Tuition tax credits would simply ease the burden on middle- and lower-income families whose children need educational alternative. . . .[15]

2. Look through the arguments you have collected and identify places in which argument stoppers are used. Do you find argument stoppers used more frequently in one kind of source than another? Do you find that people use them more frequently when reasoning about one kind of topic than another?

3. Review your material for compound sentences containing "and," "or," and "if–then" formulations. Is it clear how people are using these constructions? Does their use conform to the rules described in the text?

4. Look for examples in which people evaluate someone else's argument (e.g., in a letter to the editor). Evaluate their evaluations. Are their criticisms fair and substantial? Are criticisms focused on specific premises? Could the author of the original argument easily respond to the criticism?

5. Review some of your own previous evaluations of arguments. How good a job did you do?

6. Identify an argument that turns on an ambiguous expression. Reconstruct the argument, showing clearly the defect each reconstruction has.

7. Suppose you find a handwritten book. Inside the book it says that Hasno Pens dictated the words of the book to Trans Criber, who inscribed them in the book. Now, consider these sentences:

   A. Hasno Pens wrote the book.
   B. Trans Criber wrote the book.

   Do both sentences express true propositions, or does only one? Explain.

8. Does the sentence "God exists" express a statement with a definite truth value? Do you think there is any ambiguity or vagueness in this sentence?

9. Some people think that the debate about the morality of abortion depends largely on whether a fetus is a person. Could it be that the word "person" is vague? Might this affect the debate about abortion?

10. Why doesn't an ambiguous or vague word in an argument make it defective?

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15. Anne Graham (Assistant Secretary of Education), Letter to the editor, *New York Times*, September 22, 1982, p. A26.

ANSWERS TO SELECTED EXERCISES

1. Your additional information shows that the argument is weak for you. Since your main goal is learning the truth about the subject matter, there is no reason not to take this information into account. Since the author of the argument is unaware of this information, the premises may be reasonable for that person, and the argument may be strong for him or her. There is nothing unfair about this evaluation of the argument; it's entirely accurate.

3. Argument A is cogent but defeated. It is defeated by the facts that Jimmy Olsen is a reporter in the room and most of the reporters in the room are Democrats. Argument B is inductively strong.

1a. Geraldine Ferraro is a woman and she ran as the Democratic candidate for vice president in 1984.

b. In standard form, this statement is: All false statements are lies. Any honest mistake would be a counterexample.

3. Smith could have done better. Most people who know much about professional basketball realize that there are some exceptions to the generalization in (2). A better reconstruction would replace (2) with something like "Almost all professional basketball players are more than six feet tall." The resulting argument is cogent. A few instances of professional basketball players under six feet do not refute this premise. The revised argument seems quite strong, assuming (1) is true and justified.

1. The first sentence expresses a disjunctive premise, and the second sentence appears to deny the first disjunct. The implicit conclusion presumably is the second disjunct. Notice that there is a missing quantifier in each step of this argument. If we assume that the intended quantifier is "all," a plausible reconstruction is

1. Either we will impose the death penalty on all vicious murderers or we will let them go free. (EP)
2. We will not impose the death penalty on all vicious murderers. (EP)
3. We will let all vicious murderers go free. (1), (2)

If the "we" in question is contemporary American society, then premise (1) is not justified. There are other options: putting vicious murderers in prison for a long time and executing only some of them.

3. A first try at a plausible reconstruction might be

1. Either people have free will or they don't have free will. (EP)
2. People can't control their eye color or the way they grow. (EP)
3. If (2) is true, then people don't have free will. (IP)
4. People don't have free will. (2), (3)

Notice that (1) is an unnecessary premise in this reconstruction; it can be omitted. Premise (3) is implausible. Presumably, what is at issue is whether people have free will with respect to some of their actions. Premise (2) correctly points out that people lack freedom with respect to some things, but that leaves open whether they have free will with respect to other things. Thus, we might revise the argument as follows:

1. People can't control their eye color or the way they grow. (EP)
2. If (1) is true, then people don't have free will with respect to anything they do. (IP)
3. People don't have free will with respect to anything they do. (1), (2)

Premise (2) is false. If (2) and (3) are changed to make them about only some features or characteristics, then they are true. The argument is then completely uncontroversial.

1a. All brothers are male.
 b. All things in Toronto are things in Canada.
 c. A very large percentage of incumbents running for reelection win.
 d. Most people who work hard succeed.
3. Reconstruction:
   1. Almost everyone who reads a lot improves his or her vocabulary. (EP)
   2. Almost everyone who takes an English literature course reads a lot. (IP)
   3. You are taking an English literature course. (EP)
   4. You will read a lot. (2), (3)
   5. You will improve your vocabulary. (1), (4)
   6. If you improve your vocabulary, then you will have good chance to get the job you want. (EP)
   7. You will have a good chance to get the job you want. (5), (6)

   The objection would work only if (6) were made into a universal generalization. But that would be an uncharitable reconstruction. It could be left, as it was here, as a specific claim about the particular job "you" want. Alternatively, it could be made into a less than universal generalization. In either case, the objection would be no good.
4. Reconstruction:
   1. If abortions are made illegal, then many women will choose to have illegal abortions. (EP)
   2. If many women will choose to have illegal abortions, then the number of abortions won't go down significantly. (EP)
   3. If the number of abortions won't go down significantly, then the abortion problem won't be solved. (EP)
   4. If abortions are made illegal, then the abortion problem won't be solved. (1)–(3)

   Notice that some of the premises have been reworded. The objection seems to take the premise to say that the number won't go down at all.

1a. 1. The proposition that the sun goes around the earth is not true.
    2. Any proposition that is not true is not known by you (or anyone) to be true.
    3. The proposition that the sun goes around the earth is not known by you to be true.

   (Numerous other wordings are possible.) This is a strong argument.
2. Lay Z. means by "X got up early" something along the lines of "X got up earlier than x usually does." Mr. Kid means something like "X got up earlier than most people do." What each says may well be true.

1. A plausible reconstruction is
   1. If a decision is an important personal decision for a person, then the person should be allowed to make that decision without interference. (EP)
   2. A woman's decision about having an abortion is an important personal decision for her. (EP)
   3. A woman should be allowed to make a decision about having an abortion without interference. (1), (2)

   What does "important personal decision" mean? There are two possibilities:
   D1. An important personal decision is a decision that will affect a person's life in significant ways.

D2. An important personal decision is a decision about matters that concern only the person making the decision.

If we use (D1) throughout the argument, then (1) is implausible. The decision to get married is an important personal decision in this sense. However, one's potential spouse can legitimately "interfere" with decisions about getting married; that is, there is nothing wrong with someone trying to convince a person to marry.

If we use (D2) throughout the argument, then (2) is controversial (at best). If the decision to have an abortion is a decision to murder an innocent person, then it is not a decision affecting only the woman.

If we shift meanings, then the argument is ill-formed.

3. This argument is strong provided "justified" is taken to mean something like "practically justified" or "prudent." If it is supposed to mean the same as "reasonable" or "rational" as those terms were described previously, then the premise expressed by the first sentence of the passage is false.

5. The reconstruction might be
   1. If (typically) people do desire X, then X is desirable.
   2. If X is desirable, then X is good.
   3. If (typically) people do desire X, then X is good.

   There are at least two possible meanings of "desirable":
   D1. "Desirable" means "capable of being desired."
   D2. "Desirable" means "worthy of being desired."
   If we use (D1) throughout the argument, then (2) is false. People are capable of desiring things that are not good (or beneficial or in any sense deserving of being called "good"). If we use (D2) throughout the argument, then (1) is false, for the same reason. If we shift meanings, then the argument is ill-formed.

3. No. It could be that the sentence is true on both interpretations, or it might be false on both interpretations.
4. No, it doesn't follow. A sentence is vague if it lacks a precise meaning. It does not matter whether we know if it's true.

1a. There are numerous vice presidents and White Houses. (Perhaps the capitalization of "White House" narrows it down to the intended one.)
 b. It's implicitly relative.
 c. It is implicitly relative.
 d. Arguably, this is ambiguous between the claim that shooting is dangerous for the shooter and the claim that shooting is dangerous for people in the vicinity of the shooter. (One isn't forced to say that it is ambiguous. One might say that the sentence just says that shooting is dangerous for someone or something.)

Arguments and Testimony

In earlier chapters we developed a general method of argument analysis. This chapter shows you how to apply this general method to certain commonly occurring types of arguments. We begin with arguments based on testimony.

To testify, or give *testimony*, is to assert that a proposition is true. Although one most often hears the word "testimony" in connection with statements made in courtrooms, here we use the word in a much more general way. As we will use the term, whenever someone says that some proposition is true, the person has given testimony that the proposition is true. People often argue that a proposition is true on the grounds that someone else has said that it is true; that is, they appeal to testimony. This chapter covers some ways to reconstruct and evaluate testimonial arguments.

I. THE ROLE OF TESTIMONY

Testimony plays an extremely large role in our thinking. Nearly every belief a person has depends at least in part on someone's testimony. Every time you believe something on the basis of what you read in a newspaper, book, or magazine or on the basis of what you hear from a friend or on television or radio, you are relying on testimonial evidence. When you look at a map to find out what road to take to get someplace, you are relying on the testimony of the mapmaker. When you read the

sports scores in the newspaper, you rely on the testimony of the reporters. When you take notes in a classroom and believe the things you are told, you are relying on the testimony of the teacher. While there may be some things that you know without testimony, such as facts about your own current state and immediate environment, it is difficult to escape our reliance on testimony.

Some people think that testimonial evidence isn't "real" evidence or that it is never good evidence. Some logic books, for example, discuss "the fallacy of appeal to authority." This is the alleged mistake of accepting something on the basis of someone else's authority or testimony. While there surely are situations in which it is a mistake to accept someone's testimony, it is not in general a mistake to do so. Testimonial evidence is real, or genuine, evidence.

There are several reasons why it is reasonable to accept testimonial evidence. One reason is primarily practical. Given the complex world in which we live, it would be impossible to get by without accepting some claims on the basis of the testimony of others. For example, when you go to the supermarket to buy a box of cereal, you accept the testimony of the manufacturer that the box does indeed contain the cereal it says it does. Were you to reject entirely the testimony of others, you would have to suspend judgment about what's in the box labeled "Cheerios." Perhaps you could discover what's in the box on the basis of doing your own chemical analysis of its contents, but even then you would have to rely on the testimony of the manufacturers of the equipment you use to perform the tests. Clearly, there is a great practical advantage in accepting the word of the cereal makers that the package does contain what they say it contains.

There are other reasons, however, to think that what people say is generally true. In other words, we have evidence that testimonial evidence is good evidence. The evidence comes to us from personal experience. For example, there is a certain sort of argument that each of us can produce about him- or herself that supports the accuracy of people's testimony. I will state the argument as it applies to me, but (presumably) you can reasonably offer a similar argument. I know that I often tell the truth about various things. When I tell others about what I see and feel, I typically tell the truth. Sometimes I lie, and sometimes I make mistakes, but mostly I tell the truth. Given the general similarity that there is among people, it is reasonable to think that other people are like me. So probably much of what they say is true as well. Their testimony is therefore generally reliable.

Furthermore, I have often had people tell me that some statement is true and then been in a position to find out for myself that they were right. For example, when out hiking in the woods, I consult a map. The mapmaker "tells" me that the trail will curve off to the right and then go up a hill. I walk along and find out that the mapmaker's testimony is correct. This sort of confirmation of the testimony of others provides some reason to think that other assertions they make are also accurate. Considerations like these apply to the Cheerios case, described above. I've purchased boxes of cereal many times before. When I opened the box, I found what the label said I would find. In the past, my Cheerios boxes have contained Cheerios, not pebbles, marshmallows, or ingredients for split-pea soup. All of this makes it

reasonable for me to believe that the testimony of the manufacturer is true in this case as well.

Assuming that each of you has had similar firsthand evidence of the reliability of testimony, you also have reason to think that people often tell the truth. Of course, they don't always tell the truth, and your experiences don't make it reasonable for you to trust everything that everyone says. Experience teaches us that it is reasonable to be more selective than that. Indeed, there are some circumstances in which it is best not to trust the word of others. We will identify some of those circumstances in the next section.

EXERCISES AND STUDY QUESTIONS

1. How strong are the arguments for the reliability of testimony that were given in this section? Reconstruct and evaluate them.
2. Can you think of any additional defenses of the reasonableness of accepting testimonial evidence? Be sure to distinguish reasons based on the practical value of accepting testimony from reasons based on evidence for its reliability.
3. It is claimed in the text that the only beliefs that do not rely at least in part on testimony are beliefs about one's own current state and beliefs about one's immediate environment. Identify some beliefs of these of kinds and the evidence you have that supports them. Is it true that they don't depend at all on testimony?
4. Are there any other categories of belief that don't rely on testimony? Does your belief that $2 + 2 = 4$ rely upon testimony?

II. TESTIMONIAL ARGUMENTS

A. The Standard Form for Testimonial Arguments

Testimonial arguments are arguments whose main premise is that someone has said (or written) that a certain proposition is true and whose conclusion is that the proposition is true. Thus, in their simplest form, testimonial arguments follow this pattern:

1. *S* said that *P* is true.

2. *P* is true.

An example of an ordinary claim following this pattern is

The unemployment rate has gone up. A government spokesperson reported this yesterday.

Testimonial arguments often have implicit conclusions, as in

A government spokesperson reported that the unemployment rate has gone up. This is a serious problem for the president's reelection campaign.

This example suggests the same argument as the first passage, but it goes on to draw a further conclusion, about unemployment leading to a problem for the president's reelection.

It is common to find testimonial arguments as parts of more complex arguments.

Example 1

You quote the veteran trainer Leroy Jolley stating of racehorses, "Every time you go out on the racetrack you are asking them to put their lives at risk." He knows whereof he speaks. Consequently, thoroughbred racing should not be considered a sport. Rather, it is big business. . . .[1]

This example contains a two-part argument. The first part reports what Mr. Jolley said, and the second part takes what he said to be true and uses it as the basis for a further argument. In this case, the further argument is about whether horse racing is (or should be considered) a sport.

Testimonial arguments can be thought of as indirect arguments for their conclusions. Thus, in Example 1, no direct evidence about the danger of horse racing is provided. No data about the number of horses injured or killed is offered. In effect, we're being asked to believe that someone else, Mr. Jolley, has a more direct argument for that conclusion. If it is reasonable to believe that he does have such a direct argument, and that it is a strong argument, then the testimonial argument is a good one.

Testimonial arguments following the simple pattern just displayed are not deductively valid. That simple pattern, applied to Example 1 yields this argument:

Argument 1

1. Leroy Jolley stated that every time a racehorse goes out on the racetrack, its life is being put at risk.

2. Every time a racehorse goes out on the racetrack, its life is being put at risk.[2]

Argument 1 is not valid because it is possible for (1) to be true and (2) false. A person can say something without what the person says being true. Furthermore, there

1. Maria L. Harriton, Letter to the editor, *New York Times*, November 12, 1990, p. A18.

2. This does not exactly follow the pattern above. To make it follow that pattern, we'd have to make the premise say that Leroy Jolley said that the proposition that every time a racehorse goes out on the racetrack, its life is being put at risk is true. And the conclusion would have to be that that proposition is true. We've omitted "is true" from the premise and conclusion, but the formulations are equivalent. It is easier to understand the general patterns when "is true" is included, but that's not needed in the actual instances.

is no identifiable valid pattern here. However, as we have seen, this sort of premise does provide something of a reason to believe the conclusion. Thus, you might think that arguments like Argument 1 are cogent. However, our policy is to spell out the background assumptions that link premises and conclusions, and in this argument the linking assumption is not stated. There are three different ways these assumptions can be spelled out, and thus we can formulate three standard patterns for testimonial arguments.

Standard Pattern 1 for Testimonial Arguments

1. S said that P is true.

2. Usually, when a person says that something is true, it is true.

3. P is true. (1), (2)

Arguments following Standard Pattern 1 are cogent. It's reasonable to think that the second premise is true. Even though people do lie and make mistakes, it's likely that most things they say are true. However, arguments following pattern 1 will never be very strong, since (1) and (2) by themselves can provide only a modest amount of support for the conclusion.

Arguments conforming to Standard Pattern 1 can rather easily be defeated. Consider a defendant in a criminal trial who proclaims his innocence. You could construct the argument based on that testimony so that it conforms to this pattern, and the resulting argument would be cogent. The argument might look like this:

Argument 2

1. D. Fendant said that he is innocent.

2. Usually, when a person says that something is true, it is true.

3. D. Fendant is innocent.

Although Argument 2 is cogent, in any realistic setting it will be defeated. Background evidence about the motivation defendants have for lying about their guilt make it clear that testimony in this sort of situation is not worthy of our trust.

The sorts of considerations that show how an argument following Standard Pattern 1 can be defeated also help us see how a testimonial argument can be strengthened. What makes us dubious about a criminal defendant's claim of innocence is the fact that the consequences of telling the truth can be sufficiently bad to make a person lie. However, when we have reason to believe that a person who makes a claim is sincere, then we have more reason to accept what the person says. So, an improved testimonial argument will have an additional premise and a revised general principle, as follows:

Sidebar: The Logic of Testimonial Arguments

It might seem that testimonial arguments conform to the following familiar pattern:

1. x is an A.
2. Most As are Bs.
3. x is a B.

We can make Standard Pattern 1 look like this pattern by rewriting it in a slightly different way. Applying the modified pattern to Example 1, we get the following (somewhat awkwardly worded) argument:

Argument 1a

1. The proposition that every time a racehorse goes out on the racetrack, its life is being put at risk is said to be true by Leroy Jolley.
2. Most things that are said to be true by someone are true.
3. The proposition that every time a racehorse goes out on the racetrack, its life is being put at risk is true. (1), (2)

To see the problem here, we can apply the technique of drawing circles and boxes around the significant parts of the argument. When you do that, it's easy enough to see what goes in for x and B, but there's a problem about the place occupied by A. What occurs in (1) isn't exactly the same as what occurs in (2). In (1) we have "said to be true by Leroy Jolley." In (2) we have "said to be true by someone." Obviously, these are different terms. To reconstruct the argument so that it really does follow the cogent pattern listed above, we'd have to revise either (1) or (2) accordingly. This would require making (1) say that the proposition was said to be true by someone or else making (2) say that most things said by Mr. Jolley are true. Neither revision exactly captures the idea of the original argument.

A better reconstruction makes the argument somewhat more complex. It would go like this:

Argument 1b

1. The proposition that every time a racehorse goes out on the racetrack, its life is being put at risk is said to be true by Leroy Jolley.
2. The proposition that every time a racehorse goes out on the racetrack, its life is being put at risk is said to be true by someone. (1)
3. Most things that are said to be true by someone are true.
4. The proposition that every time a racehorse goes out on the racetrack, its life is being put at risk is true. (2), (3)

Premise (2) follows from (1) without problem, and the inference from (2) and (3) to (4) does follow our familiar pattern. So, the real underlying logic of this argument is a bit more complex than it may have initially appeared. Still, Argument 1a is cogent. It differs from Argument 1b in that the latter makes explicit an intermediate conclusion not stated in Argument 1. More generally, arguments conforming to Standard Pattern 1 are cogent. Their logic is just a bit more complicated than it may have seemed at first.

Standard Pattern 2 for Testimonial Arguments

1. *S* said that *P* is true.

2. *S* was sincere in saying that *P* is true.

3. Usually, if a person says that something is true and is sincere in saying it, it is true.

4. *P* is true. (1)–(3)

Arguments following Standard Pattern 2 are also cogent, but when their premises are justified they are in general stronger arguments than those following Standard Pattern 1. Premise (3) in this pattern is plausible, and when (1) and (2) are also justified, the argument will often be quite strong.

There is, however, a way to make testimonial arguments even better. People can testify about something with sincerity even though they don't know what they are talking about. In general, a testimonial argument is far stronger when the testifier is an expert about the topic of the testimony. This last condition is important since even the most intelligent and well-informed among us know about only a limited range of matters. A person's testimony within his or her area of expertise is worth much; it is worth far less outside of that area. Thus, the ideal pattern for testimonial arguments is as follows:

Standard Pattern 3 for Testimonial Arguments

1. *S* said that *P* is true.

2. *S* was sincere in saying that *P* is true.

3. *S* is knowledgeable about the subject matter of *P*.

4. Usually, when a person says that something is true, and is sincere in saying that it is true, and is an expert about the subject matter of the proposition, the proposition is true.

5. *P* is true. (1)–(4)

Arguments following Standard Pattern 3 are also cogent, and they can be very strong arguments. The general principle used in this pattern is the "principle of testimonial arguments" (PTA).

PTA: In most cases, if a person says that some proposition is true, and that person is sincere in saying that the proposition is true, and that person is an expert on the subject matter of the proposition, then the proposition is true.

Since it is cumbersome to write out the entire principle every time you reconstruct a testimonial argument, it is acceptable to abbreviate and simply write "(PTA)" for the fourth premise. Of course, it is rare that you will find an argument with (PTA) as an explicit premise. Usually, it is implicit.

When you are reconstructing an argument that appears to be a testimonial argument, you should try to use one of the three patterns described above. Of course, you should only use the pattern when it fits the passage you are working on, and you should use a particular pattern only when it is plausible to do so. If, for example, you don't know anything about the expertise of the testifier, it would a mistake to reconstruct the argument using standard pattern 3 and then reject the argument because its third premise is not justified for you. In such a situation, an argument conforming to one of the other standard patterns is the best you can do.

B. Evaluating the Premises of Testimonial Arguments

Evaluating testimonial arguments is rather straightforward. All testimonial arguments following any of the standard patterns are cogent. The remaining questions concern the truth value of the premises and whether the argument is defeated.

The first premise of a standard testimonial argument merely says that someone has said that some statement is true. In most cases in which you evaluate testimonial arguments, there is little question about premise (1). It is possible that someone giving a testimonial argument has misunderstood what was said, or for some other reason is wrong in attributing a statement to a person. If you have reason to doubt that the person did say what is attributed to her, then you can reject (1). However, this would be an unusual case.

Premise (2) of a testimonial argument following Standard Pattern 3 says that the testifier was sincere. It is more likely that you will have questions about (2) than about (1). There are a couple of situations that make the rejection of (2) reasonable. When the testifier has something to gain by saying something, whether it is true or not, then there is reason to question (2). Some criminal defendants have reason to say things they don't believe. In the midst of complex negotiations with a foreign power, a political leader might distort the record rather than state some crucial facts in public. People lie about things that they find particularly embarrassing. In situations such as these, you can reject (2). A second situation in which you can plausibly reject the sincerity claim in (2) is one in which you have information showing that the testifier has regularly been dishonest in the past.

The third premise of testimonial arguments following Standard Pattern 3 says that the testifier is an expert about the subject matter of the testimony. There is some vagueness in this claim, since it is not entirely clear what counts as being an expert. You should let fairness and reasonableness be your guide here. The more you know about a person's education and background, the better able you are to evaluate (3). There is no simple formula to use to determine expertise.

The other important point to keep in mind in evaluating (3) is that the person must be knowledgeable in the area of the testimony. Famous actors and athletes often testify, in advertisements and in political campaigns, to things that may be far from their areas of expertise. In reconstructing testimonial arguments in these cases, (3) may be questionable. Physicians may know much about medical matters, but they may not

be experts in moral or economic matters. It is crucial that the testifier's expertise be in the subject matter of the argument.[3]

C. Determining Whether a Testimonial Argument Is Defeated

In many cases, you will have little reason to question the premises of testimonial arguments. However, since testimonial arguments are cogent rather than valid, you must also consider whether the argument is defeated. This is apt to be a trickier matter.

Perhaps the clearest example of a defeated testimonial argument is one in which the premises are unquestionably true but you know that there are other sincere experts who deny the conclusion. Some arguments about economic matters illustrate this situation. For example, you may be able to construct a seemingly strong testimonial argument such as the following:

Argument 3

1. Economist *A* says that a tax cut will cause increased economic growth in the country.

2. Economist *A* is sincere in saying this.

3. Economist *A* is an expert about the effects of tax cuts.

4. (PTA).

5. A tax cut will cause increased economic growth. (1)–(4)

This argument may seem to be quite strong. However, if you find economist *B*, who is also a sincere expert, saying that a tax cut will cause an increased budget deficit and that this will lead to reduced economic growth, then Argument 3 is defeated. This is because the argument formed by adding this additional information to the premises of Argument 3 would not be cogent; that is, the combined testimony of economists *A* and *B* does not make a cogent argument for (5).

The situation illustrated by this example is not at all uncommon. Often experts on complex economic, political, and other questions disagree. This makes it difficult for nonexperts to form rational beliefs based on their testimony alone. To be in a position in which it is rational to do anything other than suspend judgment about these matters, one often has to gather enough information to evaluate the arguments that the experts themselves rely on. Testimonial arguments by themselves may fail to provide adequate evidence to justify belief in a particular conclusion.

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3. There is never any need to discuss (PTA) in evaluating testimonial arguments. As a premise its truth need not be questioned in ordinary contexts.

EXERCISES AND STUDY QUESTIONS

*1. Standard Pattern 2 introduced two changes to Standard Pattern 1: the general principle in the argument was changed and a new premise was added. Why wouldn't it be adequate just to change the general principle? Why did the additional premise have to be added as well. (Two analogous changes were made in moving from Standard Pattern 2 to Standard Pattern 3. Again, why wouldn't it suffice just to change the general principle?)

2. What reasons are given in the text for doubting someone's sincerity? Identify some additional factors that go into the evaluation of premise (2) of testimonial arguments.

*3. Suppose you encounter a testimonial argument based on the testimony of Lies Alot, someone you know to lie more often than not. If that argument were reconstructed to follow Standard Pattern 2 or 3, you would have grounds to doubt the second premise. Suppose the argument were reconstructed to follow Standard Pattern 1. What would you say about it then?

4. Reconstruct and evaluate the argument from Example 1.

*5. Each of the following passages contains a testimonial argument. Reconstruct and evaluate the arguments.

    a. I would like to set the record straight on a number of claims in "Holes in the Fish Safety Net" (editorial, October 17).

        You claim that data from the Centers for Disease Control suggest that fish is 25 times more likely to cause illness than beef, 16 times more likely than pork or poultry. . . . You have been severely misled. . . .

        Last Spring, William Roper, director of the Centers for Disease Control, . . . stated that the C.D.C.'s data alone "cannot be used to determine if eating seafood is more or less dangerous than eating other foods," such as poultry and beef.[4]

    b. In a recent survey, over 1,000 athletes from a variety of sports were asked the following question: "What is the one thing that has most prevented you from reaching your potential as an athlete?" The response given most often was: "The failure to effectively cope or deal with my anxieties before and during competition." This result alone says a lot about the critical role that anxiety plays in achieving maximum performance.[5]

6. Suppose you have heard two witnesses testify about some matter. One witness says that a statement, *P*, is true, and the other witness says that *P* is false. You have no other information about *P* itself. Does it follow that you should suspend judgment about *P*? Are there any factors that could make believing *P* more reasonable than suspending judgment in this situation? (Consider the two testimonial arguments you could construct. Must both arguments be defeated?)

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4. James S. Benson, Letter to the editor, *New York Times*, November 1, 1990, p. A28.

5. Robert S. Weinberg, *The Mental Advantage* (Champaign, Ill.: Leisure Press, 1988), p. 24.

III. PREMISES AND TESTIMONY

Testimony also enters into nontestimonial arguments as support for the premises, as in the following passage:

Example 2

Handguns represent only 30 percent of all the guns out there, but are responsible for 90 percent of firearms misuse. Most people who commit suicide with a firearm use a handgun. At a minimum, a handgun ban would prevent the escalation of killings in segments of society that have not yet been saturated by handgun manufacturers.[6]

The context in which this passage appears makes it clear that the author's conclusion is that handguns should be banned. Assuming that is the conclusion, we might reconstruct this argument as follows:

Argument 4

1. Thirty percent of guns in the country are handguns. (EP)

2. In 90 percent of the cases in which a firearm is misused, it is a handgun that is misused. (EP)

3. Most people who commit suicide with a firearm use a handgun. (EP)

4. If (1)–(3) are true, then handguns should be banned. (IP)

5. Handguns should be banned. (1)–(4)

Argument 4 contains premises of two very different kinds. Premise (4) makes a claim about what should be done if certain facts are true. The basic idea is that if handguns are disproportionately involved in crime and in suicide, then they should be banned.

Premises (1)–(3) assert specific facts. You can use any information you have in evaluating them. If you happen to have independent knowledge of crime statistics, then you can bring that to bear on the argument. If you lack such information, then all you have to go on in evaluating these premises is the fact that the author of the article asserted them. In effect, you have only a testimonial argument for the premises. It is not necessary to write down reconstructions of those testimonial arguments, but you can still evaluate the premises in much the way you would evaluate that argument. That is, you can think about whether the author of the article is sincere in making the claims and whether the author is an expert in the pertinent area. As always, avoid simplistic rejections.

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6. Josh Sugarmann, "The NRA Is Right," *Washington Monthly*, June 19, 1987, pp. 11–15.

Often you won't have much information to go on in situations such as these, but you can at least consider the reliability and reputation of the source in which you read the article. Obviously, highly regarded national newspapers and magazines are in general more trustworthy than the tabloids at the checkout counter in the supermarket.

EXERCISES AND STUDY QUESTIONS

Each of passages (1)–(3) reports statements made by one or more people. Evaluate the credibility of their claims. There is no need to reconstruct the arguments.

1. New York Assembly Speaker Says He'll Be Indicted

Mel Miller, the Assembly Speaker and New York State's second most powerful Democratic official, said tonight that he and a top aide would soon be indicted on Federal mail-fraud charges.

The charges, people close to the Speaker said, stem from two real-estate deals that Mr. Miller and the aide . . . are said to have participated in as private lawyers.

Appearing shaken but controlled, Mr. Miller denied any wrongdoing and vowed to stay on as Speaker. "I'm not resigning or retiring," he said at a news conference this evening. "I'm going to be re-elected Speaker on January 9 and I'm going to serve in the same irascible way I serve now."[7]

2. San Francisco Moves to Regulate Video Terminals

[San Francisco] took a big step today toward enacting an ordinance that would be the nation's only active law regulating the use of video display terminals by private businesses. . . .

The legislation is being watched closely by unions and industry because it might give momentum to efforts around the nation to regulate computer terminals, which have been linked to a variety of health problems. . . .

Businessmen say the ordinance would cost private employers in the city more than $100 million to comply and force companies to move operations out of the city. The city's budget analyst estimated the cost of complying at $31.5 million to $76.5 million for private businesses.

"I think it's going to be a terrible burden on small and large businesses," said James L. Lazarus, a vice-president of the San Francisco Chamber of Commerce.[8]

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7. "New York Assembly Speaker Says He'll Be Indicted," *New York Times*, December 11, 1990, p. A1. Copyright © 1990 by The New York Times. Reprinted by permission.

8. "San Francisco Moves to Regulate Video Terminals," *New York Times*, December 11, 1990, p. A20. Copyright © 1990 by The New York Times. Reprinted by permission.

3. Bruno Bettelheim was a world-famous child psychologist who died in March 1990. After his death, a controversy developed about his methods for dealing with children in a school that he ran. What follows is an excerpt from an article describing the controversy. In addition to considering the merits of the testimony described here, evaluate the argument given by the author of the article in the final paragraph.

Accusations of Abuse Haunt the Legacy of Dr. Bruno Bettelheim

The opening salvo seems to have been fired by Alida Jatich, a resident of the school from 1966 to 1973 and now a computer programmer in Chicago. "Bettelheim's public persona, carefully constructed in his many books and articles," was utterly wrong, she wrote. . . . In person, he was an evil man who set up his school as a private empire and himself as a demigod or cult leader. He bullied, awed, and terrorized children at his school, their parents, school staff members, his graduate students and anyone else who came into contact with him." . . .

"I never saw any of the kind of behavior that some of these former students are reporting," said Karen Zelan, a psychotherapist . . . who was a counselor at the school from 1956 to 1964. "I don't want to say that they are making it up. I think they're saying that they were afraid of the man, that they were afraid of his occasional unpredictable behavior."

[Another] psychotherapist trained by Bettelheim said: "I can tell you that . . . [the school] . . . was a very loving place. It felt loving. And, yes, I saw Bettelheim hit kids. But I do not think it was inconsistent with the spirit of loving and concern for the best interests of the child that comes across in his works. . . .

[Other former counselors at the school] argued that he did [use corporal punishment] but never in the uncontrolled way described by some of his former patients. . . . Some therapists suggest that the former students are working out the normal, even healthy anger they might feel toward Bettelheim, who intentionally served as a kind of surrogate father—often stern, certainly feared, but at the same time loving and devoted. . . .

Maybe the most troubling aspect of the issue is the impossibility of reconciling it once and for all. Bettelheim, after all, can no longer speak for himself, so there is no way to resolve the conflicting stories of a man everyone sees as not only powerful and complex, but mysterious as well.[9]

4. According to recent surveys, eight in ten Americans believe that God still works miracles and seven in ten believe in life after death.[10] One could construct a testimonial argument for the truth of these beliefs on the basis of the fact that so many people testify to their truth. How good an argument would it be?

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9. Richard Bernstein, "Accusations of Abuse Haunt Bruno Bettelheim," *New York Times*, November 4, 1990, p. E6. Copyright © 1990 by The New York Times. Reprinted by permission.

10. These data are reported in Garry Wills, *Under God: Religion and American Politics* (New York: Simon and Schuster, 1990).

5. Discuss the merits of the testimony offered in the following advertisement.

> One environmental group, Earth Island Institute, has mounted a campaign against Bumble Bee which has included false and misleading statements about Bumble Bee, our parent Unicord Co. Ltd, and our canned tuna product.
> It is time to set the record straight. Bumble Bee is dolphin safe.
> Fact—Bumble Bee and Unicord have 100% dolphin-safe procurement and processing practices worldwide."[11]

IV. SUMMARY

To give testimony is to assert that some statement is true. Our evidence for nearly everything we believe depends at least in part on testimony, and there is no general reason to distrust testimony. In fact, there are good practical reasons to rely on the testimony of others, and we often have good reasons to believe that testimony is reliable.

Testimony enters into arguments in two main ways. Some arguments explicitly appeal to testimony; these are known as testimonial arguments. Although there are a variety of ways to reconstruct testimonial arguments, the best ones make use of the principle of testimonial arguments.

PTA: In most cases, if a person says that some proposition is true,
and that person is sincere in saying that the proposition is true,
and that person is an expert on the subject matter of the
proposition, then the proposition is true.

Such arguments follow this pattern:

Standard Pattern 3 for Testimonial Arguments

1. S said that P is true.

2. S was sincere in saying P.

3. S is knowledgeable about the subject matter of P.

4. Usually, when a person sincerely says that P is true, and is an expert on the subject matter of P, P is true.

5. P is true. (1)–(4)

Arguments following this pattern are cogent. To evaluate strength, you must consider the premises themselves and also whether the argument is defeated. It is rare

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11. Advertisement by Bumble Bee Seafoods, Inc., *New York Times*, December 7, 1990, p. A31.

that you will encounter a testimonial argument following this pattern in which the first premise is false. The second premise will be false or questionable when you have reason to think that the testifier is lying. Past history of lying and the fact the statement is self-serving can provide reason to believe this. You can evaluate the third premise on the basis of whatever information you have about the person whose testimony you are considering.

To determine whether a testimonial argument is defeated, you must determine whether you have information undermining the conclusion of the argument. In some cases you may have direct evidence that shows the testimony to be mistaken. More commonly, especially when the testimony concerns some complex and controversial topic, you will be aware of countertestimony from an equally sincere expert. Such information can defeat the argument.

Frequently, when you evaluate an argument, the only reason you will have to accept some of its premises will be the fact that the author of the argument asserted them. You can consider the author's assertion of those premises as a testimonial argument for them. It is not necessary to reconstruct that argument, but the kinds of considerations that would go into the evaluation of the testimonial argument can be used to evaluate the premise itself. As always, being fair and reasonable is of paramount importance. It is reasonable to put more faith in what you read in credible and reputable sources than in what you read elsewhere.

CHECKLIST OF KEY TERMS

- testimony
- testimonial argument

CHAPTER EXERCISES

1. When college administrators use student opinion surveys to measure the teaching abilities of instructors, they are relying on the testimony of students. What (relevant) conclusions can justifiably be drawn on the basis of this sort of testimony?

2. In the fall of 1991 the Senate Judiciary Committee considered the nomination of Clarence Thomas to the Supreme Court. During the proceedings a former employee of Thomas's, Anita Hill, charged that Thomas had sexually harassed her about ten years earlier. The charges included the claim that Thomas had described pornographic movies to her. The case received a great deal of attention and provoked considerable discussion of the merits of testimony. This was a classic case of directly conflicting testimony. One commentator resolved the dispute in the following way:

> It is close to a certainty that she [Hill] was telling the truth and he was not. She had no motive to lie; he did. There is no evidence that she is a vengeful woman, a fantasist, or even a Democrat; there is considerable evidence that he "discussed pornography" with, and forced his unwanted

attentions on, other women too. For Thomas's version of their encounters to be true, Hill would have to have invented an elaborate delusional structure; for her version to be true, he would have only to have repressed (or rationalized away) a few troublesome memories. She would have to have been a psychotic; he would merely have to have been a man in a tight spot—which, manifestly, he was.[12]

Do you think that this is a strong argument for the claim that Hill was telling the truth? Why?

3. Look through the material you've collected for your argument notebooks. If you find any testimonial arguments, reconstruct and evaluate them.

4. Find some argumentative essays that contain testimonial arguments. Reconstruct and evaluate those arguments.

5. As a result of studying this chapter, do you think that you have become more inclined to accept testimonial evidence, less inclined to accept it, or about the same? Has your attitude toward testimony changed in any way?

ANSWERS TO SELECTED EXERCISES

1. Without adding the new premise (2), the sincerity premise, the argument would have been ill-formed. The general principle in Standard Pattern 2 includes two conditions; that the person said that P and that the person was sincere. To make use of this principle, you need other premises saying that both of these conditions are satisfied.
3. The argument is defeated.
5a. 1. William Roper said that the C.D.C.'s data cannot be used to determine if eating seafood is more or less dangerous than eating other foods. (EP)
2. Roper was sincere in saying this. (IP)
3. Roper is knowledgeable about this topic. (IP)
4. (PTA).
5. The C.D.C.'s data cannot be used to determine if eating seafood is more or less dangerous than eating other foods. (1)–(4)

This is a strong argument. We have no good reason to doubt Roper's sincerity or expertise. It is important to be clear about what Roper claims. He does not here make a claim about the relative safety of eating seafood.

b. This testimonial argument relies on the assumption that athletes know what prevents them from reaching their potential. However, there is some doubt about their expertise on this topic. Being good at some sport does not necessarily make one good at telling why a person succeeds or fails at the sport. Athletes, like others, may accept common explanations for their successes and failures without having any real insight into the actual causes of their successes and failures.

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12. Hendrik Hertzberg, *New Republic*, November 4, 1991, p. 42.

Statistical Arguments and Predictions

Many familiar arguments use premises about observed objects and events to draw conclusions about objects and events that haven't been observed. For example, when you predict that your next meal at your favorite restaurant will be a good one, you argue from the high quality of your past meals at that restaurant (the observed cases) to a prediction about your next meal (an unobserved case). Arguments that make use of statistical data also use premises about observed things to draw conclusions about unobserved things. For example, people argue about medical issues such as the recovery rates from diseases and the frequency with which people who exercise or eat certain foods contract various diseases. Such arguments are typically based on statistical surveys in which the recovery rates or the rates at which the people get the diseases are carefully measured. The results found in these observed cases are then generalized to a broader group. Arguments of this sort are extremely common. They include arguments about the likely results of elections, the condition of the economy, and the expected outcomes of sporting events. In this chapter we will look at some general formats for stating statistical claims, examine the standard patterns for arguments about statistical matters, and discuss some of the problems these arguments commonly encounter.

I. PAST-TO-FUTURE ARGUMENTS

We can begin our discussion of arguments that involve predictions by considering a very simple argument.

Example 1

Gree C. predicts that the burger he is about to get at Burger Palace will be greasy and overcooked. He argues: "All the burgers I've ever had from Burger Palace have been greasy and overcooked. Therefore, this one will be as well."

This simple argument introduces a surprising complication. As a first attempt at its reconstruction, we might propose

Argument 1

1. All the burgers I've eaten from Burger Palace have been greasy and overcooked.

2. This burger from Burger Palace will be greasy and overcooked.

And you might propose that the pattern here is

1. All *A*s are *B*s.

2. This *A* is a *B*.

You might expand the argument by rewriting it so that it follows the familiar pattern,

1. All *A*s are *B*s.

2. This (*x*) is an *A*.

3. This (*x*) is a *B*.

However, a problem with this reconstruction emerges when we try to identify the recurring parts of the argument. We have the phrase "greasy and overcooked" in both (1) and (2) of Argument 1; it is the *B* in the pattern. But what exactly goes in for *A*? Suppose you say that it is "burger at Burger Palace." In that case, a fully explicit revision of Argument 1 would be

Argument 1a

1. All the burgers from Burger Palace are greasy and overcooked.

2. This is a burger from Burger Palace.

3. This burger will be greasy and overcooked. (1), (2)

This, however, does not properly capture the argument. Premise (1) in this reconstruction says that all burgers from Burger Palace are greasy and overcooked, but that is not Gree C.'s premise. His premise is about all the burgers from Burger Palace *that he has eaten*. Somehow, we need to get this idea into the argument. We could try the following:

Argument 1b

1. All the burgers from Burger Palace that I (Gree C.) have eaten have been greasy and overcooked.

2. This is a burger I've eaten from Burger Palace.

3. This burger will be greasy and overcooked. (1), (2)

But now (2) isn't right. The burger that is the subject matter of the argument is *not* one that Gree C. has eaten.

We could next try using the true premises from each of the arguments we've just considered: premise (2) from Argument 1a and premise (1) from Argument 1b. We then get

Argument 1c

1. All the burgers from Burger Palace that I (Gree C.) have eaten have been greasy and overcooked.

2. This is a burger from Burger Palace.

3. This burger will be greasy and overcooked. (1), (2)

But now the argument doesn't follow any valid pattern. Premise (1) is about burgers from Burger Palace that Gree C. has eaten, while premise (2) is about burgers from Burger Palace. So this argument is ill-formed. Its pattern is best represented as follows:

1. All *AB*s are *C*s.

2. *x* is an *A*.

3. *x* is a *C*.

The place of *A* in this reconstruction is filled by "burgers from Burger Palace" and the place of *B* is taken by "eaten by Gree C."

Clearly none of the reconstructions we've tried so far will do. The point of the argument was to make a prediction about what the next burger will be like based on information about past burgers. The reconstructions above completely ignore this aspect of the argument. It wouldn't help to replace the occurrences of "all" in the arguments considered so far by "most" or "almost all." Those arguments would still miss the point. They wouldn't bring out the key idea, which is an inference from observed cases to an unobserved case. Example 1 is a ***past-to-future argument***, it makes a prediction about a future case based on past cases.[1] And the prediction is reason-

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1. Past-to-future arguments go from observed cases to unobserved cases. But notice that essentially the same argument can be entirely about the past. Suppose I know that you've just eaten at Burger Palace and haven't heard your report on your meal yet. I might reason, "All the burgers I've eaten at Burger Palace have been greasy and overcooked, so the one you just ate was greasy and overcooked as well."

able, so we shouldn't be content to end our discussion by saying that no reconstruction of the argument turns out to be a strong argument.

There are a variety of ways in which we might fix up the argument. What we need is a premise linking the observed pattern in the past cases to the expectation about the next case. The most general premise of this sort is

If all *A*s examined up until now have been *B*s, then the next *A* will be a *B*.

Using this past-to-future principle, we can plug in "burger at Burger Palace" and "greasy and overcooked" for *A* and *B* respectively. Then, without much trouble, we have a valid argument for the right conclusion.

Unfortunately, as a general principle the past-to-future principle isn't right. A silly example will illustrate its flaw. Suppose that at midnight on January 1, 2000, I say that all births up till now have been before the year 2000. I could then use the past-to-future principle to conclude that the next birth will be before the year 2000, but that's obviously mistaken.

Other examples illustrate the same point. Suppose Jones is running for president, and she has never won a presidential election before. I might then argue that since all presidential elections up until now (the observed cases) have been won by someone other than Jones, this election will be won by someone other than Jones. The past-to-future principle would support this inference, but the argument isn't a good one.

We might try to come up with a modification of the past-to-future principle that would spell out the characteristics that differentiate good past-to-future arguments from weak ones. While we will not attempt to do that here, some of the considerations discussed later in the chapter could be used to formulate such a principle. For now we will focus on developing linking principles that are relatively specific to the case at hand. Thus, we might try

Argument 1d

1. All the burgers I've eaten from Burger Palace have been greasy and overcooked.

2. If (1), then this burger from Burger Palace will be greasy and overcooked.

3. This burger from Burger Palace will be greasy and overcooked.

A conditional like (2) is reasonable to accept when it is reasonable to think that the consequent will probably be true when the antecedent is true. In a relatively normal situation, it is reasonable to accept (2). So Argument 1d can be a strong argument, and it is not a bad reconstruction of Gree C.'s argument.

We could also use a linking principle that is slightly more general than the one in Argument 1d.[2] The following argument contains a revised premise (2).

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2. You might want to do this if you think that by using Argument 1d you are resorting to cheap validity. That is sometimes the best you can do. In this example, however, there is another possibility.

Argument 1e

1. All the burgers I've eaten from Burger Palace have been greasy and overcooked.

2. In most cases, if all the burgers I've eaten at a restaurant have been greasy and overcooked, then the next burger cooked at that restaurant will be greasy and overcooked.

3. Burger Palace is a restaurant.

4. This burger from Burger Palace will be greasy and overcooked. (1), (2), (3)

Premise (3) had to be added to make the argument cogent.[3] Other generalizations could be used as well. For example, the argument could be made about types of food generally, rather than just burgers. It could be made about other ways in which food turns out, rather than just being greasy and overcooked. Such changes would add greater complexity to the argument, and we will not go into those matters here. Argument 1e, however, does a reasonably good job of bringing out the argument expressed in Example 1 and illustrates one way in which past-to-future arguments can be reconstructed.

EXERCISES AND STUDY QUESTIONS

*1. By replacing Argument 1d by Argument 1e, more of the underlying assumption behind the argument was revealed. This is comparable to using a wider generalization rather than a narrower one. It is possible to make use of an even wider generalization here. What might that be? Formulate the revised argument using that even wider generalization.

Each of the Exercises 2–9 contains a brief argument. Analyze the arguments, taking into consideration the points made in this section.

*2. I've been able to do the exercises of this text. So I should be able to do the exercises in this chapter.

3. Almost all the burgers I've eaten at Burger Palace have been greasy and overcooked. So I think that this one will be as well.

*4. Some of the burgers I've eaten at Burger Palace have been greasy and overcooked. So I think that this one will be as well.

5. The letter you mailed three days ago did not arrive yesterday and it did not arrive today. So I think that it will arrive tomorrow.

6. The letter you mailed three days ago did not arrive yesterday and it did not arrive today. So I think that it will not arrive tomorrow.

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3. The pattern of Argument 1e is very complicated, and far more complicated than any other pattern we've discussed so far. We will not attempt to display its pattern here.

7. The letter you mailed six months ago did not arrive any day up until today. So I think that it will arrive tomorrow.

8. The letter you mailed six months ago did not arrive any day up until today. So I don't think that it will arrive tomorrow.

II. SIMPLE STATISTICAL STATEMENTS

We can make statistical claims in many different ways. A ***statistical statement*** says that some percentage of some group have some characteristic. They are sometimes very precise and sometimes somewhat indefinite. All the following are examples of statistical statements.

1. Most of the people in Texas voted for the Republican candidate.
2. All deciduous trees lose their leaves in the fall.
3. The recovery rate from skin cancer is high.
4. Sixty-eight percent of the students in the class got a grade of B or higher.

If you look carefully at these examples, you'll notice several features that they have in common: In each case, some group of people or things is picked out as the subject matter of the statement. In sentence (1), the group picked out is "the people in Texas." In sentence (2), the subject matter is "deciduous trees." Although it is not quite so obvious, there is also a group picked out in (3), namely, (people) with skin cancer. And in sentence (4), the subject matter is "students in the class." Every statistical statement refers to, or is about, some group of things, people, or events. We refer to the subject matter of a statistical statement as the "population" of the statement.

A second feature these statistical statements share is that they say something about the members of their population. That is, they attribute some property to (some) members of their population. In (1), voting for the Republican candidate is the property in question. In (2) it is losing their leaves in the fall, in (3) it is recovering, and in (4) it is getting a grade of B or higher. We refer to what is said about the members of the population of the statistical statement as the "property" of the statement.

The third common feature in these statistical statements is a mathematical or numerical element. In each statement some portion, or "percentage," of the population is said to have the property in question. In statement (4), this portion is quite precise–68 percent. The other statements don't use numbers, instead, they express the portion of the population having the property in words. In (1) "most" means "more than 50 percent."[4] In (2) "all" means "100 percent." In (3) "high" is imprecise.

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4. Throughout this text we use "most" to mean "more than 50 percent."

We can use these three points to identify a *standard form for simple statistical statements*:

(Percentage) of (population) has (property).

Every statistical statement that we can express in this form is a simple statistical statement. Thus, we can rewrite the four sample statements with which we began in standard form as follows:

1a. More than 50 percent of the people in Texas voted for the Republican candidate.

2a. 100 percent of deciduous trees lose their leaves in the fall.

3a. A high percentage of people with skin cancer recover.

4a. 68 percent of the students in the class got a grade of B or higher.

As these examples show, simple statistical statements need not say that a precise percentage of the population has the property in question.

There are other more complex statistical statements that do not fit this form. The only such statements with which we will be concerned are correlation statements, which we will examine later in this chapter.

EXERCISES AND STUDY QUESTIONS

*1. Each of the following sentences expresses a simple statistical statement. Rewrite the sentence in the standard form for statistical statements.
   *a. Of the fifty students in the class, five are absent today.
   b. Most of the athletes graduated.
   *c. On my block, all the men voted Democratic in the last election.
   d. In the last election, the Republicans got most of the votes of the women on my block.
   *e. In a recent survey, four out of ten people surveyed said that they had never watched a football game on TV.
   f. In most elections, the candidate who spends the most on advertisements wins.
   *g. Of the 1,000 students who enrolled at State U. four years ago, 700 have graduated.
   h. People usually say that they work harder than they actually do.

Paragraphs (2)–(6) contain some statistical claims. Rewrite each of the statistical claims in standard form. If there is any ambiguity or uncertainty about any of the elements in the statistical claim, state which element it is and what the alternative interpretations are.

*2. A Time to Seek

At one time or another, roughly two thirds of baby boomers dropped out of organized religion. But in recent years, more than one third of the dropouts have returned. About 57 percent—43 million people—now attend church or

synagogue. More than 80 percent of the boomers consider themselves religious and believe in life after death. The biggest group of returnees (about 60 percent) are married with children.[5]

3. Stick or No Stick?

A Newsweek poll showed broad public support for Bush's policy: His overall approval rating rebounded to 63 percent, and 56 percent of the people surveyed—a 10-point jump in less than four weeks—said the United States should go to war if Iraq refuses to leave Kuwait. But nearly as many thought January 15 was too short a deadline. A 53 percent majority wanted Washington to "wait longer to see if economic and diplomatic sanctions are effective." And by a margin of more than 3 to 1, respondents said the messy compromise would constitute a "success" for Bush's policy.[6]

*4. Men, Women, and Heart Disease: More Than a Question of Sexism

Evidence is mounting that doctors treat women with heart disease less aggressively than they treat men, but experts say many more studies in men and women will be needed to determine whether the women are getting too little treatment, men too much, or both just the right amount. . . .

Women are relatively spared [of heart disease] during the reproductive years and start catching up to men only a decade after menopause. By the age of 67, however, heart disease becomes the most common cause of death among women. Yet one in five men suffers a heart attack by age 60, compared with 1 in 17 women.[7]

5. A 15-Year Decline in Crime Found in Survey of Homes

The rate of crime reported in a survey of American households dropped last year to 23.7 percent, continuing a decline that began after 1975, according to a Justice Department report. . . .

The statistics are from the National Crime Victimization Survey of people at least 12 years old who live in about 50,000 households nationwide. The survey includes information on crimes not reported to the police, although murder is not included because the data is solely from crime victims. . . .

The percentage of members in households reporting a personal theft dropped to 10.5 from 11.2, while the percentage of households in which there was a theft directly from the home declined to 7.5 from 8, the report said.

The West was the most crime-prone region, with 27.9 percent of households affected, while the Northeast had the best rate, 19.8 percent, the report said. The rates were 24.3 percent for the South and 23 percent for the Midwest. . . .

5. Kenneth L. Woodward, "A Time to Seek," *Newsweek*, December 17, 1990, p. 50. © 1990 Newsweek, Inc. All rights reserved. Reprinted by permission.

6. Russell Watson, "Stick or No Stick," *Newsweek*, December 17, 1990, p. 21. © 1990 Newsweek, Inc. All rights reserved. Reprinted by permission.

7. Lawrence K. Altman, "Men, Women, and Heart Disease: More Than a Question of Sexism," *New York Times*, August 6, 1991, p. C1. Copyright © 1990 by The New York Times Co. Reprinted by permission.

In 1975, the first year of the survey, 32.1 percent of the nation's households reported experiencing a crime, and the rate has been declining each year since then. . . .

[White and black households] experienced about the same rate of crime in 1975, with 33 percent of black households and 32 percent of white households victimized by at least one crime of violence or theft. By contrast, the level last year was 27.8 percent for black homes and 23.1 percent for white homes. . . .[8]

6. Creating Problems

Where American students fall down is in thinking. Take . . . [this] problem: . . . "An Army bus holds 36 soldiers. If 1,128 soldiers are being bused to their training site, how many buses are needed?" Only 70 percent of secondary-school students who were given this problem in a national assessmen\t performed the right operation—dividing 1,128 by 36 to arrive at 31 with a remainder of 12 (or 31⅓). Worse, of those who got that far, only one in three went on to draw the conclusion that to move all the soldiers a total of 32 buses were needed. The rest, accustomed to the sterile, self-referential world of school math courses, did not stop to question an answer involving one third of a bus.[9]

III. THE STANDARD PATTERN FOR SURVEY ARGUMENTS

Although there are many ways to argue for statistical claims, the most common arguments are based on surveys or samples. Surveys and samples can be done quite rigorously and carefully, as in good scientific research, and they can be done casually and informally, as when you ask your friends what they think about some topic to find out what people in general think. *Survey arguments* present a finding about a limited group of people or things and then generalize or extrapolate that finding to a larger group. In this section, we will describe the characteristics of an ideal survey argument. In practice, you will find that survey arguments often lack certain key pieces of information. This situation is discussed later in the chapter.

To discuss the elements of a survey argument we begin with a simple example.

Example 2

Reg S. Trar wants to know what percentage of the male students at his school wear ties to class. To find out, he goes to one of the large classes, Introduction to Chemistry, and counts all the male students to see how many

8. "A 15-Year Decline in Crime Found in Survey of Homes," *New York Times*, August 9, 1991, p. A12. © Associated Press. Reprinted by permission.

9. Jerry Adler, "Creating Problems," *Newsweek*, Special Issue, Fall/Winter 1990, pp. 16–17. © 1990 Newsweek, Inc. All rights reserved. Reprinted by permission.

of them are wearing ties. He finds that of the 250 male students in the class 25 wore ties. On this basis, he concludes that 10 percent of the male students at the school wear ties to class.

You may think that there is something wrong with Reg's argument, but before criticizing the argument let's reconstruct it carefully. Notice that this argument has three main parts. In the first part of the argument, Reg describes the survey or sample that was taken. Thus, he might say that he observed all the students entering the Introduction to Chemistry class on a certain date. He counted the total number of male students entering the room and also counted the number of those students wearing ties. In the next part of the argument, he describes the results obtained in the survey: 25 of the 250 male students wore ties. We can put this result in the form of a standard statistical statement:

> 10 percent of the male students entering the Introduction to Chemistry class wore ties.

The final part of the argument is an inference from the result in the sample to a conclusion about a more general population. In this case, the more general population is all male students in the school, and the conclusion drawn is that the same percentage, 10 percent, of this more general population has the property in question. This conclusion can also be put in the form of a simple statistical statement:

> 10 percent of the male students at the school wear ties to class.

It will be useful to introduce some terminology to help make discussion of this example, and other survey arguments, easier. We call the group of people actually observed or measured the *sample population*, or *sample*. The group about which the wider conclusion is drawn is the *target population*. The target population is the population you want to find out about. In Example 2, Reg is interested in finding out a fact about all male students at his school. Because it is too much trouble to count all students in all the classes, he observes only those students in one particular class. The students in that class are the sample.

We can thus summarize the steps of this first argument this way. The first step describes the sample—who was studied, where, when, how. The second step reports the results in the sample. It describes what percentage of the sample population had the property in question. The final step generalizes and states what percentage of the target population has the property in question.

You might have some objections to the argument in Example 2. Perhaps you think there is reason to distrust the counting of the sample. Or perhaps you think that there is reason to question the inference from the result in the sample to the conclusion about the target population. There are legitimate objections to raise, and we will return to them later. Before doing that, however, it will be useful to consider another example.

Example 3

Fund Raiser is president of a British University. She is considering instituting a rule requiring all male students to wear ties to class. To find out student opinion on this matter, she instructs her assistant, Sir Vey, to survey student opinion on the issue. Vey sets up a table outside the student union at lunchtime one day. He asks as many students as he can, as they go by, whether they support or oppose the tie requirement. (He first explains to them exactly what the tie requirement is.) Two students out of the 200 asked express support for the tie requirement. Vey reports to the president that 1 percent of the students support the tie requirement.

This argument may look similar to the one described in Example 2. However, there is a very important difference. The arguments start out alike, detailing the time, place, and nature of the survey conducted. In Example 3 Sir Vey took a poll outside the student union at noon and asked students whether or not they favored the tie requirement (after explaining the nature of that requirement to them). The next step in Example 3 also seems to follow the pattern of the previous example, reporting the results obtained in the survey:

1 percent of the students surveyed support the tie requirement.

The argument continues by generalizing this result to the target population of all students.

There is, however, an important assumption concealed in this description of the argument. This second step involves two elements that we should distinguish carefully. The first part of step 2 reports the results directly obtained in the survey, that 1 percent of the students, or 2 out of 200, said that they favored the tie requirement. From this Sir Vey inferred that 1 percent of the students surveyed actually favor the tie requirement. But *saying* that you favor the tie requirement and actually favoring the tie requirement are different properties. People could lie when they answer the question or they could misunderstand the question or they could misspeak when they answer. Thus, there is a difference between the property that Vey directly measured when he conducted the survey and the property he was actually interested in learning about.

We will describe the two different properties involved in survey arguments as the measured property and the target property. The ***measured property*** is the property actually measured in the sample. The ***target property*** is the property you are interested in finding out about and are using the measured property to indicate. In some cases, such as Example 2, the measured property and the target property are the same. In that example, you directly measured the number of students wearing ties, and that was the target property as well. In Example 3 the properties differed. You will find this kind of difference in many survey reports, especially opinion polls of various sorts. Opinion polls often directly measure the answers people give to questions and use that information to draw a conclusion about what they actually believe. In such

cases, the measured property concerns what answers they give and the target property concerns what beliefs they have.

Using the distinction between a measured property and a target property, as well as the distinction between a sample population and a target population, we can characterize the "standard pattern for survey arguments" as follows:

Standard Pattern for Survey Arguments (Preliminary Version)

Background information: Description of sample, including who or what was sampled, when, where; what they were asked; how they were observed; and so on.

1. *Result of sample: x* percent of the sample population has the measured property (EP) or (IP)

2. *Conclusion about sample: x* percent of the sample population has the target property (1)

3. *Final conclusion: x* percent of the target population has the target property (1), (2)

Steps 1, 2, and 3 are expressed as statistical statements, which can always be put into the standard form for simple statistical statements. When the argument in Example 3 is put into standard form, it looks like this:

Argument 3

Background information: 200 students were surveyed outside the student union one day at lunchtime. They were asked whether or not they supported the tie requirement (after that requirement was explained to them).

1. 1 percent of the students surveyed said that they favored the tie requirement. (EP)

2. 1 percent of the students surveyed favor the tie requirement. (1)

3. 1 percent of all students (at this school) favor the tie requirement. (2)

Strictly speaking, arguments following the pattern for statistical arguments are not well-formed, because they contain no premise linking (1) to (2) or (2) to (3). To make the arguments well-formed, according to the rules we have been using, you must make these linking premises explicit. The inference from (1) to (2) goes from a claim about the measured property in the sample to a claim about the target property in the sample. Thus, to get from (1) to (2) we need a premise linking the measured property to the target property. It must say that the percentage of individuals in the sample with the measured property is the same as the percentage of individuals in the sample with the target property. In other words, this premise says that the measured property is an accurate measure of the target property. Accordingly, we will call it the ***accuracy premise***.

To get from step (2) to the conclusion we need a premise linking the sample population to the target population. It must say that the rate at which the target property appears in the sample population is the same as the rate at which the target property occurs in the target population. In other words, this premise must say that the sample population is representative of the target population. Accordingly, we call it the ***representativeness premise***.

Thus, the pattern for survey arguments, when fully spelled out, is as follows:

Standard Pattern for Survey Arguments (Expanded Version)

Background information: Description of sample, including who or what was sampled, when, where; what they were asked; how they were observed; and so on. (EP or IP)

1. *Result of sample: x* percent of the sample population has the measured property. (EP or IP)

2. *Accuracy premise:* If *x* percent of the sample population has the measured property, then *x* percent of the sample population has the target property. (EP or IP, but indirectly supported by the background information)

3. *Conclusion about sample: x* percent of the sample population has the target property. (1), (2)

4. *Representativeness premise:* If *x* percent of the sample population has the target property, then *x* percent of the target population has the target property. (EP or IP, but indirectly supported by background information)

5. *Final conclusion: x* percent of the target population has the target property. (3), (4)

Notice that (2) and (4) are explicit premises of the argument. As we will see shortly, when you evaluate them you will consider them in the light of the background information provided. Your question will be "Given that the survey was set up as specified in the background information, are the accuracy and representative premises reasonable to believe?" Because the background information is so crucial to the evaluation of these arguments, it is useful to include it in your reconstruction of the argument even though it is not officially a premise of the argument.

Since all survey arguments in the expanded standard form have premises of exactly the same form in steps (2) and (4), it is acceptable to simply use the names of those premises when writing out those steps, as in the following reconstruction for Example 3:

Argument 3a

Background information: 200 students were surveyed outside the student union one day at lunchtime. They were asked whether or not they supported the tie requirement (after that requirement was explained to them).

1. 1 percent of the students surveyed said that they favored the tie requirement. (EP)

2. Accuracy premise. (IP)

3. 1 percent of the students surveyed favor the tie requirement. (2), (3)

4. Representativeness premise. (IP)

5. 1 percent of all students (at this school) favor the tie requirement. (4), (5).

To reconstruct a survey argument all you need to do is to identify the four main elements: the sample population, the target population, the measured property, and the target property. Once you have identified these elements, you can simply insert the appropriate elements into their proper places in the standard pattern. Thus, completing the reconstruction is relatively automatic. As we will see in the next section, however, evaluating the resulting argument is often not so easy.

Most survey arguments can be displayed in the form just described. However, in some cases, you will be lacking some important piece of background information. For example, you may not know exactly what the measured property is. This can happen when you don't know exactly what question was asked or what property was directly measured. In other cases, you will have only an approximation of the numerical results. Thus, the steps you list may be less precise than in this example.

In many cases, several statistical arguments are described together. For example, newspapers often report the results of an opinion survey in which people were asked to respond to several different questions. In these cases you can reconstruct separate arguments for each conclusion or one complex argument with several conclusions.

EXERCISES AND STUDY QUESTIONS

Each of the following paragraphs contains the information needed to construct a simple statistical argument. For each passage, identify the measured property, the target property, the sample population, and the target population. Reconstruct the argument in standard form. Indicate any important information that has been omitted.

*1. Most people who buy a Stick-To-It exercise machine continue to use it after five years. A survey of owners of Stick-To-It machines shows that more than 50 percent of those who still own their machines after five years use it at least a few times per week. The survey was conducted by mailing questionnaires to all registered owners of the machines. Twenty percent of the questionnaires were returned.

 2. The Hard Facts about Hard Work

Surveys of several thousand Americans done in 1965, 1975, and 1985 show that men aged 18 to 65 have been doing a greater share of housework since 1965. This has happened in two phases. From 1965 to 1975, women dramatically cut the amount of time they spent on housework (from 27 to 22 hours a week) as more of them took paying jobs and they had fewer children.

During that decade, the amount of time men spent on housework increased from 5 to 7 hours a week. . . . [In 1985 men did] a total of almost 10 hours of housework a week. In contrast, women . . . [did] a total of 20 hours of housework a week by 1985.[10]

*3. Date or Rape? In Our Culture Both May Be Telling Truth

In the most often cited 1985 study of 6,000 college students, University of Arizona Professor Mary Koss found that over 25 percent of college women had experienced a completed or attempted rape since their 14th birthday. Four out of five of these encounters were with men they knew. But among college men, only 8 percent admitted to behavior that fit these definitions.[11]

4. Adoption Survey Questions Several Earlier Assumptions

A new government study has challenged a long-held assumption about the statistical odds of being able to adopt a child, suggesting that far fewer people are seeking children than had been thought. The survey found that 200,000 women sought adoption in 1988, one-tenth the number usually cited. . . .

The survey used long, personal interviews with 8,450 women, aged 15 to 44, to draw conclusions on many aspects of fertility, infertility and adoption. The women were asked whether they had ever sought to adopt children and whether they were now seeking to do so.

The researchers extrapolated that two million women had at some time pursued adoption, while only 200,000 were currently doing so.

Previous studies . . . had said two million women were seeking to adopt. But that estimate was based on the number of women who had sought help for infertility problems and on the assumption that most of those women would want to adopt.

But the family survey found that only 17 percent of infertile women had ever sought to adopt children.[12]

In addition to reconstructing the main argument from this article, reconstruct, as well as possible, the argument described in the next to last paragraph.

5. Final Count in Census Is Likely to Be 2 Million Lower than Early Estimate

Today's hearing . . . broached the question of whether some of the 300,000 enumerators or their supervisors falsified forms as the census deadline approached. Newspaper articles . . . indicated that enumerators had been instructed to finish their work by creating one-person households when they could not get to residents or neighbors. The report surveyed 24 of the almost

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10. "The Hard Facts about Hard Work," *American Demographics*, December 1988. Reprinted in *Utne Reader*, March/April 1990, p. 70.

11. Ellen Goodman, "Date or Rape? In Our Culture Both May Be Telling Truth," *Rochester Democrat and Chronicle*, May 3, 1991, p. 14A. Copyright © 1991, Washington Post Writers Group. Reprinted with permission.

12. "Adoption Survey Questions Earlier Assumptions," *Rochester Democrat and Chronicle*, December 16, 1990, p. 12A. Copyright © 1990 by The New York Times Co. Reprinted by permission.

500 district offices that seemed to have a disproportionate number of census forms indicating one-person households. In those offices, the survey found that such forms, filed during the last week of operations and based on secondhand information, were in error nearly half the time. From 40 to 50 percent of those houses were vacant or had more than one person, the report said.[13]

Be careful about the populations and the properties in this example.

IV. EVALUATING SURVEY ARGUMENTS

All arguments conforming to the expanded standard pattern for survey arguments are valid.[14] Good objections to them must therefore be directed at their premises. Moreover, since (3) follows validly from (1) and (2), and (5) follows from (3) and (4), you cannot object directly to (3) and (5). Thus, (1), (2), and (4) are the only steps of the argument to question.

A. Evaluating Sample Results

Step 1 of a survey argument simply describes the result found in the sample. It tells how frequently the measured property was found in the sample. The only time you will have reason to doubt step (1) in a survey argument is when you have reason to suspect that the results of the survey or study have been misreported. Since you are typically relying for this information on the people who did the survey and whoever is reporting the study to you, you can apply the standards for testimonial arguments to evaluate the merits of these premises. In some cases you may not know much about the exact results of the survey, so (1) may be somewhat imprecise or incomplete. This is relatively rare, and premise (1) will not often be the focus of your critical discussion.

B. Evaluating the Accuracy Premise

The accuracy premise of a survey argument says that the measured property is an accurate measure of the target property. Whether this premise is reasonable depends entirely on the circumstances of each case. You can use the background information to help you decide about this. (It is very rare that you will doubt the background information itself. In some cases you may have less than adequate detail about exactly

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13. Felicity Barringer, "Final Count in Census Is Likely to Be 2 Million Lower than Early Estimate," *New York Times*, November 15, 1990, p. A22. Copyright © 1990 The New York Times Co. Reprinted by permission.

14. The conditionals in these arguments are almost always at best the kind in which the consequent is likely to be true if the antecedent is.

how large the sample was or who was in it, but that will not raise a question about the truth of the background information.)

In some cases, the measured property and the target property are the same. For instance, in Example 2, wearing a tie was both the measured property and the target property. When the target property is directly measured, the measured property and the target property will be the same. If the measured property and the target property are the same, then the measured property is a perfectly accurate measure of the target property. Obviously, in that case there can be no good objection to the accuracy premise.

In the usual case, however, the measured property and the target property are different and the status of the accuracy premise depends on the connection between the two properties. If the measured property is a good indicator of the target property, then the premise is likely to be true and you should accept it. On the other hand, if there is good reason to think the measured property is not a good indicator of the target property, then the premise is most likely not true and it is reasonable to reject it. There are several factors that can cause the measured property to fail to be a good indicator of the target property: dishonest survey answers, slanted questions, and inaccurate tests.

B1. Dishonest Survey Answers

One common kind of survey argument makes use of information gained in opinion polls. In these cases, as in Example 3, the measured property has to do with what people say, but the target property typically has to do with what they think. Whether people's answers to the survey questions accurately reflect their beliefs depends on a variety of factors such as the kinds of questions asked and their subject matter. In our example about the tie requirement, for example, there isn't much reason to suspect that students would lie when they gave their answers, so the accuracy premise seems reasonable enough in that case. However, if the questions in a survey require people to reveal embarrassing facts about themselves, they may well not tell the truth. In that case, you should reject the accuracy premise unless you have reason to believe that the survey was done in a way that would overcome this problem.

B2. Slanted Questions

A second possible problem with the accuracy premise in arguments based on surveys arises from **slanted questions**. These are questions that induce people to give inaccurate answers. It isn't so much that they lie but rather that the questions are asked in a way that confuses people and causes them to give mistaken answers.

The following example illustrates the use of slanted questions in an opinion survey.

Example 4

National Legislative Action Survey

Instructions: Below are several questions on major issues that are currently being debated in the U.S. Congress. Mark your answers in the appropriate box for each question.

1. Do you believe the Reagan administration's economic plan to balance the federal budget and reduce taxes is the best way to increase productivity, create new jobs, and raise the standard of living of every American?

   ☐ Yes   ☐ No   ☐ Undecided

2. Do you agree that local and state governments should have more flexibility over federal grants thereby eliminating wasteful administrative overhead?

   ☐ Yes   ☐ No   ☐ Undecided

3. Do you support a permanent 25%, across the board, reduction (over the next three years) in your individual federal taxes to stimulate savings, investment and create more jobs?

   ☐ Yes   ☐ No   ☐ Undecided[15]

The first of the questions in this survey is not particularly problematic, but questions (2) and (3) are. To answer no to question (2) requires declaring oneself in favor of "wasteful administrative overhead," and to answer no to question (3) requires declaring oneself to be opposed to lower taxes, stimulated savings, and the creation of more jobs. The wording of the questions make it difficult to choose these answers. As a result, these questions are slanted, or leading.

The answers you give to questions like these may fail to reflect your actual attitudes toward the program in question. Question 2, for example, arose in the context of a debate about whether the federal government should give state and local governments more control over various grants. Doing so would allegedly eliminate expenses incurred by having the grant programs administered by the federal government. However, giving the states and local governments control also meant giving them the power to change some of the policies and standards for the distribution of the money. Some people feared that the states and localities would use the money in unfair ways; these people preferred to retain federal control of the program, even if some extra cost was involved. By phrasing the question the way it does, the survey calls attention to reasons that support only one view on this issue. That could easily cause people responding to the question to lose sight of their actual views and to give the answer the survey leads them to.

The obviously slanted questions in this survey show that it was designed to establish that there was widespread support for the views advocated by one side. Although reputable pollsters rarely use such obviously biased questions, they can unintentionally phrase questions in ways that bias their results. For example, when surveys are done on the telephone or in person (rather than in writing), the tone of voice in which questions are asked may well influence the answers people give.

15. The questions listed here were included in a survey distributed by the Republican National Committee in 1981. Surveys with slanted questions have also been used by Democrats and other political parties.

B3. Inaccurate Tests

In some survey arguments that do not involve opinion polls, the measured property just isn't a very good test for the target property. For example, you sometimes see reports about the percentage of people who have a particular disease. Sometimes this conclusion is reached by giving people a blood test that is supposed to indicate the presence of the disease. In this case, the measured property is the result of the blood test, for example, having a positive test result. The target property, however, is having the disease. Thus, when put in the form of our standard argument, premise (1) would report the percentage of the sample having a positive test result and the accuracy premise would say that the same percentage of the sample actually has the disease. But, if the blood test isn't a very good indicator of the disease, then (2) might well be false or unreasonable.

C. Evaluating the Representativeness Premise

Probably the most common objection to survey arguments concerns the representativeness premise. It is easy to understand why. Survey arguments are often based on results found in seemingly small samples, and it may seem unreasonable to generalize these results to a much larger population. We might well wonder how a survey of a few thousand American voters could give a clear indication of the views and preferences of 250 million citizens. Surprisingly, however, such polls are often reliable, and the representativeness premise is often reasonable.

C1. Sample Sizes and Margins of Error

A full discussion of the representativeness premise would take us more deeply into statistics than is necessary for our purposes. To grasp the main ideas that we need, consider some simple examples. Suppose you have a fair coin (i.e., a coin that is not weighted toward one side or the other) and you toss it twenty times. You would expect it to come up heads about half the time, or on about ten tosses. You don't expect it to be exactly ten heads and ten tails, but you do expect approximately that number. It is possible, of course, that a fair coin will come up heads twenty times in a row, but that is a very unlikely outcome.

Now, suppose you have a coin and you want to know whether it is fair. To determine this, you toss it a bunch of times. If you get roughly an equal number of heads and tails, you'll conclude that it probably is fair. It is possible, of course, that a weighted coin will not reveal its bias in a series of twenty tosses, but that too is unlikely. So in this case you use the sample, your series of tosses, as the basis for a general conclusion about the coin.

There are many other examples in which you use a small sample to learn about more general populations. You might ask a few students about the merits of a particular course or teacher, even though they may be only a tiny fraction of the total num-

ber of students familiar with that course or teacher. It could be, of course, that their opinions are atypical, but that is unlikely (unless you ask students you know to have odd preferences). Similarly, you might generalize about the personality of dogs of a certain breed based on your knowledge of only a few dogs of that breed.

Consider one more example. Grubs are little bugs that eat the roots of grass. If there are a lot of grubs in your lawn, they can destroy it. To find out what your lawn's grub population is, lawn-care experts recommend digging up a few patches of lawn of about one square foot and seeing how many grubs you find just below the roots of the grass. Now, suppose you pick four or five spots on your lawn and check for grubs in the recommended way. You find three grubs in one of the sections, four in another, and five in the others. You will conclude that you have about four grubs per square foot in your lawn. It's possible, of course, that you just happened to pick sections that were unlike the rest of the lawn, but that is not what you expect. A few samples are likely to give you a good idea of what the situation is throughout your lawn. It is sensible to rely on a sample in this case, since not relying on a sample would require that you destroy your lawn.

Surveys and opinion polls use reasoning of just this sort. If you ask a few thousand Americans their views about some topic, it is possible that you've gotten an unusual group whose views are not like the views of the rest of the population. However, if you've selected the sample in a suitable way, that is unlikely. It is always possible that it is atypical, but the odds are that the results in the sample are about the same as the results would be if you actually tested everyone in the more general population.

These considerations suggest two general points about the representativeness premise. First, although we can never be absolutely certain that it is true, it is often reasonable for us to believe that it is; that is, it is often reasonable for us to believe that a suitably selected sample is representative of the more general population. (We will see shortly examples of the kinds of reasons that can make it unreasonable to believe that a sample is representative.)

Second, it is typically reasonable to believe that the result in the general population is approximately the same as the result in the sample, rather than exactly the same. You may have noticed that when newspapers report the results of opinion polls, they usually mention a ***margin of error***. This is the maximum difference there is likely to be between the rate at which a property is found in a sample and the rate it actually occurs in the target population. For example, the results of a preelection survey of voters might say that "45 percent of the people favor candidate X, plus or minus 3 percent." This 3 percent deviation in either direction is the margin of error in the survey. In general, the larger the sample size, the smaller the margin of error. When analyzing survey arguments, we can ignore the details of sample sizes and margins of error, but in our conclusions of statistical arguments we should only say that the result in the general population is approximately the same as the result in the sample. Thus, in standard survey arguments, the representativeness premise and the final conclusion should be revised as follows:

4. *Representativeness premise:* If *x* percent of the sample population has the target property, then approximately *x* percent of the target population has the target property.

5. *Final conclusion:* Approximately *x* percent of the target population has the target property.

C2. Unrepresentative Samples

To make a good objection to the representativeness premise, it is not enough to say that the sample population and the target population "might be different." It is almost always true that they *might* be different. To point this out is to make a flimsy criticism that goes against the basic rules of argument evaluation. The relevant issue is whether it is reasonable for you to think that the sample population is similar in the relevant way to the target population. If it is, then you should accept the representativeness premise. To object you need to find reasons to think that the two populations are not the same (or at least reasons to suspend judgment about whether they are approximately the same).

In ideal circumstances, the sample population is selected randomly from the target population. In a ***random sample*** every member of the target population has an equally good chance to be selected for the sample, and those who are selected are picked purely by chance. For example, to survey the students in a class, one might put the names of all the students on separate sheets of paper, and then mix them up thoroughly and select the sample by randomly pulling some of the sheets of paper from a box.

In practice, it is often extraordinarily difficult to select a random sample. For example, it is not practical to construct lists of all people in the United States and randomly select some of them to be in a sample. What poll takers often do is to make samples that match the target population in relevant ways. In polls taken before elections, for example, poll takers try to make their samples like the general population in terms of geographical distribution, race, religion, and the like. Thus, the sample is designed to be like the general population in terms of the percentages of people who live in urban, suburban, and rural areas; the percentages of men and women; and other relevant characteristics.

To make a good objection to the representativeness premise, you need to find some important respect in which the sample and the target population differ. To point out merely that there is some difference between the groups is to make an insubstantial criticism. For example, in the case of Example 2, you might point out that juniors and seniors are unlikely to take Introduction to Chemistry, and thus the sample is biased toward freshman and sophomores. By itself this isn't much of an objection. However, if this fact is coupled with some reason to think that freshmen and sophomores are somewhat likely to dress differently from juniors and seniors, then the objection is more compelling. This additional information would provide reason to think that the sample population is unrepresentative, and so it would be part of a more effective criticism.

Similarly, in Example 3, simply to say that the sample consisted of students at the student union and that they might be different from other students is not to make a substantial objection. To point out some reason why students at the student union would have different opinions on this topic than other students would be to make an effective objection. For example, if members of fraternities and sororities are unlikely to be at the student union, and you have reason to think that those students are likely to have different attitudes toward the tie requirement, then you have a good objection to the argument.

There are a variety of ways, some of them surprising, in which samples can introduce biases into studies. For example, suppose you want to find out the general views of people about some issue, and you conduct a survey by questioning people at a shopping center. Such a survey is apt to miss significant groups of people: those who are too poor to go shopping, those who are so wealthy that they hire others to do their shopping for them, those who work long hours and don't have time to go to shopping malls during the hours they are open, and those who just don't like to go shopping. If shoppers are likely to differ from these other groups in ways relevant to the issue you are studying, your sample is likely to be unrepresentative. The examples in the exercises at the end of this section contain descriptions of numerous surveys which reveal some of the other ways in which samples can be unrepresentative.

C3. Small or Poorly Described Samples

When you know very little about a sample or how it was chosen, then you have reason to wonder whether it is representative. A very small sample, of course, is not as good a basis for an argument as a larger sample. A surprising fact to many people is that a survey of a couple thousand people can provide the basis for a confident conclusion about a much larger group such as the entire population of the country. However, this is true only if the sample matches the larger population in significant ways, such as geographical distribution, income, age, and the like.

Sometimes you may find a report about a survey but have very little information about exactly how large the sample was or how it was selected. This lack of information considerably weakens the argument for you. In such cases it is best to think of the argument as somewhat like a testimonial argument. If a reputable organization conducted the survey and a reputable source reported it, then you have reason to believe that they carefully selected the sample. In effect, you have their testimony for this claim. Lacking such information, the statistical argument is rather weak.

EXERCISES AND STUDY QUESTIONS

*1. Reconstruct the argument from Example 2. Then discuss the following objections to the argument.
   a. Some of the students may have been wearing coats that concealed their ties.
   b. It may have been crowded and hard to see all the students clearly.

   c. Scientists are typically sloppy dressers.

   d. Men are more likely than women to take chemistry.

   Restate each objection more fully and clearly, and be sure to specify which premise it is an objection to. Evaluate the objections.

2. Consider the following objections to Argument 3a.

   a. Students who go to the student union may not be like other students.

   b. Students who go to the student union are typically students who live off campus, since those who live on campus are on the meal plan and they eat in the dorms. Those who live off campus tend to be more independent and less likely to favor conservative dress requirements.

   c. You never know if people are telling the truth.

   d. We don't know who asked the question. Maybe the students who said they supported the requirement were only trying to appear agreeable to the administrator who conducted the survey.

   Restate each objection more fully and clearly, and be sure to specify which premise it is an objection to. Evaluate the objections.

3. Assume that Arguments 2 and 3 are based on surveys done at your school or a school you know about. Evaluate the arguments.

4. The following questions appeared on a survey distributed by the Sierra Club, an organization supporting protection of the environment. Comment on the merits of an argument that uses the results of this survey to determine the attitudes of Americans on the questions it contains.

   a. Our nation is still blessed with millions of acres of public lands, including roadless wilderness areas, forests, and range lands. Land developers, loggers, and mining and oil companies want to increase their operations on these public lands. Do you think these remaining pristine lands should be protected from such exploitation?

   ☐ Yes   ☐ No   ☐ No opinion

   b. In recent years, government funds have been drastically cut on purchasing of new national park lands. Would you want to see more public funds spent to have more land set aside for parks?

   ☐ Yes   ☐ No   ☐ No opinion

   c. Air pollution threatens our health and lives. Would you like to see our government impose stronger sanctions to clean up our air–even though it may result in higher taxes or higher consumer costs on such items as cars.

   ☐ Yes   ☐ No   ☐ No opinion

   d. The big issue in water pollution today is the "nonpoint" pollution. This is the run-off from parking lots, streets, and agriculture that is polluting our water system. Since this water doesn't come out of a pipe, it can't be regulated as would water coming from a factory. Should our water quality programs be extended to include "nonpoint" pollution?

   ☐ Yes   ☐ No   ☐ No opinion

*5. Reread the passage in exercise 3. In the article containing that passage, Ellen Goodman says:

> It isn't that the same 8 percent of the men are assaulting 25 percent of the women. Nor are they necessarily lying. The kernel of the research suggests, rather, that the men don't believe they have used force. Not really. Nor do they believe that the women have resisted. Not really.[16]

How would Goodman's comments apply to a statistical argument based on the survey results she reported?

6. Suppose that you want to find out what percentage of the students in one of your classes got an A on a recent test. Since it is a large class, with over 200 students, you decide to survey some of the students. You go to class early one day and ask the first 25 students who arrive what grade they got on the test. Of these, 5 report getting an A. You conclude that about 20 percent of the students got an A. Reconstruct and evaluate your argument.

7. Suppose that Professor Ima Bore wants to know if she's a good teacher. To find out, she randomly surveys about half the students as they leave her senior seminar one afternoon. The students are asked to rate her teaching on a scale of 1 (poor) to 5 (excellent). She receives an average evaluation of slightly over 4 and concludes that she is a good teacher. Is her conclusion justified? Why?

8. Read the following report about women and childlessness, and then answer the questions that follow.

> Some predictions [about how many children a woman will have] can be made, however, on the basis of what women say about the number of children they expect to have. In 1975 less than 5 percent of wives who were interviewed about family plans expected to remain childless. This proportion was relatively constant throughout the age groups. The proportion of women who expect to remain childless went up slightly from 1967–1974, but then went down again in 1975. Better-educated women and white women are most likely to expect to remain childless, but the difference is not great.[17]

> **a.** The first sentence suggests that the information presented here can be used to argue for a conclusion about how many women will remain childless. Reconstruct the argument.

> **b.** Consider the following criticism of the argument, mentioned by the author:

> One problem with the data is that the Census Bureau interviews only married women about their family plans, not unmarried women who may or may not marry and may or may not expect children in the future. Another is

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16. Goodman, "Date or Rape?" p. 14A.

17. Mary Jo Bane, *Here to Stay: American Families in the Twentieth Century* (1976). Reprinted in Annette T. Rottenberg, ed., *Elements of Argument*, 2nd ed. (New York: Bedford Books, 1988), p. 304.

that women who now see themselves as putting off children may later be unable to have them, or decide not to.[18]

Reformulate these objections to make them apply to the argument you recon-structed. Are they good objections?

c. State and discuss any other objections to the argument that you can think of.

9. Reconstruct the statistical argument based on the survey described in the first arti-cle that follows. Then formulate precisely the objections that are raised to that argument in the second article. Evaluate the objections.

One in Five Polled Voices Doubt on Holocaust

A poll released today found that 22 percent of adults and 20 percent of high school students who were surveyed said they thought it was possible that the Holocaust, Nazi Germany's extermination of six million Jews, never happened.

In addition to the 22 percent of adult respondents to the survey by the Roper Organization who said it seemed possible that the Holocaust never happened, 12 percent more said they did not know if it was possible or impossible, according to the survey's sponsor, the American Jewish Committee.

The findings shocked Holocaust survivors, some of whom had devoted much of their lives to keeping alive the memory of the systematic extermination of Jews in World War II.

Roper interviewed 592 adults from November 14 to November 21 and 506 high school students from October 19 to October 30. All were asked, "Does it seem possible, or does it seem impossible to you, that the Nazi extermination of the Jews never happened?"

Sixty-five percent of adults and 63 percent of high school students said it was impossible to believe that the Holocaust never happened. Twelve percent of the adults and 17 percent of the high school students said they did not know. The margin of sampling error was plus or minus four percentage points for the adult survey and plus or minus five percentage points for the survey of students.

"What have we done?" asked a stunned Elie Wiesel, the Nobel laureate who chronicled his experiences at the Auschwitz and Buchenwald concentration camps. "We have been working for years and years. I am shocked that 22 percent—oh, my God.". . .

The survey also found that 72 percent of adults and 64 percent of high school students said it was essential or very important for all Americans to know about and understand what was done to the Jews by the Nazis.

In addition, 63 percent of adult respondents and 54 percent of high school respondents rejected the idea that 50 years had erased the relevance of the Holocaust.[19]

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18. Ibid.

19. "One in Five Polled Voices Doubt on Holocaust," *New York Times*, April 20, 1993, p. A12. © Associ-ated Press. Reprinted with permission.

Putting a Ready Check on "Holocaust Denial"

Do Americans really doubt the Holocaust occurred?

A now-famous Roper poll shocked almost everyone last year with the answer it got to the question, "Does it seem possible or does it seem impossible to you that the Nazi extermination of the Jews never happened?"

Twenty-two percent said "it seemed possible." Another 12% "didn't know." Thus, nearly a third of the country either didn't know if it happened or believed it was possible it didn't. Only 65 percent believe it was "impossible it never happened."

The poll was cited by major newspapers, including the *New York Times* and the *Washington Post* as evidence of growing anti-Semitism and Holocaust denial. "One in five people in the United States is open to the idea that the Holocaust is a myth," declared *USA Today*.

"Figure one out of five Americans could be willfully stupid," opined the *San Francisco Examiner*.

Not quite.

The poll didn't say either of those things. And the truth is, Americans know the Holocaust was no myth.

Gallup decided to test the Roper question by asking it differently.

They simplified the convoluted language of the original question by eliminating the double negative and the forced choice of two extremes.

Their question: "The term Holocaust usually refers to the killing of millions of Jews in Nazi death camps during World War II. In your opinion, did the Holocaust definitely happen, probably happen, probably not happen, or definitely not happen?"

The results: 83% said the Holocaust definitely happened, 13% said it probably happened, 2% said probably did not, 1% said definitely not, 1% had no opinion.

What that means is 96% believe the Holocaust happened; 3% do not.

In a separate sample, Gallup asked the Roper question again. This time, 37% said it was possible it never happened—15 points higher than the first time it was asked. Why does Roper's question seem to find more doubters?

Beyond simple confusion caused by the awkward sentence, the problem may lie in the words "impossible" and "never."

Despite what people believe, they are reluctant to use such absolute terms. There is a weary skepticism that seems to tell us anything is possible—whether or not we strongly doubt it. Or, as the adage states, "The older I get, the less I say 'always' and 'never.' "

Finally, notice that the word "Holocaust" never appears in Roper's question. Instead they use "extermination of the Jews." Extermination implies "complete extinction." Jews are not extinct.

Maybe Americans are smarter than the media seem to believe. Maybe they simply understand the subtleties of language better than the pollsters and journalists who misuse it daily.

Whatever the case, Americans are not "willfully stupid." Virtually all of them realize the Holocaust is historical fact.[20]

10. In January 1991 the United States was considering going to war with Iraq. On January 9 one polling organization did a telephone survey to learn people's views about going to war. The poll was done in just one night, and potential participants who were not at home were not called back. Some critics thought that this biased the poll. Can you think of any ways in which these conditions might have made the sample unrepresentative?

11. Evaluate the arguments you reconstructed in exercises 2–5.

V. CORRELATIONS

A. Correlation Statements

Another important, and more complex, kind of statistical statement describes a correlation. People are describing correlations when they make statements such as the following:

> 5. Wealthy voters voted for the Republican candidate in the recent election more than nonwealthy voters.
> 6. People who smoke cigarettes tend to have heart attacks more than people who don't.
> 7. Philosophy majors get high scores on the law boards more than other students.

A *correlation* compares the rate at which some property or characteristic shows up in two different groups. For example, suppose you know that (5) is true and that 60 percent of the wealthy people who voted in the recent election voted for the Republican candidate. (Assume that you have a clear enough way to distinguish who is wealthy from who is not.) From this you can infer that less than 60 percent of the nonwealthy people who voted in the recent election voted for the Republican candidate. Notice that (5) doesn't say what percentage of wealthy people voted for the Republican. It just says that the percentage of wealthy voters who voted for the Republican is higher than the percentage of nonwealthy voters who voted for the Republican.

We can restate (5) this way:

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20. Joe Urschel, "Putting a Reality Check on 'Holocaust Denial'," *USA Today*, January 13, 1994. Copyright © 1994, USA Today. Reprinted with permission.

5a. The percentage of wealthy people who voted for the Republican candidate in the recent election is greater than the percentage of nonwealthy people who voted for the Republican candidate.

This statement compares the percentages in two related simple statistical statements, but it doesn't give any specific percentages. If we represent the first percentage as X, then the first part of (5a), when put in standard form for simple statistical statements, says:

X percent of the wealthy people voted for the Republican candidate.

And the second part says:

Fewer than X percent of the nonwealthy people voted for the Republican candidate.

Notice how the populations and properties of these two statements are related. The properties in the two statements are the same (voted for the Republican candidate), and the populations are different (wealthy voters and nonwealthy voters). So the correlation claims that a certain property, voting for the Republican candidate, shows up more frequently in one population than the other. This idea can easily be represented by the following graph:

Voters for the Republican Candidate

Wealthy voters   Nonwealthy voters
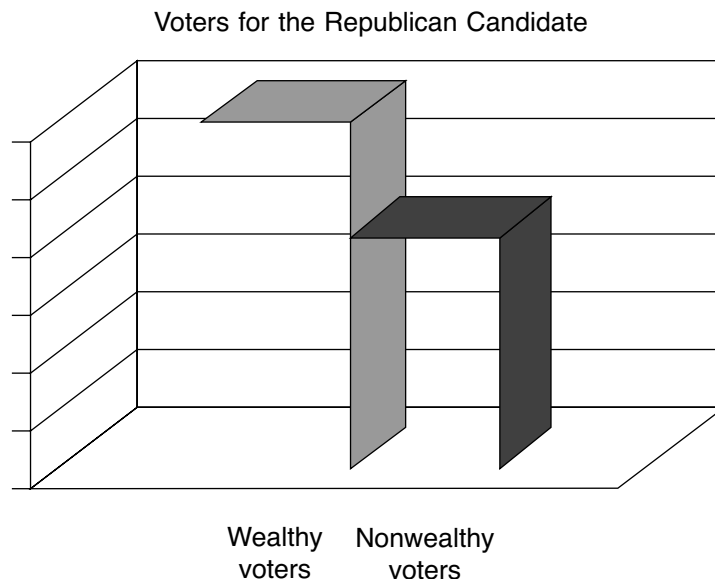
The overall population is all voters. It is divided into two groups—wealthy voters and nonwealthy voters. We could also say that the members of the overall population are divided into groups according to whether they do or don't have the property of being wealthy. The correlation claim just says that the percentage voting for the Republican candidate is higher among those who do have this property than among those who don't. In other words, the properties of being wealthy and voting Republican are correlated. So, another way to state this relationship is

> 5b. Being wealthy is correlated with voting for the Republican candidate in the recent election among people who voted in the recent election.

More generally, correlation statements can be defined as follows:

> **CR:** A is correlated with B in population P = Within population P, the percentage of As who are B is greater than the percentage of non-As who are B.

The left side of this definition, displays the *standard form for correlation statements*:

> A is correlated with B in population P.

It has three elements: the two correlated factors and the overall population. What goes in for B in these statements is the property in question (e.g., voting for the Republican candidate), and what goes in for A is a property that picks out one of the subpopulations (e.g., being wealthy).

If we put statement (6) into the standard form for correlations, we have

> 6a. Smoking cigarettes is correlated with having a heart attack among people.

Having a heart attack is the property in question, and the overall population is all people, which is divided into two groups, those who smoke cigarettes and those who don't. Statement (6a) is another way of saying

> 6b. The percentage of smokers who have heart attacks is greater than the percentage of nonsmokers who have heart attacks.

In statement (7) there is a correlation between getting high scores on the law boards and being a philosophy major. So, put into proper form, the correlation statement is

> 7a. Being a philosophy major is correlated with getting a high score on the law boards among all people who take the law boards.

This can be expanded to the statement

7b. The percentage of philosophy majors taking the law boards who get high scores on the law boards is greater than the percentage of nonphilosophy majors taking the law boards who get high scores on the law boards.

Strictly speaking, the statements above are examples of ***positive correlations***. Two factors, *A* and *B*, are ***positively correlated*** in population *P* when the percentage of *A*s (in *P*) who are *B* is greater than the percentage of non-*A*s (in *P*) who are *B*. People often use the word "correlation" when they mean "positive correlation." Two factors, *A* and *B*, are ***negatively correlated*** in population *P* when the percentage of *A*s (in *P*) who are *B* is less than the percentage of non-*A*s who are *B*. Thus, for example, exercising regularly is negatively correlated with having heart disease among people since the rate of heart disease among those who exercise regularly is lower than the rate of heart disease among those who don't exercise regularly. Two factors are not correlated within a population when they are neither positively nor negatively correlated.

There are several important points to keep in mind about correlations. First, people sometimes think that if *A* is positively correlated with *B*, then most *A*s are *B*s. This is a mistake. Smoking cigarettes and getting lung cancer are positively correlated, although it is not true that most smokers get lung cancer. In fact, only about 7 percent of smokers get lung cancer.[21] The correlation holds because the percentage of smokers who get lung cancer is greater than the percentage of nonsmokers who get lung cancer. It could be that factors *A* and *B* are positively correlated even if a very small percentage of the *A*s are *B*. All that matters is that a higher percentage of the *A*s than the non-*A*s are *B*. For example, if 3 percent of the *A*s and 1 percent of the non-*A*s are *B*, then *A* and *B* are positively correlated.

Another mistake people sometimes make is to confuse correlations with actual numbers. Think again about the alleged fact that being a philosophy major is positively correlated with getting a high score on the law boards. This does not imply that the number of philosophy majors who get high scores is greater the number of nonphilosophy majors who get high scores. Suppose that there are 1,000 philosophy majors and 100,000 nonphilosophy majors nationwide. It may be that there are far more nonphilosophy majors with high scores than philosophy majors. Still, the percentages may make the correlation true.

It is also useful to realize that correlation statements are symmetrical. This means that if *A* is positively correlated with *B* in population *P*, then *B* is positively correlated with *A* in population *P*. (An example illustrating this point is found in exercise 3 at the end of this section.)

A final point to remember about correlations is that the fact that there is a correlation between two factors does not imply that one factor causes the other.

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21. Sharon Begley, "Not in the Stars, But in Our Genes," *Newsweek*, October 21, 1991, p. 56.

EXERCISES AND STUDY QUESTIONS

*1. Rewrite each of the following statements in the standard form for correlation statements.

    *a. Students trained in the liberal arts are better able to formulate valid concepts, analyze arguments, define themselves, and orient themselves maturely to their world.[22]

    b. People who have used marijuana are more likely to have tried cocaine than are people who have never used marijuana.

    *c. In auto accidents, drivers of small cars are more likely to be seriously injured than drivers of large cars.

    d. Another disturbing 1988 report from the Kaiser Permanente Medical Care Program in Oakland, California, found that women who worked on VDTs [video display terminals] more than 20 hours per week had nearly twice as many miscarriages as women in similar jobs who didn't use VDTs.[23]

    *e. Midwesterners tend to vote Republican more than Northeasterners.

    f. Robins are more likely to migrate to the south during the winter than are blue jays.

    *g. Much attention has been paid recently to the growing disparity in the mortality rates between blacks and whites. There is a moral imperative to mobilize social resources to reverse this trend. But there is another mortality gap, one that is not talked about: the social class gap. . . . In 1986, on one of the few occasions that the government did gather such information (and measured only deaths from heart and cerebrovascular diseases), the results were stunning. People of any race with less formal education, with lower incomes, and belonging to the working class (those whom the census classifies under the terms "operator" and "services") die of the diseases at higher rates than people belonging to the upper classes (those designated "managers" and "professionals"). The death rate from heart disease, for example, was 2.3 times higher among unskilled blue-collar operators than among managers and professionals. By contrast, the mortality rate from heart disease in 1986 for blacks was 1.3 times higher than for whites.[24]

2. Fill in the numbers in statement (7) about philosophy majors and the law boards in such a way that the correlation is true but the number of philosophy majors who get high scores is lower than the number of nonphilosophy majors with high scores.

*3. In the text it is asserted that the correlation relation is symmetrical. If, within population *P*, *A* is positively correlated with *B*, then it is also the case that *B* is pos-

22. David G. Winter, Abigail J. Stewart, and David G. McClelland, "Grading the Effects of a Liberal Arts Education," *Psychology Today*, September, 1978, pp. 68–74, 106.

23. "Computer Danger Zone," *Utne Reader*, January/February 1991, p. 18.

24. "The Class Gap," *Nation*, April 8, 1991. Reprinted in *Utne Reader*, July/August 1991, p. 113.

itively correlated with *A*. To illustrate this point, consider the following example. Suppose there is a certain movie that women tend to like more than men; that is, being a woman is positively correlated with liking the movie among all people who see the movie. (Assume that everybody falls into the category of liking the movie or not liking the movie. People who are neutral count as not liking it, which differs from disliking it.) The following chart illustrates the data.

	Liked the movie	Didn't like the movie
Women	700	300
Men	200	200

*a. Show that the statement "Being a woman is positively correlated with liking the movie among people (women and men) who saw the movie" is true.

*b. Show that the statement "Liking the movie is positively correlated with being a woman among people (women and men) who saw the movie" is true.

c. Try adjusting the numbers in the chart so that the correlation in (a) is true and the correlation in (b) is false. (You can't do it.)

4. Reread the report in exercise 5. The information supplied there provides the basis for numerous correlation statements. State those correlations, putting the statements into standard form.

*5. State whether each sentence is true or false.

a. If all *A*s are *B*s, then *A* must be correlated with *B* (for any population).

b. If some *A*s are *B*s, then *A* must be correlated with *B* (for any population).

c. If no *A*s are *B*s, then *A* can't be correlated with *B* (for any population).

B. Arguments for Correlations

It is not strictly necessary to introduce any new argument patterns to account for arguments for correlations. You can argue for a correlation by arguing constructing standard statistical arguments for the two simple statistical claims from which it follows. However, you can also use a simpler pattern of argument specifically for correlations.

Suppose that you want to find out whether the correlation reported in sentence (5) is true. In standard form (5b) the statement is

Being wealthy is positively correlated with voting for the Republican candidate in the recent election among people who voted in the recent election.

One way in which you might go about arguing for (5b) is by questioning people as they leave the places where they vote. You could ask people whom they voted for and what their income is. (The assumption here is that you determine whether

people are wealthy by their income.) To make any such survey precise, it is necessary to come up with some clear way of deciding what counts as being wealthy. Suppose you decide that anyone with an annual family income above $50,000 is wealthy. To carry out the survey, you question people at voting places throughout the area, making sure you get a representative sample of the overall population. Your results might look like this:

	Percentage who said they voted for the Republican	Percentage who said they voted for the Democrat	Percentage who said they voted for other candidates
People reporting annual family incomes above $50,000	60	35	5
People reporting annual family incomes at or below $50,000	40	50	10

Based on this information, you might conclude that (5b) is in fact true. Assuming that all the information given by the people is accurate, we can conclude that

> 60 percent of the wealthy voters voted for the Republican.
> 40 percent of the nonwealthy voters voted for the Republican.

Since a higher percentage of the wealthy voters voted for the Republican, (5b) is true.

You can set out the argument for this conclusion more precisely as follows. First, describe background information, providing an account of exactly what was done and where. Next, describe the results obtained in the survey. It is important to be careful about exactly what was directly measured and what was inferred from that. What you directly measured was how people reported their income and how they reported their votes. On this basis, you can establish a ***measured correlation*** in the sample, that is, a correlation between the factors you were able to measure or observe directly:

> Reporting an annual family income above $50,000 is positively correlated with saying that you voted for the Republican candidate among the people surveyed.

Next, you use this measured correlation to infer a conclusion about a ***target correlation*** in the sample:

> Being wealthy (i.e., having a family income above $50,000) is positively correlated with voting for the Republican candidate in the recent election among the people surveyed.

Finally, this result is used to draw a conclusion that states the target correlation *in the target population*:

> Being wealthy is positively correlated with voting for the Republican candidate in the recent election among all voters.

The assumptions behind this argument are exactly like those behind simple statistical arguments. There is an accuracy premise, saying that the directly measured properties accurately indicate the target properties. But notice that because the correlation statement involves two properties, there are two accuracy claims at stake. In our example, one accuracy claim is that reports about income accurately measure actual income. The other is that reports about voting accurately measure who the person actually voted for. There is also a representativeness premise, asserting that the sample population is similar to the target population. Generalizing from this example, we can describe the "standard pattern for correlation arguments" as follows:

Standard Pattern for Correlation Arguments

Background information: Description of survey, including who or what was sampled, when, where, and how.

1. *Results obtained:* The results can be expressed as several simple statistical statements reporting the rate at which the measured property was found in the two groups studied in the sample. (EP or IP)

2. *Measured correlation in sample:* Typically, this states that there is a correlation between the measured factors in the sample population. (derived from step 1)

3. *Accuracy premise:* This says that the factors measured accurately measure the target properties. In other words, if there is a measured correlation in the sample, then there is also a target correlation in the sample. (EP or IP, but indirectly supported by the background information)

4. *Target correlation in sample:* This says that the target factors are correlated in the sample. (2), (3)

5. *Representativeness premise:* This says that the sample populations are representative of the target populations. In other words, if there is a target correlation in the sample, then there is a target correlation in the target population. (EP or IP)

6. Final conclusion: This says that the target factors are (positively or negatively) correlated in the overall target population. (4), (5)

Formulated precisely, then, the argument about wealthy people voting for the Republican candidate might be stated in this way:

The "Wealthy Vote Republican" Argument

Background information: People were questioned about their incomes and their votes as they left polling places in the recent election. The number of people surveyed is not stated, but the sample is said to be comparable to the overall population. People were classified as wealthy if they reported their annual family income to be over $50,000.

1. Of those who reported annual family incomes above $50,000, 60 percent said that they voted for the Republican candidate, 35 percent said that they voted for the Democratic candidate, and 5 percent said they voted for others.

   Of those who reported annual family incomes of $50,000 or less, 40 percent reported voting for the Republican candidate, 50 percent reported voting for the Democratic candidate, and 10 percent reported voting for others. (EP)

2. Reporting that one has an annual family income above $50,000 is positively correlated with reporting that one voted for the Republican candidate among the people surveyed. (1)

3. *Accuracy premise:* If the measured properties (reported income, reported voting behavior) are correlated in the sample, then the target properties (actual income, actual voting behavior) are correlated in the sample. (IP)

4. Being wealthy is positively correlated with voting for the Republican candidate in the recent election among the people surveyed. (2), (3)

5. *Representativeness premise:* If there is a correlation in the sample, then there is a correlation in the target population. (IP)

6. Being wealthy is positively correlated with voting for the Republican candidate in the recent election among all voters in the election. (4), (5)

In evaluating this argument, you might note that we aren't given much information about the size and nature of the survey, so we can only be moderately confident of the truth of (5). In this formulation of the argument, we have taken income to be a measure of wealth. One can legitimately question this way of determining who is wealthy. However, any objections raised on that point could be avoided by revising the argument so that it only makes claims about correlations between voting behavior and annual income.

The most serious question with this argument has to do with the accuracy premise. One wonders whether people accurately report their incomes to strangers questioning them after they vote. Since there are several reasons why people might be reluctant to divulge such information, we can raise a question about the truth

of (3). By itself, this question is not sufficient to dismiss the argument entirely. Rather, it makes (3) worthy of only cautious acceptance. So the argument is only moderately strong.

In general, criticism of correlation arguments is similar to criticism of simple statistical arguments. Criticism of premise (1) arises only when there is reason to doubt the accuracy of the report of the study. Most effective criticisms focus on the accuracy premise or the representativeness premise. The sorts of things that can go wrong with accuracy and representativeness these premises in correlation arguments are exactly like the things that can go wrong with those premises in simple statistical arguments.

When reconstructing correlation arguments, a good procedure is to identify the key elements of the argument: the sample and target populations and the measured and target properties. Keep in mind that there will sometimes be two (or more) measured properties and two (or more) target properties. In our example, what one says about one's income and what one says about voting are measured properties. One's actual income and how one actually voted are target properties. Once you've identified these elements, it is rather easy to plug them into the argument pattern.

EXERCISES AND STUDY QUESTIONS

Questions (1) and (2) refer to the chart on wealth and voting.

*1. The text describes one correlation supported by the information reported in the chart. State some additional correlations this information supports.

2. The voting study relies on people's reports of their income. Do you think this fact is likely to bias the results? In what way? Can you think of a practical way to avoid the problems you've raised?

Each of the following questions contains a description of a study designed to test for a statistical conclusion. Some of the paragraphs also suggest arguments for causal claims. Ignore the causal claims for now. Identify the correlation claims made in these paragraphs, and reconstruct and evaluate the arguments for them.

*3. Books or Football?

Suppose that the president of a university has received a large donation and is trying to decide what to do with the money. The two main options are to build a new football stadium or to build a new library. As part of the decision process, he wants to know what students think about these choices. Since he suspects that men and women may have different attitudes about this question, he is especially concerned to see if there really is a difference. To find out, he has a poll taken in the largest class at the university, Psychology 101. Every student is asked to fill out a form indicating whether the student is male or female and his or her preference concerning the use of the money. There are 250 women in the class, and 175 of them report preferring to use the money for a new football stadium. Of the 200 men in the class, 120 say they would prefer that the money be used for a new football stadium. The president concludes that women are more apt to prefer using the money for a new football stadium than men.

4. What to Do When You're Threatened

Research shows that in weaponless assaults 85 percent of women who fight and yell get away. Fifty percent who do one or the other escape. Those who do neither are much more likely to be raped.[25]

*5. Who Says You Have to Die?

In an experiment in 1980, Harvard psychologist Charles Alexander went into three old-age homes outside Boston and taught about 60 residents, all at least 80 years old, some mind-body techniques: a mainstream relaxation technique (the kind used in typical stress management programs), transcendental meditation, and a set of creative word games to be performed every day to keep the mind sharp. Each person learned only one technique and the groups were allowed to use them without supervision.

On follow-up, the meditators scored highest on measures of improved learning ability, low blood pressure, and mental health—all of which should decline with age. The people also reported that they felt happier and not as old as before. But the really striking result did not come to light until three years later. When Alexander returned to the old-age homes, about one-third of the residents had died, including 24 percent of the participants who had not learned the meditation. Among the meditative group, however, the death rate was zero.[26]

6. Kids Who Beat Up Other Kids to Get Own Way Commit More Crimes as Adults, Prof Says.

Some learn aggression well "because it's rewarded well."

Children who beat up other children to get their way become adults who commit more crimes and are arrested more often than those who were non-aggressive children, a study has found. . . .

[The] findings are based on a study that began in 1960 when researchers examined 875 children, the entire third-grade population of semirural Columbia County in New York.

A decade later, when the subjects of the study were 19, the researchers did a follow-up study. "We found that there was a very good relationship between how aggressive their peers said they were when they were 8 and how their peers rated them when they were 19," Eron [the professor who did the study] said.

"We did another follow-up when these people were 30 years old in 1981," he said. "We interviewed 410 of them and 165 of their spouses and 85 of their children. We also have records from the Criminal Justice Division of New York state, . . ."

The subjects and the spouses were interviewed in person or by mail and were paid $40 a piece.[27]

25. Eugene, Oregon, Department of Public Safety, "What to Do When You're Threatened," *Community Safety Quarterly*. Reprinted in *Utne Reader*, May/June 1991, p. 90.

26. *Quantum Healus* (New York: Bantam Books, 1989). Reprinted in *Utne Reader*, September/October 1991, p. 69.

*7. Sexual Harassment in the Workplace

Sexual harassment is a fact of life in the American workplace; 21 percent of women polled by *Newsweek* said they had been harassed at work and 42 percent said they knew someone who had been harassed. [Only 37 percent of men said that they knew someone who had been harassed.] Other surveys indicate that more than half of working women have faced the problem at some point in their careers. The situation tends to be worst in male-dominated workplaces; in a 1990 Defense Department study, 64 percent of military women said they had endured such abuse.[28]

8. Testing the Effects of a Liberal Arts Education

In order to test the effects of a liberal arts education, psychologists recently studied the reasoning abilities of students at several different kinds of colleges. They tested students at a prestigious four year liberal arts college, students at a four year college for training teachers, and students at a two year community college offering programs in data processing, secretarial skills, and other vocational programs. Altogether, 414 students were tested, half men and half women. First year and last year students at each school were tested. At all three schools, the last year students had better scores than the first year students. However, the improvement shown by students at the liberal arts college was far greater than the improvement shown by students at the other schools.[29]

VI. SUMMARY

Many familiar arguments use premises about observed cases of some kind to draw conclusions about unobserved cases of the same kind. Informally, we often make predictions based on past experience. These simple past-to-future arguments have as a premise the fact that the observed instances of a certain thing have a had a certain property and they have as their conclusion the proposition that the next instance will have that same property. The logical structure of these arguments can get rather complex, but it is usually best to reconstruct them by making use of relatively specific principles to link the observed instances to the unobserved instances, as was illustrated in Arguments 1d and 1e.

These simple past-to-future arguments are sometimes everyday, informal variations on statistical arguments based on surveys and scientific studies. The two main kinds of statistical propositions discussed in this chapter are simple statistical state-

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27. "Kids Who Beat Up Other Kids to Get Own Way Commit More Crimes as Adults, Prof Says." *Rochester Democrat and Chronicle*, August 28, 1983, p. 12A. © Associated Press. Reprinted with permission.

28. Barbara Kantrowitz, "Striking a Nerve," *Newsweek*, October 21, 1991, p. 34. Copyright © 1991, Newsweek, Inc. All rights reserved. Reprinted by permission.

29. Winter, Stewart, and McClelland, "Grading the Effects of a Liberal Arts Education."

ments and correlation statements. There is a standard form for each kind of statement. For simple statistical statements the standard form is

(Percentage) of (population) has (property).

For correlation statements, the standard form is

A is (positively, negatively) correlated with *B* in population *P*.

Correlation statements can be defined as follows:

CR: *A* is positively correlated with *B* in population *P* = Within population *P*, the percentage of *A*s who are *B* is greater than the percentage of non-*A*s who are *B*.

When the percentage of *A*s who are *B* is lower than the percentage of non-*A*s who are *B*, then *A* is negatively correlated with *B*. When the two percentages are the same, the two factors are not correlated.

Arguments for statistical statements are often, but not always, based on surveys or samples. One frequently encountered kind of statistical argument is based on an opinion poll. An argument for a simple statistical claim follows this pattern.

Standard Pattern for Survey Arguments (Expanded and Revised Version)

Background information: Description of sample: who or what was sampled, when, where, what they were asked or how they were observed, and so on. (EP or IP)

1. *Result of sample: x* percent of the sample population has the measured property. (EP or IP)

2. *Accuracy premise:* If *x* percent of the sample population has the measured property, then *x* percent of the sample population has the target property. (EP or IP, but indirectly supported by the background information)

3. *Conclusion about sample: x* percent of the sample population has the target property. (1), (2)

4. *Representativeness premise:* If *x* percent of the sample population has the target property, then approximately *x* percent of the target population has the target property. (EP or IP, but approximately indirectly supported by background information)

5. *Final conclusion:* approximately *x* percent of the target population has the target property. (3), (4)

Of course, you will often not have all the information needed to reconstruct an argument in this detail. In that case, you just have to proceed on the basis of whatever information you do have. When criticizing arguments that do follow this pattern, your objections will typically focus on premises (2) and (4). Objections to (1) arise only when there is reason to think that the results of the survey or study have not been accurately reported. Objections to the accuracy premise, (2), arise whenever the measured property is not a good measure of the target property. This can happen in opinion polls when the questions asked address embarrassing or personal topics, about which people are apt to lie. Slanted questions can also bring about inaccurate answers. Problems with statistical arguments not based on opinion polls arise when the measured property fails to measure the target property. For example, one might attempt to learn the percentage of the population having a certain disease by giving a blood test that detects the disease to some sample population. The merits of an argument based on this survey depend on the accuracy of blood test in detecting the disease.

The other main sort of objection to statistical arguments concerns the representativeness premise, (4). It is always possible that the sample in a study differs from the larger population in important ways, but this possibility can be so remote as to be not worth worrying about. Merely pointing out that there is this possibility of difference is an insubstantial objection to a statistical argument. Good criticisms must show that there is reason to think that the sample and the target populations differ and that this difference is relevant to the rate at which the measured and target properties show up in the two populations. For example, in opinion polls about voting, samples that do not include individuals from significant groups, such as very poor people or very wealthy people, are likely to be unrepresentative.

The best samples are randomly selected from the target population, but it is often not practical to select samples randomly. When that is not possible, researchers often try to make sure that their samples are similar to the target population by including various groups in the sample in the same proportions that occur in the target population. For example, in opinion polls, they would be sure to have proportional numbers of men and women, urbanites and suburbanites, and so on.

Arguments for correlations are quite similar to arguments for simple statistical statements. Correlation arguments can be formulated according to the standard pattern. Objections to these arguments are similar to objections to simple statistical arguments. The best objections usually concern the accuracy and representativeness premises.

CHECKLIST OF KEY TERMS

- past-to-future argument
- statistical statement
- simple statistical statement
- survey argument

- sample population
- target population
- measured property
- target property
- accuracy premise
- representativeness premise
- slanted question
- margin of error
- random sample
- correlation
- positive correlation
- negative correlation
- measured correlation
- target correlation

CHAPTER EXERCISES

1. In a large percentage of the studies done in psychology, the subjects are college students. In what ways might this choice of sample population bias the results? Would having samples of this sort be more of a problem for some sorts of studies than others? Which ones?

2. Performance on standardized tests is sometimes taken to be an indication of intelligence. Some critics of these tests claim that the standardized tests are "biased." What might they mean? (Explain your answer using the terms introduced in this chapter.) How could you find out if the tests are biased?

3. The following passage is an excerpt from a letter to the editor of the *New York Times* written by Gregory Y. Porter, director of the National Organization for the Reform of Marijuana Laws.

> **What We Get from Our War on Marijuana**
>
> Most experts would agree that illicit drug use has declined, but the size of the decline is in question.
>
> Government officials cannot agree on the accuracy of surveys measuring rates of drug use. Conflicting reports were issued last year by the Senate Judiciary Committee and the National Institute on Drug Abuse. The committee report puts the number of heavy cocaine users at 2.4 million, while the institute reported only 662,000. *Washington Post* articles on August 23 and October 25 reported that drug use was up.
>
> The two most prominent indicators of drug use have been surveys and market size (indicative of demand)—neither an exact science. The National Institute on Drug Abuse's household survey and the University of Michigan's

survey of high school students are cited most often. Market size relies on these surveys, as well as crop estimates in source areas. . . .

The institute survey is conducted by Government employees in the homes of the respondents. Would thinking people admit to drug use to a Government agent in their home? The Michigan survey, while offering greater "anonymity," still depends on the honesty of the respondents.

All the users in your article spoke on the condition of anonymity. Moreover, fear (of the effects of the drug, arrest, incarceration or loss of employment) was the most important reason people stopped using marijuana. A convicted marijuana offender cannot get a student loan to go to college. It is no wonder people are unwilling to admit to marijuana use.[30]

Porter apparently thinks that surveys about drug use are not reliable. Identify all the reasons he gives for this claim (you might try to reconstruct his argument). Do you think he is right about the surveys? Do Porter's arguments give us good reason to doubt that the surveys reflect an actual decline in drug use?

4. The following passage is an excerpt from an article by Frank Pittman about marital infidelity.

Betraying Trust

The data on the frequency of infidelity is fairly consistent. About half do and half don't. Traditionally, more men than women have been adulterous, but the women seem to be catching up. Surveys in the last few years tell us that about 50 percent of husbands have been unfaithful, while 30 to 40 percent of wives have been.

If infidelity of some sort takes place in over half of all marriages, that's a lot of infidelity. The figures are misleading, though. Many adulterers have had only one affair, most only a few. Much of the infidelity takes place (as cause or effect) in the last year of a dying marriage. Intact, continuing marriages are far less adulterous. Marital fidelity remains the norm, since most marital partners are faithful most of the time. The same surveys that show the vast majority of people believe strongly in marital fidelity, certainly for their spouse and generally for themselves. It remains the ideal, even if it is not always achieved.[31]

Pittman says that the statistics about infidelity are "misleading" and that "fidelity remains the norm." Reconstruct and evaluate his arguments for these claims.

5. Reconstruct and evaluate the following argument about the likelihood of a nuclear power plant disaster.

30. Gregory Y. Portes, "What We Get from Our War on Marijuana," *New York Times*, November 19, 1991, p. A24.

31. Frank Pittman, "Betraying Trust," *Family Therapy Newsletter*, May/June 1989. Reprinted in *Utne Reader*, November/December 1991, p. 108.

It Can Happen Here

The Three-Mile Island nuclear disaster gives us important information about the safety of all [nuclear] reactors everywhere. Industry and government have claimed that the chance of an accident of the type which actually occurred is less than one in 10,000,000 reactor years. This accident proves that the calculation methods which were used simply do not work. It proves that we do not know how likely an accident actually is at any plant.[32]

6. Reconstruct and evaluate the argument in the following report and crime and the elderly.

Fear of Elderly about Crime Found Exaggerated

The fears of older people that they are more likely than other people to become victims of crime are not supported by national statistics, a study commissioned by the Department of Justice reported today.

"There is little reason to believe the elderly are victimized more frequently than other age groups," the report concluded. "On the contrary, there is substantial evidence that victimization rates decrease with age for most types of crimes. Fear of crime, however, has been found to be greatest among the elderly and to increase with advancing age."

These were some examples of the prevalence of fear of crime among older people that the study reported:

- Seventy percent of the 900 elderly people surveyed in two urban areas said that they had limited their activities to some extent to reduce the risk of becoming victims.
- Two-thirds of the sample believed there was some likelihood they would be robbed while away from home. Twenty-five percent said it would be "most likely," and 42 percent "somewhat likely."
- Seventy-eight percent of those interviewed believed that the elderly were more likely to be victims of crime than younger people.

The authors noted that the elderly had a lower victimization rate than any other age group.[33]

7. Evaluate the reasoning in the following essay.

Lewd or Rude

Are we in the midst of a national epidemic of sexual harassment in the schools? That's what a recent report from the American Association of University Women (AAUW), with the ominous title "Hostile Hallways," says.

32. From a flyer distributed by the Rochester Safe Energy Alliance following the 1979 accident at the nuclear power plant at Three Mile Island.

33. Warren Weaver Jr., "Fear of Elderly about Crime Found Exaggerated," *New York Times*, November 11, 1981, p. A17. Copyright © 1981 by the New York Times Co. Reprinted by permission.

The figures that the report presents are staggering. Four out of five students say they have been sexually harassed at or on their way to school, generally by other students. As you might expect, more girls report harassment than boys, but the numbers are surprisingly close: 85 percent of girls and 76 percent of boys. Clearly, whatever is going on is not limited to some schools in some localities. Are we to believe that school hallways all over the country look like a K–12 Tailhook Convention when classes are passing?

In fact, "Hostile Hallways" defines sexual harassment so broadly that it can be anything from being raped on the stairs to "unwelcome" words or gestures from someone you don't find attractive. Obviously, if a boy or girl is forced to kiss someone (that happened to 14 percent of those who reported being harassed) or forced to do "something sexual other than kissing" (that happened to 11 percent), it's harassment—it is also against the law. But a smile or compliment that you feel is sexual—and offensive—also counts as sexual harassment, even though you might welcome exactly the same thing from someone you like. And the glance/gesture/remark kind of harassment is by far the most frequently reported.

AAUW's survey says that this broadly defined sexual harassment creates a "hostile learning environment," but the evidence doesn't support this claim. Only one-third of the youngsters who said they had been harassed identified any academic effect. The most frequent response was "not wanting to go to school" (23 percent)—though only 16 percent actually stayed home. Given that many kids seize any excuse to cut school, this is hardly convincing evidence of great trauma.

Other effects most kids reported sounded like routine responses to an unpleasant incident or situation—like being embarrassed (50 percent) and feeling self-conscious (37 percent) and avoiding the other person (49 percent). No one enjoys feelings like these, but are they likely to "interfere" with a student's life? Most adolescents regularly suffer from them—for a variety of reasons—without being permanently scarred. And it's not just adolescents. Is there anyone who at some time has not had such feelings?

This is not to deny that a large number of students are being sexually harassed at or on the way to school. At least 26 percent of students report experiences that would fit in with any definition of harassment, however narrow. These kids are clearly victims, who deserve and need help. And it is not to say that a kid has to be physically assaulted before it is sexual harassment. *Seventeen* magazine (September 1992) carried a horrifying story about a young girl who was tormented for two years by obscene graffiti about her that kept appearing in the boys' room in her high school.

But what possible benefit is it to anyone to define sexual harassment so broadly that it includes most of the kids in a school—a girl who doesn't like the way a guy looked at her as well one who suffered several broken bones when she was attacked? It trivializes the injustice against boys and girls who have been greatly harmed. Instead of showing students the distinction between acts that are criminal and acts that are merely rude, the AAUW's definition of harassment levels that distinction. It's like saying that someone who uses offensive speech is guilty of the same crime as someone who

firebombs a church. Schools should not be in the business of fostering this thoughtless use of language.

There's another problem, too. This attitude towards sexual harassment, which AAUW hopes schools will make into a code, is sending the wrong message to students about their rights and responsibilities. It teaches kids that they should never question their own motives, actions and perceptions—only the other person's. It encourages them to think that they have an absolute right never to be offended. There's no need to learn to handle themselves with all kinds of people, some of whom they are bound to find obnoxious: they can report anyone who offends them.

Is the AAUW getting students ready to support speech codes based on similar assumptions? Are they preparing kids to feel at home in our litigious society, where everybody is a victim and people sue each other at the drop of a hat?

Sexual harassment is a serious crime, and it should be punished. But we will never be able to deal with it if we confuse—and teach our kids to confuse—giving someone the eye, and rape.[34]

8. Review the arguments you have already reconstructed in your argument notebooks. If any of them are statistical arguments, look over your reconstructions and see if you can improve on them. If you have evaluated any of the arguments, evaluate your evaluations.

9. Find some recent reports of scientific studies containing statistical data and analyze the statistical arguments you find in the reports.

ANSWERS TO SELECTED EXERCISES

1. One could make the generalization apply to all kinds of food and ways in which they might turn out, as in "In most cases, if all the foods of a certain kind at a restaurant have turned out in a certain way, then the next time food of that kind is prepared at that restaurant it will turn out that same way." To apply this generalization, the argument now needs additional premises saying that burgers are a kind of food and that being greasy and overcooked is a way food can turn out.

2. 1. I've been able to do the exercises of this text.
   2. Usually, if a person has been able to do the exercises of a book then that person is able to do the exercises.
   3. I will be able to do the exercises of this text.
   The generalization here is plausible. The argument would be strengthened by more information about the nature of the book.

4. This is just like Argument 1e, except that "some" replaces "all." The mere fact that some of the burgers have turned out this way does not make it reasonable to conclude that the next one will. So, the generalization in this argument would be not be reasonable, and the argument is weak.

34. Albert Shanker, "Lewd or Rude?" *New York Times*, August 1, 1993, p. E7. Reprinted by permission of the American Federation of Teachers.

1a. 10% of the students in the class are absent today.
 c. 100% of the men on my block voted Democratic in the last election.
 e. 40% of the people surveyed in a recent survey said that they had never watched a football game on TV.
 g. 70% of the students who enrolled at State U. four years ago have graduated.
2. About 66% of the baby boomers dropped out of organized religion at one time or another. More than 33% of the baby boomers who dropped out of organized religion at one time or another have returned to organized religion.
 57% of baby boomers attend church or synagogue. (It's unclear how often they attend.)
 More than 80% of baby boomers say that they are religious and that they believe in life after death.
 60% of the baby boomers who return to organized religion after dropping out are married and have children.
4. 20% of men suffer a heart attack by age 60. 5.9% of women suffer a heart attack by age 60.

1. *Sample population*: registered owners of Stick-To-It exercise machines who have owned their machines for at least 5 years and who returned a questionnaire about their use of the machine (20% of all registered owners)
 Target population: all owners of Stick-To-It exercise machines
 Measured property: saying that you use your exercise machine a few times per week
 Target property: using your exercise machine a few times per week

 Reconstruction:
 Background information: Registered owners of Stick-To-It exercise machines were sent a questionnaire about their use of the machine; 20% of the questionnaires were filled out and returned.
 1. More than 50% of the registered owners who have owned their machines for at least 5 years and who returned the questionnaire said that they used it a few times per week. (EP)
 2. *Accuracy premise:* Reports about exercise machine use accurately report actual usage. (IP)
 3. More than 50% of the registered owners who have owned their machines for at least 5 years and who returned the questionnaire use it a few times per week. (1), (2)
 4. *Representativeness premise:* The people who returned the questionnaires are representative of all Stick-To-It machine owners. (IP)
 5. More than 50% of all owners of Stick-To-It exercise machines use it a few times per week. (3), (4)

 It isn't clear just what counts as using the machine a few times per week. Also, we're not told how many people get rid of their machines before 5 years.
3. *Sample population:* 6,000 college students in a survey. (Apparently, both men and women were surveyed, but the argument described here concerns only the women in the survey.)
 Target population: all college women
 Measured property: reporting that you experienced a completed or attempted rape after reaching age 14
 Target property: experiencing a completed or attempted rape after reaching age 14

 The passage merely reports the statistics from the study without explicitly drawing the more general conclusion about the target population. However, the context from which this passage was taken makes it clear that the general conclusion is intended. The reconstruction follows the standard pattern.

1. The reconstruction follows the standard pattern for survey arguments.
   Background information: All students in the Introduction to Chemistry class were observed while they were the class one day. Of the 250 male students in the class, 25 were wearing ties.
   1. 10% of the male students in the chemistry class wore a tie to class. (EP)
   2. *Representativeness premise:* The male students in Chemistry class are representative of all male students in the school. (EP)
   3. 10% of all male students in the school wear ties to class.

   This reconstruction assumes that the measured property and the target property are the same, namely, wearing a tie to class. Hence, there is no need to include in the argument a step involving an accuracy premise (See objection *a* below.)
   a. This objection suggests that premise (1) may be false, since the number of students wearing ties could have been miscounted. Whether this is a good objection depends in part on the circumstances. If the study was conducted at a school in a warm climate where no one wears a coat, then this does not provide much reason to doubt (2). More details about the study could alleviate whatever doubts this objection raises. (One could have formulated the argument so that the measured property is something like being counted by Reg S. Trar as wearing a tie, and the target property is wearing a tie. If the argument is reconstructed in this way, then you do need an accuracy premise, and this objection would be a possible objection to it.)
   b. This also raises a question about (1), or about the accuracy premise if the argument is modified as suggested in the answer to (1a). It isn't a significant objection unless there is reason to think that it actually was hard to see and count the students.
   c. This objection raises a question about the representativeness premise. The suggestion is that students in a chemistry class tend to be worse dressers than students in other nonscience classes. If that were true, then the percentage of tie-wearers in the sample would be lower than the percentage of tie wearers in the target population. If we had reason to believe that this claim about science students were true, then this would be a good objection to the argument, but, so far as I know, there is no reason to think that the claim is true.
   d. This objection is based on a misreading of the argument. The conclusion concerns only male students, so the (alleged) fact that men are more likely than women to take chemistry just has no bearing on an argument concerning the rate at which male students wear ties.

      As actually formulated in this example, the sample population is male students in the chemistry class and the target population is all male students at the school. We can consider another argument in which the sample population is all students in the class and the target population is all students in the school. If the premise simply reported the percentage of all students in the sample who wore ties, and the conclusion generalized to the total student population, then we would have a more serious objection here. In that case, this objection would apply to the representativeness premise. Most likely, the idea is that the sample population is more likely biased toward men; that is, it has a higher percentage of men than the target population has. By itself, this isn't an important point. However, if we think that men and women are likely to differ with respect to the measured and target properties, then the objection becomes more significant. It is (I think) more common for men to wear ties than for women to wear ties. If it is true that the sample is biased toward men, and men are more likely to wear ties, then the representativeness premise of this revised argument should be rejected.

5. One could construct two survey arguments, one about men and one about women. The arguments might look like this:

   Argument A

   Background information: 6,000 college students were surveyed in 1985.

1. 25% of the women surveyed reported having experienced a completed or attempted rape since age 14. (EP)
2. *Accuracy premise:* The reports of women surveyed are accurate. (IP)
3. 25% of the women surveyed had experienced a completed or attempted rape since age 14. (1), (2)
4. *Representativeness premise:* The women in the survey are representative of all college women. (IP)
5. 25% of all college women have experienced a completed or attempted rape since age 14. (3), (4)

Argument B

Background information: As above.
1. 8% of the men surveyed reported having committed a completed or attempted rape. (EP)
2. *Accuracy premise:* The reports of the men surveyed are accurate. (IP)
3. 8% of the men surveyed had committed a completed or attempted rape. (1), (2)
4. *Representativeness premise:* The men in the survey are representative of all college men. (IP)
5. 8% of college men have committed a completed or attempted rape. (3), (4)

There are alternative interpretations of the measured and target properties and populations here. For example, one might think that the target property in Argument B is committing a completed or attempted rape of a college women at any time since the women reached age 14. It is also unclear whether the intended population is restricted to college-age men.

One might accept both of these arguments and conclude that 8% of the men rape or attempt to rape 25% of the women. Goodman rejects that conclusion. She says that the men don't believe they have committed or attempted rape. The suggestion is that they have done so but don't think that they have. In that case, her point is that the accuracy premise of Argument B is false. The men give incorrect answers, not so much because they lie but rather because they don't realize what they've done.

1a. Being trained in the liberal arts is positively correlated with being able to formulate concepts (etc.) among all students.
 c. Being seriously injured is positively correlated with driving a small car among drivers in auto accidents. (Alternative population: drivers of small or large cars in accidents.)
 e. Voting Republican is positively correlated with being a Midwesterner among Midwesterners and Northeasterners.
 g. Being in the working class is positively correlated with dying from heart disease among working-class and upper-class people.
3a. 1000 women saw the movie, and 700 of them liked it. 400 men saw the movie, and 200 of them liked it. So, 70% of the women who saw the movie liked it, and 50% of the men who saw the movie liked it. Thus, being a woman is positively correlated with liking the movie among people who saw the movie.
 b. 900 people liked the movie, and 700 of them were women. 500 people didn't like the movie, and 300 of them were women. So, 77% of the people who did like the movie were women, and 60% of the people who didn't like the movie were men. Thus, liking the movie is positively correlated with being a women among people who saw the movie.
5a. False
 b. False
 c. True

1a. Reporting one's annual family income at or below $50,000 is positively correlated with voting for another candidate (not a Democrat or a Republican) among the people surveyed.

3. *Background information:* All 450 students in Psychology 101 were asked whether they prefer to use university funds to build a new football stadium or to build a new library. (EP)
    1. 70% (175/250) of the women surveyed said that they preferred to use the funds for a new football stadium; 60% (120/200) of the men surveyed said that they preferred to use the funds for a new football stadium. (EP)
    2. Being a women is positively correlated with saying you prefer to use the funds for a new football stadium among the students surveyed. (1).
    3. *Accuracy premise:* Reports by the people surveyed of their preferences are accurate. (IP)
    4. Being a woman is positively correlated with preferring to use the funds for a new football stadium. (2), (3)
    5. *Representativeness premise:* Students in Psychology 101 are like other students on this topic. (IP)
    6. Being a women is positively correlated with preferring to use the funds for a new football stadium among all students. (4), (5)

Since this is a hypothetical example, evaluation of the argument must be based on assumptions about "typical" students. The argument is a standard correlation argument. It would be, in most realistic circumstances, a fairly strong argument.

The main reason to doubt the accuracy premise is that students might exaggerate their interest in a library to appear more serious or intellectual. Thus, the survey might overestimate the amount of support for the library. If this is right, then there is some doubt about whether there is as much support for the library as the results indicate. Even if that's the case, there is not yet any reason to doubt the correlation claims here. To find reason to doubt the correlation claims, you'd need reason to think that men are more likely than women to misrepresent their actual preferences.

Psychology 101 students may be predominantly freshmen and sophomores and thus not a perfect sample of the student body. But this does not present any serious objection to (5) unless it is coupled with reason to think that freshmen and sophomores have attitudes about this matter different from those of juniors and seniors. Without more background information, there's no good reason to think that. Hence, this is a fairly strong argument.

5. There are several conclusions you might draw from this study, including some causal claims about ways to prevent death. For now, we will stick to the striking statistical claim about survival mentioned at the end. The first part of the argument for this claim is easy to formulate.

Background information: Residents at three old-age homes near Boston, all at least 80 years old, were taught some mind-body techniques, including relaxation, meditation, and creative word games. They were allowed to continue the use of these techniques unsupervised, and were examined again 3 years later.
1. 100% of the residents of three old-age homes who learned meditation survived for the three year period.
   About 67% of the residents who did not learn meditation survived. (EP)
2. Learning meditation is positively correlated with surviving among the residents of the old-age home studied. (1)

At this point, things become more complex. The article does not make it entirely clear whether those who learned meditation practiced it regularly. It refers to the "meditative group," but this could be the people who learned meditation or those who learned it and used it. Also, one could take learning meditation to be the measured property and some more general property, such as relaxing, as the target property. Or one could restrict the argument to the more cautious claim about meditation itself. Since the article does not say anything more general, the latter claim is probably the best interpretation. In that case, we need not bother with an accuracy premise, since the measured property and the target property are both learning meditation. (More precisely, the measured correlation and the target correlation in the sample are the same.)

Similar considerations apply to the representativeness premise. If you take this article to make a statistical claim about a more general target population, then you should include that step in the argument. Given the title of the article, it seems that authors are making a more general claim (and a causal claim as well). So one might continue the argument in the following way:

3. *Representativeness premise:* The people in the study are like people over 80 generally. (IP)

4. Learning meditation is positively correlated with surviving among people over 80. (2), (3)

There's little reason to question the argument up through line (2). Premise (3) is somewhat questionable, since we have so little information about the study. We don't know much about the people in the study, about which ones were chosen for the meditation group, or whether the meditators were in general younger and healthier than the others. Many of these questions would be extremely important if we were considering a causal argument based on this study. Generalizing to (4) is somewhat odd in this case, since it is unlikely that very many people in this country learn to meditate after they reach age 80, and we just aren't in a position to judge whether those who do are similar to the people in this study.

7. There's not much information here. The main thing to extract from this example is a standard argument for a correlation of the following sort:

Being sexually harassed is positively correlated with working in male-dominated workplaces among working women.

Causal Arguments

Among the most interesting and important arguments we encounter are arguments about what causes what. The concept of causation is central to many of our practical concerns and to most of the scientific issues that receive public attention. One of the main reasons we are interested in causation is that understanding what causes what is the first step in controlling events in the world around us. If, for example, we know what causes heart attacks, then we are in a better position to know what to do to prevent heart attacks. If we knew what caused criminal behavior, then perhaps we would be in a better position to eliminate those causes and thus eliminate their effects.

In some cases, of course, there is little we can do about events even if we do know their causes, as in the case of earthquakes and sunspots. Still, knowing the causes of events can often increase our ability to predict their occurrence, and in the case of potentially dangerous events such as earthquakes, we might be able to do things to reduce the amount of damage or injury they cause. But even when understanding the causes of events does not enable us to control them or when the ability to predict them is of little practical value, people are often interested in learning about their causes, simply understanding why things happen the way they do.

This chapter is about causal statements and the arguments we use to support them. We will begin by distinguishing several kinds of causal statements, and then describe a standard form for such statements. Next, we will develop a standard pattern for arguments for causal claims. In the last part of the chapter we will discuss the

main issues that arise in evaluating causal arguments and in interpreting reports of scientific studies supporting causal claims.

I. CAUSAL STATEMENTS

The concept of *causation* applies to situations in which some event makes a second event happen. We ordinarily and routinely make causal claims unproblematically. We say that a person is tired because she did not get enough sleep, that a student did well in a course because he studied hard, or that a drought caused a water shortage. We've learned that smoking can cause lung cancer and that eating fatty foods can cause heart disease. In these cases we are saying more than that one thing followed another; we are saying that the first thing brought about the second thing, that it is in some way responsible for the occurrence of the second thing.

A. Explicitly Causal Statements and Implicitly Causal Statements

Although many claims about causation explicitly use the word "causes," more often than not causal claims do not contain this word. The statements below contain the word "causes" (or some variant) and thus are *explicitly causal statements*.

1. The slippery road surface caused the accident.
2. The earthquake caused a lot of damage.
3. Fertilizing a lawn causes it to grow.

The next group of sentences express *implicitly causal statements*, since they make causal claims without using the word "cause" in any form.

4. Exercising reduces the risk of heart attack.
5. Smoking cigarettes leads to lung cancer.
6. An apple a day keeps the doctor away.

These three examples concern health and medicine, but causal claims are by no means restricted to these areas. We are also making causal claims when we say things such as

7. Lee Harvey Oswald killed President John F. Kennedy.
8. Absence makes the heart grow fonder.

Sentences (1)–(8) all contain verbs that express causal relations. Although (4)–(8) do not contain the word "cause," we can define the verbs in these sentences in terms of causes. Thus, "reduces" in (4) means "causes to go down," "leads to" in (5) and "makes" in (8) both mean "causes," "keeps away" in (6) means "causes to stay away,"

and "killed" in (7) means "caused the death of." Sentences (4)–(8) can all be rewritten as explicitly causal sentences:

4a. Exercising causes a reduction in the risk of heart attack.
5a. Smoking cigarettes causes lung cancer.
6a. Eating an apple every day causes the doctor to stay away (i.e., eating an apple a day causes good health).
7a. Lee Harvey Oswald caused the death of President John F. Kennedy.
8a. Being absent from (away from) someone causes one to become fonder of that person.[1]

In reconstructing arguments about causation, our general practice will be to make all causal claims explicit and thus replace sentences like (4)–(8) with their explicitly causal counterparts.

B. Singular and General Causal Statements

Some causal claims say that one particular event caused another particular event, while other causal claims assert that there is a causal connection between kinds or categories of events. Statements (1) and (2) above are about specific events. They are about a particular accident and earthquake, respectively. Statements such as (1) and (2) are called **singular causal statements**. Statements (3)–(6), on the other hand, don't refer to any particular or specific events or occurrences. Such statements are called **general causal statements**.

While singular causal statements might not explicitly mention the dates and times of the events they are about, there always are specific events that they are about. In contrast, general causal statements are not about specific events and times. So, in response to (1) it would make sense to ask, "When did the accident happen?" and in response to (2) it would be sensible to ask which earthquake caused the damage. In contrast, in response to (8) it would not make sense to ask, "When did the absence occur?" since no particular absence is being discussed. Although both singular and general causal statements can be premises and conclusions of arguments, our focus here will be on arguments whose conclusions are general causal statements.

C. Events and Objects as Causes

Notice that in some causal statements we say that some object causes something to happen. For example, in statement (1) a thing, a slippery road, is said to be the cause of an event, an accident. An event is an occurrence, a thing that happens. However, it seems clear in these cases that it is some event involving the object that is really

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1. A more complete version of (8) might say that being absent from someone you are already fond of causes you to become more fond of that person.

the cause. The slippery road didn't really cause the accident; rather, the car's skidding on the slippery road, or some other similar event, caused the accident. Sometimes people say that cigarettes cause lung cancer, but of course it is really an event of a certain sort, smoking cigarettes, that causes people to get lung cancer. In general, causal connections always hold between events or kinds of events.

We often speak loosely and say that some object or thing is a cause. For the most part, speaking this way is harmless. However, when analyzing causal arguments we want to make the causal claims as clear and precise as possible, so it is best to rephrase sentences so that the things related as cause and effect are events.

D. Immediate and Distant Causes

In talking about causes, we sometimes refer to an event that occurred right before another event and caused it. At other times we identify causes from the distant past. For example, we sometimes claim that events in someone's early childhood cause certain behaviors in later life. These are called ***distant causes***, or ***remote causes***. Causes of an event that occur just before the event are ***immediate causes*** of that event. Distant causes of an event can only be effective by means of some intervening factors leading up to immediate causes of that event. Thus, if some childhood experience causes someone's current behavior, it does so by causing some intervening condition (such as a memory) that is the immediate cause of the event. When one event is a distant cause of another, then there is a chain of events, or a ***causal chain***, from the cause to the effect.

We will discuss causal claims about distant causes and about more immediate causes. It is important to remember that distant causes are in fact causes. It is therefore a mistake to reject a causal claim on the grounds that the alleged cause and effect are distantly separated in time (or space). Such events can be causally connected, but only if there is a causal chain between them.

E. Partial and Complete Causes

In any realistic case, the cause of any particular event is a combination of many factors. For example, we might say that the cause of an accident was the car's skidding on the wet road, but actually other events played a role as well. These other factors might include the actions of the driver, the prior speed of the car, and so on. Usually when we call something the cause of something else, we mean that it is a particularly important, unusual, or salient cause of the effect in question. We typically aren't claiming that the thing we call the cause is solely responsible for the effect; rather, it is a ***partial cause***, or one of the factors leading to the effect. So, most causal statements are best taken as assertions that the alleged cause is a partial cause. The combination of all the partial causes of an event is the ***complete cause*** of that event. It would be a mistake, therefore, to reject a typical causal claim on the grounds that the alleged cause is not by itself sufficient to bring about the effect.

All our examples of causes so far have been examples of partial causes. None of the factors mentioned are by themselves sufficient to bring about the effects mentioned. This will be true of nearly all the examples discussed in this chapter.

F. The Standard Form of General Causal Statements

Before we begin to reconstruct and evaluate arguments for general causal claims, let's look again at some of the general causal statements listed earlier:

> Exercising causes a reduction in the risk of heart attack.
> Smoking cigarettes causes lung cancer.
> Eating an apple every day causes the doctor to stay away. (Eating an apple a day causes good health.)

Notice that these sentences follow the same pattern. In each sentence events of one kind are said to cause events of a second kind. However, if you think about familiar sentences like these, they often contain an additional element. For example, reports about medical studies sometimes say that some substance has been found to cause some disease *in rats*. Pet-food companies may claim that (consumption of) their product causes good health *in dogs*. General causal statements usually apply to a particular population, although in many cases the population is left unstated.

Although these sentences don't explicitly say that the first kind of event causes the second kind of event *in people*, it is reasonably clear that is the intended meaning of these sentences in ordinary circumstances. Usually, when we make causal claims, we have some population, or group, in mind. Thus, we can identify a "standard form for general causal statements":

> *C* causes *E* in population *P*.

In standard form, every general causal statement has three elements: a causal factor, an effect, and a population.

It is crucial to include the population in causal statements in standard form, since failure to do so can lead to serious misunderstandings and confusions. One factor might be a cause of another in one population but not in another. For example, eating fatty foods might cause heart disease in people but not in dogs. Sprinkling fertilizer on grass might cause growth in lawns, but sprinkling fertilizer on children won't cause them to grow. Without a specified population, a general causal statement is incomplete and not amenable to evaluation.

G. Comparative Causal Claims

Another particularly common sort of causal statement is one that compares the effectiveness of two causal factors. For example, the manufacturer of a medication

might say that its product more effectively relieves the symptoms of some disease than another medication does. The manufacturer is admitting that both medications cause relief from the symptoms, but is claiming that their product is a **stronger cause** or more effective cause, than the other product. In standard form, the claim might look like this:

> Sniffle-Free is more effective than Sinudrain as a cause of relief from cold symptoms among people.

Strictly speaking, of course, the medicine itself does not cause relief. The cause is an event, taking the medicine. So a better statement of the causal claim is

> Taking Sniffle-Free is more effective than taking Sinudrain as a cause of relief from cold symptoms among people.

Statements that compare the effectiveness of two causes are called **comparative causal statements**. The standard pattern is

> *C1* is more effective than *C2* as a cause of *E* in *P*.

Other comparative causal statements take the form

> *C* is more effective as a cause of *E1* than as a cause of *E2* in *P*.

EXERCISES AND STUDY QUESTIONS

1. Indicate whether each of the following sentences expresses a singular causal statement, a general causal statement, or a noncausal statement. Put all the sentences that express general causal statements into the standard form for general causal statements, making sure to include a population. Rewrite implicitly causal statements as explicitly causal statements.
   *a. Too much work and too little play leads students to be unhappy.
   b. Religion is the opiate of the masses.
   *c. Smith cut Jones's lawn.
   *d. Out of sight, out of mind.
   e. An injured knee kept him out of the game.
   f. Vitamin C reduces the severity of colds.
   *g. People who get very little sun tend to be pale.
   *h. Dirty campaigning wins elections.
   i. The pipe froze when the temperature fell below 32 degrees Fahrenheit.
   *j. Overwatering plants makes them grow poorly.
   k. She hurt her back while shoveling snow.
   *l. You can't judge a book by its cover.
   m. Harsh punishments lower the crime rate.

2. Consider these sentences:

> A. Oswald killed Kennedy.
> B. Oswald caused the death of Kennedy.

Are these sentences equivalent? The cause mentioned in (B) is a person. Given that (B) is true, does it refute the claim made in the text that causes are always events?

3. Each of the following paragraphs contains a causal claim. Rewrite the causal claim in standard form.

*a. Catholic Schools Educate Better

University of Chicago sociologist James S. Coleman . . . found that Catholic high schools educate students better than public high schools. They score higher in academic tests, are 20 to 30 percent more likely to attend college, and succeed in college more often than do public school students of similar backgrounds. Coleman explained that research showed their superiority was due not to wealth or discipline but to strict course requirements and parental support of the schools' requirements and values.[2]

*b. For Longer Life, Take a Wife

Researchers at the University of California, San Francisco, reported a few weeks ago that middle-aged men without wives were actually twice as likely to die during a ten-year span as men with wives. In their study population, subjects who shared living quarters with people other than a spouse had the same lower survival rates as those who lived by themselves. . . The lower survival rates of the spouseless were found primarily in men who were widowed, separated or divorced, rather than in those who had never been married.[3] Note: (The causal claim is in the headline here.)

c. Lower Dose of Aspirin Found Safer and Effective

Daily doses of a mere one-tenth of a regular aspirin are safer and no less effective than higher doses in preventing heart attacks and strokes, a new study has found. . . . The researchers reported that when compared with a daily dose of 283 milligrams of aspirin, the 30-milligram dose resulted in somewhat fewer deaths from vascular causes and non-fatal strokes and heart attacks. Patients taking the lower dose also suffered significantly fewer complications from the aspirin therapy.[4]

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2. "Catholic Schools Educate Better," *Utne Reader*, September/October 1990, p. 71.

3. Jean Seligmann, "For Longer Life, Take a Wife," *Newsweek*, November 5, 1990, p. 73. Copyright © 1990 Newsweek, Inc. All rights reserved. Reprinted by permission..

4. Jane E. Brody, "Lower Dose of Aspirin Found Safer and Effective," *New York Times*, October 31, 1991, p. A24. Copyright © by The New York Times Co. Reprinted by permission.

II. THE MEANING OF GENERAL CAUSAL STATEMENTS

In the United States, cigarette packages and advertisements must contain one of several warnings. The exact wording of these warnings has changed over time, but they all convey the message that cigarette smoking is bad for your health. In 1997 one of the warnings read as follows:

> **SURGEON GENERAL'S WARNING:**
>
> Smoking causes lung cancer, heart disease, emphysema, and may complicate pregnancy.

Among other things, the surgeon general says here that cigarette smoking causes lung cancer. In this section, using this claim of the Surgeon General's as our primary example, we will try to gain a clearer understanding of general causal statements. Our question for now is not to figure out how the surgeon general, or anyone else, can know that the statement is true but to look at the meaning of causal statements themselves.

We can put the surgeon general's statement into standard form:

9. Smoking cigarettes causes lung cancer in people.[5]

What can we say about the meaning of this statement? Under what circumstances is (9) true?

We can begin by noting a few things that (9) does not mean. It does not imply that everyone who smokes cigarettes gets lung cancer. The surgeon general, like the rest of us, probably knows of people who have smoked and not gotten cancer.[6] In some cases, they die first from some other disease, such as heart disease. Some are fortunate enough to live long and rather healthy lives in spite of their smoking. Given that the surgeon general knows that some smokers don't get lung cancer, and she asserts (9) anyway, we can safely assume that (9) does not imply that all smokers get lung cancer.

Another thing that (9) does not imply is that most smokers get lung cancer. The surgeon general asserts (9) although she knows that most smokers don't get lung cancer. In fact, only about 7 percent of smokers do get lung cancer.[7]

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5. To conform to our rule that causes and effects are events (or kinds of events), we will assume here that "lung cancer" refers to a kind of event or process. Perhaps it would be slightly better to say that smoking cigarettes causes getting (or contracting) lung cancer in people.

6. We will assume for now that what is meant by "smoking" is precisely defined, that someone smokes if and only if that person smokes, and inhales, some minimum number of cigarettes per day. We will not concern ourselves with what that number is.

7. Sharon Begley, "Not in the Stars, But in Our Genes," *Newsweek*, October 21, 1991, p. 56. Copyright © 1991 Newsweek, Inc. All rights reserved. Reprinted by permission.

We might next try out the idea that (9) means only that some smokers get lung cancer. It is true that some smokers get lung cancer, and perhaps (9) does imply this, but that surely isn't all that (9) means. If (9) were just another way of saying that some smokers get lung cancer, then the mere fact that some smokers do get lung cancer would by itself imply that smoking causes lung cancer. By similar reasoning, we'd have to say that the mere fact that some people who wear red ties get cancer implies that wearing red ties causes cancer. That's an obvious mistake.

It is clear that (9) means something other than that all, most, or some smokers get lung cancer. It is not equivalent to any simple statistical statement such as these. What it does mean is that smoking brings about, or is responsible for, lung cancer, but it is important to be more precise.

One plausible view about sentences like (9) is that they are generalizations with missing quantifiers. By this view, (9) means something like

9a. Smoking cigarettes causes some people to get lung cancer.

In this case, the quantifier supplied is "some." Other specifications of the quantifier are possible, such as

9b. Smoking cigarettes causes some significant number of people to get lung cancer.

This might better capture what the surgeon general has in mind.

For the most part, it is satisfactory to interpret general causal statements as having missing quantifiers. However, some cases present problems if we interpret them this way. For example, consider the following statement:

10. Wearing a seat belt causes people to die in auto accidents. (In proper form: Wearing a seat belt causes death among people involved in auto accidents.)

Most people probably think that (10) is false, since it is well-known that seat belts save lives. However, there are some cases in which people in auto accidents do die (partly) as a result of wearing a seat belt. So, given the interpretation of general causal statements suggested above, (10) comes out true. This is a puzzling result. Even more puzzling is that the following statement also comes out true.

11. Wearing a seat belt causes people to survive auto accidents. (In proper form: Wearing a seat belt causes survival among people in auto accidents.)

If both (10) and (11) are true, then seat belts kill and seat belts also save lives. Can both of these claims really be true?

If sentences like (10) and (11) are incomplete sentences with missing quantifiers and the intended quantifier is "some," then the propositions both sentences express are true. Wearing a seat belt sometimes has one effect and sometimes has the other

effect. However, one effect is considerably more common than the other, and thus it seems a little misleading to say that both sentences are true. It could be that, at least sometimes, when we make what seems to be a noncomparative causal claim such as (10) or (11), we really mean to make a comparative claim. Thus, when we use (10), the proposition we have in mind is better expressed as a comparative claim:

> 12. Wearing a seat belt causes death among people in auto accidents more than it causes survival in people in auto accidents.

Similarly, we can take (11) to say something like this:

> 13. Wearing a seat belt causes survival among people in auto accidents more than it causes death among people in auto accidents.

The data about seat-belt use suggest that (13) is true and (12) is false. So, if sentences (10) and (11) really mean to express claims like those given in (12) and (13), then our idea that (10) is false and (11) is true turns out to be correct.

Thus, we have two ways of understanding general causal sentences. Sometimes they are incomplete sentences which are missing a quantifier. At other times they express comparative causal claims. It's important to keep track of these different ways to interpret causal sentences in examining arguments about causation.

EXERCISES AND STUDY QUESTIONS

*1. There is considerable controversy about the effectiveness of capital punishment as a deterrent to crime. Suppose some people are deterred from committing crimes as a result of the threat of capital punishment, that other people commit crimes because they want to be executed (or because they enjoy the thrill of doing something that risks death), and some other people don't consider possible punishments at all when they commit crimes. What should we then say about capital punishment as a deterrent? Formulate some general causal statements relevant to this situation and evaluate them. (If you need more information to evaluate the statements, say what that information is.)

 2. Comment on the following argument.

> Some people claim that exercising prevents heart attacks, but I know of several people who got heart attacks as a result of exercising. So this claim is mistaken.

*3. Many people believe that a positive attitude can help cure some illnesses. Suppose that thinking that one will recover from an illness is in fact effective in some cases. Sometimes people who are given pills that don't have any direct effect on their disease (placebos) get better, presumably because they think that taking the pills will make them recover. Consider this general causal statement.

> Taking placebos causes recovery from disease among people.

Is this statement true? Explain your answer.

4. Reconstruct and evaluate this argument from the text:

> If the statement "Smoking cigarettes causes lung cancer in people" is just another way of saying that some smokers get lung cancer, then the mere fact that some smokers do get lung cancer would by itself imply that smoking causes lung cancer. By similar reasoning, we'd have to say that the mere fact that some people who wear red ties get cancer implies that wearing red ties causes cancer. That's an obvious mistake.

*5. Consider the following excerpt from a newspaper report:

> Thought to cut heart attack risk by keeping blood clots from forming, fish oils got their big flash of fame a few years ago. "Omega-3 fatty acid" capsules were suddenly everywhere. Unfortunately, the capsules have been shown to have erratic effects–lowering blood cholesterol in some people, for instance, and raising it in others.[8]

In this case, it is not entirely clear what we should say about the truth value of

> A. Consuming fish oils lowers blood cholesterol levels in people.

Suppose that there is some fact about one's blood chemistry that determines whether fish oils raise or lower one's cholesterol. People with one type of blood chemistry (type-1) regularly get higher cholesterol from fish oils and people with the other type (type-2) get lower cholesterol levels. Can we resolve the question about (A) by saying that (B) is false and (C) is true?

> B. Consuming fish oils lowers blood cholesterol levels in type-1 people.
> C. Consuming fish oils lowers blood cholesterol levels in type-2 people.

6. What assumption about causation does the argument at the end of the following paragraph rely on? Is the assumption plausible?

> Multifactorial event: one with many "causes" or precipitating factors. Most of us think of cause and effect as a simple relationship–for example, we say "the sleet storm caused him to run off the road." But disease (like many other events in nature) results from the interaction of many factors. Indeed, even running off a road in a storm is "multifactorial." Otherwise everyone driving in the storm would skid off the road.[9]

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8. *USA Weekend*, September 7–9, 1990, p. 8A.

9. University of California, Berkeley, *Wellness Letter* 6, September 1990, p. 4.

III. KNOWLEDGE OF GENERAL CAUSAL STATEMENTS

Now that we have an idea of the meaning of general causal statements, we can turn to the question of how we can know, or reasonably believe, that such statements are true; that is, what kind of evidence do we need to believe a causal statement? We can begin by identifying three ways in which we cannot come to know causal statements.

A. Causation and Observation

In a certain sense, we can never directly observe causal connections. What you can observe is that one event occurred immediately after another, or that events of one kind regularly occur immediately before or after events of another kind. You never directly observe one event causing another; rather, the causal connection is something you infer from the observations you do make.

This claim about our inability to observe causation may seem obviously correct when applied to some relatively complex cases but not so clearly true when applied to other cases. For example, it seems clear that we can't directly observe whether instituting the death penalty for violent crimes causes a reduction in those crimes. We can observe what happens to the crime rate when the death penalty is instituted. But even if the crime rate goes down, we can't observe that this decrease is the effect of the harsher punishment. In other cases, you might think that we really can observe causal connections. For example, I can observe that my flipping the light switch causes the light to go on and that my drinking a glass of water quenches my thirst. However, if you think carefully about these cases, then you will notice that all you really observe is a succession of events; you can't observe their causal connection.

Similarly, in the case of the surgeon general's warning about smoking, the surgeon general can't directly observe that smoking causes lung cancer. She can see that people smoke and that significant numbers of them get lung cancer, but she can't see the smoking causing the onset of lung cancer. Even by tracking the physical changes that occur in the body when one smokes, the surgeon general can't see the causal connections leading from smoking to lung cancers. She can observe the events making up the causal chain linking smoking and lung cancer in some cases, but this too is just an observation of events in sequences.

The point of these remarks is not to make you skeptical about causal claims. You know that flipping the switch causes the light to go on and that drinking the glass of water quenches your thirst. The surgeon general does know that smoking causes lung cancer. Rather, the point is that knowledge of causal facts is inferred from observations, and the observations never include direct observations of causation. We'll turn shortly to a discussion of what observations do support causal claims.

B. Causation and Common Sense

Some people think that some causal statements are truths that just "stand to reason" and we can know them as mere matters of "common sense." There is no doubt that some causal facts are rather easily known, and nearly anyone who thinks about them can know them. However, in general we should be very careful about these assumptions, especially with general causal statements about complex social phenomena. Some people might think that it is obvious that the death penalty deters crime, that watching violent programs on television causes violent behavior, or that large budget deficits harm the economy. However, facts of these sorts are never obvious. We cannot tell that they are true simply by thinking about them. The only way we can find out about these truths is by means of careful research.

C. Causation and Correlation

The existence of a correlation between two factors does not show that there is a causal connection between them. Consider once again the surgeon general and her claim about smoking. We know that she doesn't base this claim on the premise that all or most smokers get lung cancer, because we know that she knows this premise to be false. Nor does she base her conclusion on the premise that some smokers get lung cancer. Some smokers get gray hair, but the surgeon general would be unlikely to attribute this to their smoking.

We can get closer to an understanding of the basis for her claim if we think about the rate at which smokers get lung cancer compared to the rate at which nonsmokers get lung cancer. You might think that she concludes that smoking causes lung cancer from the premise that smokers get lung cancer more often than nonsmokers. However, as we will see, this premise is not adequate to support the conclusion.

If we reconstruct the argument we are now attributing to the surgeon general, using as its premise the claim that smoking is correlated with getting lung cancer among people, and deriving a causal conclusion from this premise alone, we have a simple causal argument following this pattern:

Simple Causal Arguments

1. C is positively correlated with E in P.

2. C causes E in P. (1)

We previously examined correlation claims and the arguments for them. If simple causal arguments following the above pattern were well-formed, it would be easy to establish general causal claims, but as the following examples show, such arguments are not well-formed. The examples, although somewhat unrealistic, clearly

illustrate three different sorts of situations in which the premise is true but the conclusion is not.[10]

Example 1

Bulk E. is concerned that he is getting overweight and is considering joining the local health club. He visits the health club and notices that the people at the club are generally overweight. He checks out the figures carefully and concludes (correctly) that members of the health club are more likely to be overweight than are other people in his town. On this basis, he concludes this is a bad health club since going to it causes people to be overweight. He decides not to join.

We can reconstruct Bulk's thinking as an argument conforming to the pattern of a simple causal argument.

Argument 1

1. Being a member of the health club is positively correlated with being overweight among people in Bulk's town.

2. Being a member of the health club causes being overweight among people in Bulk's town. (1)

Of course, this argument is quite bad. Premise (1) may be true, but that is not a good reason to think that the conclusion is true. There may be a correlation in this case, but it does not follow that joining the health club causes people to be overweight. Rather, most likely things work in just the opposite direction: being overweight may well lead people to join the health club. This causal argument has the *causal factors reversed*; that is, the correlation claim is true, but the causal connection, if there is one, goes in the opposite direction from that claimed in the conclusion.

The next example brings out a second kind of situation in which the premise of a simple causal argument is true but the conclusion is not.

Example 2

Tiny Tim wants very much to play on the school basketball team. He notices that most of the students who play on the basketball team wear very large sneakers. Relatively few of the nonbasketball players wear such large sneakers. On the basis of this correlation between sneaker size and being on the team, Tiny Tim concludes that wearing large sneakers causes students to make the basketball team and that he could increase his chances of being on the team by wearing large sneakers himself. Unfortunately, things don't work out, since Tim performs unusually poorly during the tryouts (partly because his sneakers are too big).

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10. Strictly speaking, simple causal arguments are obviously ill-formed since they lack a premise linking the correlation claim in (1) to the causal claim in (2). We could correct this problem by adding the premise "If C is positively correlated with E in P, then C causes E in P," but the point made in this section is that this premise is false.

Tim's reasoning in this example is quite obviously defective. As in the case of Example 1, there is a correct observation of a correlation here, but a mistaken inference to a causal connection. Tim's reasoning can be reconstructed as follows:

Argument 2

1. Wearing large sneakers is positively correlated with being on the basketball team among students at Tim's school.

2. Wearing large sneakers causes being on the basketball team among students at Tim's school. (1)

Premise (1) is true. The percentage of large sneaker-wearers who are on the team is greater than the percentage of students who don't wear large sneakers who are on the team. But why is this true? Most likely, the reason is that being tall is a (partial) cause of being on the team and being tall is correlated with wearing large sneakers. Perhaps we can even say that there is some factor, possibly a genetic factor, that causes people to be tall and to have large feet. Being tall may be a partial cause of someone's getting on the basketball team. (Of course, it is only a partial cause.) We can diagram the situation using arrows to represent the causal connections:

$$\text{Genetic factor for being large} \nearrow \begin{array}{l} \text{Big feet} \rightarrow \text{Wearing large sneakers} \\ \\ \text{Tall} \rightarrow \text{Being on team} \end{array}$$
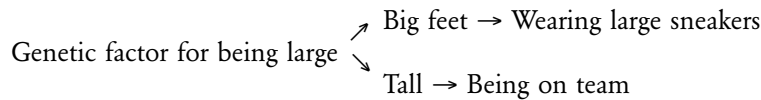
Because of these causal connections, there is a correlation between wearing large sneakers and being on the team. So premise (1) of Argument 2 is true. However, that doesn't make it reasonable to believe the conclusion. In this case, the two correlated factors are correlated because they are both consequences of one ***common cause***, the genetic factor for being large.

There is a third sort of situation in which correlations can occur without causation.

Example 3

One day while looking at the list of students in his debating class, Professor Dudley D. Duncan notices that there is an unusually large number of students enrolled whose last names begin with *D*. Duncan concludes that having a last name beginning with *D* is a (partial) cause of their enrolling in his course.

We can reconstruct Duncan's thinking as a simple causal argument.

Argument 3

1. Having a last name beginning with *D* is positively correlated with being registered for the debate class among students at Duncan's university.

2. Having a last name beginning with *D* causes registration in the debate class among students at Duncan's university. (1)

In this case, it is clear that the correlation that Duncan has discovered is an ***accidental correlation***. There may be such a correlation, but it is unlikely that names have anything to do with class choice. There surely are reasons why the students who selected his class chose it rather than other possibilities, and these might be revealed through investigation. However, given the background information we have, it is reasonable to reject Argument 3. The correlation in this case is just coincidence.

These examples show that there are three circumstances in which the premise of a simple causal argument can be true and the conclusion of that argument can nevertheless be false. This can happen when the correlation in the premise has the causal factors reversed, when the correlations are the product of a common cause, and when the correlation is purely accidental. The mere existence of a correlation is not sufficient to establish a causal connection between two factors. In general, in considering these examples we looked for alternative hypotheses to explain the correlation described in the premise. When you learn that there is a correlation between two factors, you should try to explain its existence and see if there is a reasonable alternative to the causal hypothesis.

To return to the example of the surgeon general's warning, then, it is not enough for the surgeon general to know that smoking is positively correlated with lung cancer to draw her conclusion. In addition, she must know that she doesn't have the factors reversed, that is, that having lung cancer isn't the cause of smoking; she must know that the correlation isn't a case of common consequences, such as a genetic or environmental condition that independently causes both smoking and lung cancer; and she must know that the correlation isn't purely accidental.

EXERCISES AND STUDY QUESTIONS

*1. In discussing Arguments 1–3 we concluded that the causal conclusions did not follow from the premises. Does this show that there really wasn't a correlation in the first place? Explain.

 2. Each of the following paragraphs contains a description of a correlation. Background information that you are likely to have suggests that some of these correlations have the factors reversed, other correlated factors are the products of a common cause, and others are only accidentally related. Some may be genuine causes. Formulate each correlation statement in standard form, formulate each associated causal statement in standard form, and state whether you think the causal statement is true. Explain your reasons for your answer.

 *a. The American Philosophical Association (APA) sometimes boasts about the fact that students who major in philosophy have higher averages on the law boards (tests taken by applicants to law school) than do students who major in almost any other subject. The APA suggests that students interested in going to law school ought to consider a philosophy major. The APA's reasoning suggests a causal argument.

 b. Recent surveys show that the average salary of thirty-five-year-old college graduates is significantly higher than the average salary of thirty-five-year-olds who never went to college. This shows that a college degree leads to a higher salary.

   c. Recent surveys show that the average salary of thirty-five-year-old women with full-time jobs is significantly lower than the average salary of thirty-five-year-old men with full-time jobs. This shows that there is discrimination against women. (The causal conclusion is something like "Being a woman causes getting a low salary in thirty-five-year-old people with full-time jobs.")

   d. In a recent national survey, a strong correlation was found between wearing heavy sweaters and being in a place with a cool temperature. It follows that wearing a heavy sweater lowers the temperature.

*3. The following letter appeared in the *New York Times*.

Violent People Go to Violent Movies

"Violent Movies Make Violent Audiences" by John Savage is an example of how a person can come to a seemingly logical conclusion that may be totally untrue.

He cites incidents where violent movies have been associated with violent audience behavior (most recently, "New Jack City") and concludes that the content of the movies caused the audiences to become violent. He disregards equally plausible possibilities, the most obvious being that such movies bring together people who are prone to violence and that the content has little or nothing to do with the reactions they seem to produce. I regularly read about violent incidents occurring around late-night social clubs or bars where there is no violent stimulus to be blamed.

More than 200 years ago David Hume explained that just because two things seem to go together we can't assume that one causes the other, and nowadays statisticians use the maxim "correlation does not imply causation" to warn students about this error.

Maybe the violent content of some movies does produce violence in their audiences. But it will take good scientific research to prove it, not anecdotal incrimination.[11]

In the text, we distinguished several ways in which there can be a correlation between events without causation. Which specific way is the author of this letter discussing? Is his point correct?

  4. The descriptions in Examples 1–3 do not include a specific number of individuals in each population mentioned. Fill in the details of the examples in ways that make the correlations come out true. Apply the definition to make sure that you've gotten the numbers right.

  5. You might think that the correlation reported in the following article must be some sort of accident. Is it?

Chances of Heart Attack Are Greatest on Birthday

People, especially men, are more likely to suffer heart attacks on their birthdays than on other days of the same week, a new study has found.

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11. Richard Epro, Letter to the editor, *New York Times*, May 1, 1991, p. A24.

Researchers said that overindulgence might be the reason.

Dr. Alan Wilson of the Robert Wood Johnson Medical School in New Brunswick, N.J., based his birthday findings on records of 118,955 heart attacks treated over a five-year period at 90 New Jersey hospitals. He presented his data today at a meeting of the American College of Cardiology.

The pattern was significantly different for men and women, Dr. Wilson said. The heart attack rates for men were 21 percent higher on their birthdays, but those for women were only 9 percent higher.

"Emotional stress and overindulgence," like drinking and smoking, might explain the birthday risk, he said. "The sex difference may give us clues about the trigger."

Looking at when heart attacks occur is a popular subject of research. Experts hope their work will help reveal the forces that touch off these attacks, so they can find new ways to stop them.

Anything that reduces the number of heart attacks has a major effect on public health, since heart attacks are the nation's biggest killer, taking 500,000 lives a year.

The study of what prompts heart attacks is one of the newest in cardiology. It began with the discovery by Dr. James Muller in 1985 that people are most likely to have a heart attack during the first two hours of the morning.

"There is a lot of interesting information coming out on emotional stress," said Dr. Muller, who is a physician at New England Deaconess Hospital in Boston. "A birthday is a big event."

Dr. Wilson also found that people were more likely to be seen for heart attacks the day after a holiday. Heart attacks were 11 percent more common than expected on the day after New Year's Day, 28 percent higher after Easter and 17 percent higher after the Fourth of July.

Several studies have found that heart attacks are also more common on Mondays and during the winter.

But a British study presented at the conference suggests that cold weather, not just the time of year, is bad for the heart. It found that heart attacks are more common than expected even on brisk days in the summer.

Heart attacks "occur more commonly on colder days, regardless of the time of year," said Dr. Bradley Marchant of London Chest Hospital.[12]

IV. ANALYZING CAUSAL ARGUMENTS

We have seen that the mere existence of a correlation between two factors is not sufficient to establish that there is a causal connection between them. We have also iden-

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12. "Chances of Heart Attack Are Greatest on Birthday," *New York Times*, March 19, 1993, p. A19. Reprinted with the permission of the Associated Press.

tified the additional information needed to establish a causal conclusion: information showing that the correlation does not involve reversed factors, a common cause for the factors, or an accidental connection between them. This provides the basis for developing a standard pattern for general causal arguments.

The pattern of argument we will describe here is not the only pattern that strong causal arguments can follow. Strong testimonial arguments can be made for causal claims. You can also argue for a causal claim using an argument from elimination, in which you first identify all the possible causes of some effect and then eliminate all but one of those possibilities. However, many of causal arguments are based on data about correlations, like those we will be examining here.

A. A Pattern for Causal Arguments

If you know that two factors, *A* and *B*, are positively correlated in population *P*, there are four possibilities concerning the causal connections between *A* and *B*:

1. *A* causes *B* in *P*.
2. *B* causes *A* in *P*.
3. Some third factor independently causes both *A* and *B* in *P*. That is, some third factor, *C*, causes *A* and also causes *B*, but *A* does not cause *B* and *B* does not cause *A*.
4. There is no causal connection between *A* and *B* in *P*. (The correlation is accidental.)

These alternatives exhaust the possibilities. However, they are not exclusive; more than one of them may be true at the same time. If (1) and (2) are interpreted to mean that in some cases *A* causes *B* and that in some cases *B* causes *A*, then it is possible that both are true. In other words, it is possible for one factor to cause something in some cases and for the causal process to be reversed in other cases. For example, confidence may sometimes cause success and success may sometimes cause confidence. In any case, at least one of these four alternatives must be true whenever there is a correlation. It is this fact that will serve as the basis for the arguments that follow.

Notice that alternatives (2), (3), and (4) correspond to the situations described in Examples 1, 2, and 3. If you use the correlation between *A* and *B* in *P* to argue for the conclusion that *A* causes *B* in *P*, then when alternative (2) obtains, the causal factors are reversed; when alternative (3) obtains, the correlated factors are independent consequences of a common cause; and when (4) obtains the correlation is purely accidental.

Given that there are only four options, if you can eliminate any three of them in a particular case, you can conclude that the fourth holds. So, if you discover a correlation between *A* and *B*, and you can eliminate options (2), (3), and (4), then you can conclude that *A* causes *B*. This gives us the structure of *a standard pattern for causal arguments*:

Standard Pattern for Causal Arguments

1. *C* is positively correlated with *E* in *P*.

2. If *C* is positively correlated with *E* in *P*, then either the causal factors are reversed in this correlation (*E* causes *C* in *P*), or this correlation is the result of a common cause (some third factor causes both *C* and *E*, but neither *C* nor *E* causes the other), or this correlation is accidental (*C* and *E* are causally unrelated), or *C* causes *E* in *P*.

3. The causal factors are not reversed.

4. The correlation is not the result of a common cause.

5. The correlation is not accidental.

6. *C* causes *E* in *P*. (1)–(5)

Arguments conforming to this pattern are valid. Typically, a statistical argument supports (1). The fact that the correlation claim is subsequently used as a premise in a causal argument has no bearing at all on the merits of the argument for the correlation itself. You can therefore evaluate the argument for the correlation in the manner you've learned.

In any argument conforming to this pattern, premise (2) is true because the four possibilities listed in its consequent exhaust the possibilities. If there is a correlation, then one of these four alternatives must obtain.

Premises (3)–(5) of standard causal arguments are sometimes difficult to evaluate. In a typical discussion of a causal argument, you will devote most of your attention to these premises. You may use any relevant information you have when evaluating these premises. Often, information about the studies used to support the correlation claim in (1) will bear directly on these premises. Details from those studies would be included in reconstructions of the arguments for the correlation claims.

Our discussions of Examples 1–3 indicate some of the considerations that are relevant to the evaluation of these premises. In each of those examples, one of these premises was not justified. Before looking in more detail at those cases, however, consider again the case of the surgeon general and her claim about smoking. This causal argument is strong, and it nicely illustrates the way causal arguments work.

If we reconstruct the argument for the surgeon general's claim to make it fit the standard pattern for causal arguments, we get the following:

The Surgeon General's Argument

1. Smoking cigarettes (*S*) is positively correlated with getting lung cancer (*L*) among people (*P*).[13]

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13. Since this argument is not reconstructed from a written passage, we cannot identify the premises as explicit or implicit.

2. If *S* is positively correlated with *L* among *P*, then *(a)* *L* causes *S* in *P*, *(b)* *L* and *S* are independently caused in *P* by some third factor, *(c)* there is no causal connection between *S* and *L* in *P* and the correlation is accidental, or *(d)* *S* causes *L* in *P*.

3. Not-(a).

4. Not-(b).

5. Not-(c).

6. *S* causes *L* in *P*. (1)–(5)

This argument is valid, as are all arguments conforming to the standard pattern for causal arguments. We will assume that careful studies have shown that (1) is true. Premise (2) is true for the reason already noted. The success of the argument thus turns on premises (3), (4), and (5). If they are justified, then the argument is strong.[14]

Consider premise (5) first. On what basis can we rule out the possibility that the correlation between smoking and lung cancer is accidental? The main reason is that the correlation holds in a wide variety of circumstances. The evidence in the complete argument for (1) would reveal this. There is a small chance that a correlation discovered in one study, or just a few, is accidental. However, if the correlation turns up again and again, in a wide variety of circumstances, then it is usually reasonable to conclude that it is not an accident. So (5) is justified.

We turn next to (4). If both smoking and lung cancer were the product of some common cause, then the correlation would not be an accident. So, the considerations that support (5) are not sufficient to justify the claim in (4) that there is no common cause. To make acceptance of (4) justified, we must think of what the common cause could be and then rule that factor out as a cause. For example, it could be that there is some genetic factor that causes people to like to smoke and independently causes them to get lung cancer. If there were such a factor, then there would be a correlation between smoking and lung cancer, but smoking wouldn't be a cause of lung cancer. Fortunately, there is a good way to test for this possibility. We just need to find pairs of people who are genetically alike (identical twins), one of whom smokes and one of whom doesn't. If lung cancer is more common among the smokers in this group than among the nonsmokers, we can safely conclude that it is smoking, rather than some genetic factor, that is responsible for the difference.

Another possible common cause for smoking and lung cancer is emotional stress. It could be that people who are under a lot of stress tend to smoke a lot (as a way to feel better) and that stress also weakens the body's resistance to disease and thus leads to lung cancer. Again, if this were the case, there would be a

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14. It is possible, of course, that the premises are justified for some people but not others, or that they are better justified for some people than others. If so, then the argument will be strong for some people and not others, or stronger for some people than for others.

correlation between smoking and lung cancer, but the surgeon general's conclusion would not be true. (Under these circumstances, smoking itself does not contribute to the incidence of lung cancer among people.) Again, to eliminate this possibility, we check to see if lung cancer is more common among stressed smokers than among stressed nonsmokers. If it is, then we can eliminate stress as the common cause.

The same pattern holds for any suspected common cause. You see if lung cancer is more common among smokers who have that third factor than among nonsmokers who have that third factor. If you can eliminate all suspected common causes, then it is reasonable for you to accept premise (4) of the causal argument. Of course, it is always possible that there is some common cause of smoking and lung cancer that we just haven't thought of. We can test and eliminate every proposed cause that occurs to us, but we can never be absolutely certain we have exhausted the possibilities.

The mere possibility that there is a common cause shouldn't lead us to reject premise (4) in this argument. Sometimes, a common cause can be proposed but it is ridiculous. We know that flipping the light switch causes the light to come on. It is possible that there is some genie ruling over us who, for his own amusement, causes us to flip the switch and (independently) causes the light to come on. To object to premise (4) of a causal argument because there might be some common cause, when one has nothing plausible to say about what that cause is, is to indulge in an insubstantial criticism. Since we lack any plausible common cause in this case, the surgeon general seems to be on safe ground in asserting (4).

Finally, we need to examine (3), the premise asserting that lung cancer doesn't cause smoking (i.e., that the causal factors are not reversed). Again, the surgeon general has good support for this premise. For one thing, people smoke *before* they get lung cancer. Since causes can't come after their effects, this fact pretty well rules out reversed causal factors. Furthermore, there is a reasonably well understood partial explanation of how smoking might lead to lung cancer. There is no plausible explanation of how having lung cancer might cause people to smoke. So the surgeon general is well-justified in asserting (3). (There may be a few odd cases in which a nonsmoker takes up smoking upon learning that he has lung cancer, but we can safely set aside these unusual cases.) Thus, the surgeon general's argument is strong. We are justified in accepting its conclusion.

Examples 1–3, on the other hand, show us how causal arguments can go wrong. Example 1 presented a correlation between being a member of the health club and being overweight. For conciseness, we'll introduce these abbreviations into our reconstructions:

H: Being a member of the health club
O: Being overweight
T: The people in Bulk E.'s town

The reconstructed argument thus looks like this:

Argument 1a

1. *H* is positively correlated with *O* in *T*.[15]

2. If *H* is positively correlated with *O* in *T*, then either *O* causes *H* in *T*, *O* and *H* are both caused by some third factor in *T*, the correlation is accidental (*O* does not cause *H* in *T* and *H* does not cause *O* in *T*), or *H* causes *O* in *T*.

3. It is not the case that *O* causes *H* in *T*.

4. It is not the case that some third factor causes both *O* and *H* in *T*.

5. It is not the case that the correlation between *O* and *H* is accidental.

6. *H* causes *O* in *T*. (1)–(5)

In realistic cases we would probably have a statistical argument for (1). Some of the information in that argument might be relevant to our assessment of (3)–(5).

Premise (3) says that the correlation between *O* and *H* is not the result of a causal chain going from *O* to *H*. If the suggestion that *O* caused *H* were ridiculous or clearly refuted by our data, then we could accept (3). For example, if we found that people became overweight after joining the club, then we would have reason to deny that *O* causes *H*. If we found that there was no plausible explanation of how *O* could lead to *H*, then we could reasonably accept (3). But, of course, we don't find anything of the kind in this case; we don't find that people gain weight after joining the health club. We do have an explanation of how being overweight could lead to joining the health club. People who are overweight could decide that they want to lose weight; this could lead them to look into things that are alleged to cause weight loss; this might lead to their learning that exercise is supposed to help with weight loss; and they might join a health club as a result. So we do have an explanation of how *O* might cause *H*. As a result, we are not justified in accepting (3), and this argument fails.

Example 2 was about sneaker size and being on the basketball team. We can reconstruct a causal argument for that example, using abbreviations, as follows:

W: Wearing large sneakers
B: Being on the basketball team
P: People eligible to be on the team

Argument 2a

1. *W* is positively correlated with *B* among *P*.

2. If *W* is positively correlated with *B* among *P*, then either *B* causes *W* in *P*, *B* and *W* are independently caused by some third factor, the correlation is accidental, or *W* causes *B* in *P*.

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15. There is no need to state whether the premises are explicit or implicit in this reconstruction or in those that follow since we are not reconstructing the arguments from realistic argumentative writing.

3. It is not the case that *B* causes *W* in *P*.

4. It is not the case that *B* and *W* are independently caused by some third factor.

5. It is not the case that the correlation between *B* and *W* is accidental.

6. *W* causes *B* in *P*. (1)–(5)

In this case, the suspect premise is (4). It is entirely possible that some third factor, such as whatever causes people to be big, causes people to have large feet and thus to wear large sneakers and independently makes them good at basketball.

Finally, consider again Example 3, about the correlation between having a last name beginning with *D* and registering for the debate class. The fifth premise in the reconstruction for that argument would say that the correlation is not accidental. However, as we saw earlier, there is no basis for accepting this premise. There is no evidence that the correlation has been found repeatedly. Moreover, there is no sensible explanation available, given the information provided in the example, of how there could be a causal connection in this case. So it is quite reasonable to think that the correlation is simply an accident, and we should reject the fifth premise in this case.

B. Scientific Studies and Causal Arguments

In reports of scientific studies you often find causal arguments based on the results of experiments. You can typically analyze these arguments using the standard patterns for statistical and causal arguments. In this section we will examine the main types of experiments and the sorts of problems that can arise in the arguments based on them.

B1. Randomized Experiments

Suppose you want to know whether *C* causes *E* in population *P*. The ideal way to proceed would be to take a bunch of objects in population *P* and randomly divide them up into two groups, those who are exposed to *C* and those who aren't exposed to *C*. You then see if *E* turns up more frequently in the first group than in the second group. If it does, then you conclude that *C* causes *E*. If not, then you conclude that it doesn't.

This, in effect, is what goes on in a typical experiment. If everything is done carefully, then we can have a very strong argument for a causal conclusion. Looking back at our examples of correlations without causation, you can easily see that doing experiments of this sort would not have produced correlations. For example, if you divided people into two groups at random, and you gave the people in one group large sneakers and the people in the other group small sneakers and then let them try out for the basketball team, you probably wouldn't find that the ones with the large sneakers made the team more frequently. Or, if you randomly divided people into

two groups, made the people in one group join the health club, and kept the others out of the health club, it is highly unlikely that you'd find that the members of the first group would become more overweight than the members of the second group. Experiments of this sort would easily undermine the causal claims in these examples. In contrast, if you randomly divided people into two groups and then made the people in one group smoke cigarettes but prohibited the others from smoking, you would (eventually) find more lung cancer among the smokers.

The crucial feature of a ***randomized experiment*** is that individuals are randomly assigned to the group that is exposed to the suspected cause, known as the ***experimental group***, or sometimes the X group, or to the group that isn't exposed to the suspected cause, the ***control group***. If the assignments are made randomly, then any individual has an equally good chance of being in either group. If the groups are reasonably large, then it is unlikely that some other factor is responsible for the differences in the two groups, barring difficulties of the sort discussed shortly.

If people (or animals or whatever is the subject of the experiment) aren't randomly assigned to one of the two groups, then they must be assigned to their group by their own choice (self-selection), by the choice of the experimenters, or by some other natural factors that lead them into one of the groups. These alternatives always introduce possible problems. For example, in the smoking case, people choose whether to smoke. In effect, they decide themselves whether to be in the experimental group or the control group. In cases like this you should always consider the possibility that whatever causes people to choose the suspected cause is itself what causes the effect. When experimenters select subjects for the two groups they may do so in a way that introduces biases that make the two groups importantly different. Natural forces that lead subjects into one group or the other can also conceal common causes or extraneous factors that undermine causal conclusions. Randomization avoids many of these problems.

Still, even in randomized experiments, there may be a correlation without there being a causal connection between the correlated factors. That is, it is possible that premise (3), (4), or (5) of a standard causal argument is false even though the first premise was established by means of a randomized experiment. A simple example will illustrate this point.

Example 4

Professor R. Q. Ment wants to know whether her method of teaching reasoning causes students to reason well. Suppose that all students at her school are required to take a course on reasoning in either the first or second semester. The students are randomly divided into two groups, those who take the course in the first semester and those who take it in the second semester. At the end of the first semester all students take a test on reasoning. Professor Ment compares the test results of the students who took her course with the results of the students who have not yet taken a reasoning course. She finds that more of the students who have taken her course do well on the test, and she concludes that her method of teaching reasoning does cause students to learn to reason well.

It is easy to reconstruct R. Q. Ment's argument.

> *T*: Being taught to reason by R. Q. Ment's method
> *R*: Being able to reason well
> *S*: Students in the school

Argument 4

1. *T* is positively correlated with *R* in *S*.

2. If (1) is true, then either *R* causes *T* in *S*, *R* and *T* are products of a common cause, the correlation is accidental, or *T* causes *R* in *S*.

3. It is not the case that *R* causes *T* in *S*.

4. *R* and *T* are not products of a common cause.

5. The correlation between *R* and *T* is not accidental.

6. *T* causes *R* in *S*. (1)–(5)

The argument for (1) is a standard correlation argument. The main issue concerns the accuracy of the test. The measured property in this case is "good performance on the test," which is supposed to indicate the ability to reason well. Let us ignore for now questions about this assumption and assume that (1) is true. As always, (2) is true. So the main questions about this argument concern (3)–(5).

Since students were randomly assigned to classes, it is quite unlikely that *R* caused *T*. If students were allowed to choose whether to take the reasoning course in the first semester, it could be that the better reasoners took the course first. In that case, the property of being able to reason well, *R*, would cause people in the group to be taught by Ment's method, *T*. The superior performance of this group thus might have nothing to do with the teaching method itself. Randomized assignment to classes effectively eliminates this possibility. So (3) is reasonable. (If students selected their own sections, then we would be less confident of the third premise.)

Randomization also makes (4) quite reasonable. Since people were randomly assigned to the two classes, there can't be some factor that caused them both to be in the class and to be able to reason well.

Consider (5) next. If we assume that the class was large enough and the difference in reasoning ability large enough, we can safely eliminate the possibility that the correlation between the teaching method and reasoning ability is a simple coincidence. However, there is another way in which the correlation can be accidental that we have not considered yet. That is, there is another way in which it can happen that two factors are correlated even though neither causes the other and they are not independent products of a common prior cause.

The problem in this case is that the students who were exposed to the alleged cause, R. Q. Ment's teaching method, were also exposed to some other factors that could be the cause of their superior performance. For example, they were exposed not

only to the method for teaching reasoning that she uses but perhaps also to her enthusiasm for that method and to her general style of teaching. (We can distinguish between her method for teaching reasoning—the rules and system she uses—and her general demeanor and approach to students.) It could be that her enthusiasm was contagious, and her students therefore worked harder. As a result, her students learned to reason on their own. The course prompted them to think about the topics, but the actual teaching method may have played no role. These other factors, rather than the teaching method itself, may be responsible for the superior performance. Moreover, these alternative explanations are not remote possibilities; they are realistic and plausible alternatives.

If one of these alternative explanations is correct, then the correlation between being taught by R. Q. Ment's method and superior performance is accidental. It is not an accident in the sense that the correlation is a statistical abnormality that is likely to be uncovered by repeated tests. Rather, it is an accident in that the two factors are causally unrelated, since neither factor causes the other and they are not products of a common cause. The superior performance is caused by something else, such as R. Q. Ment's enthusiasm, which regularly accompanies her method in the sample population. It is accidental that this enthusiasm accompanies her teaching method. If an unenthusiastic teacher used her method, we might be able to determine the causal effectiveness of the method itself.

Thus, when evaluating causal arguments, you should ask yourself two questions:

1. Is there anything other than being exposed to the suspected causal factor that is correlated with being in the experimental group and not correlated with being in the control group. In other words, is there a difference between the two groups other than that one group received C?

2. If the answer to question 1 is yes, is there any reason to think that this other factor, rather than the suspected cause, C, brought about the effect?

If the answer to both questions is yes, then you should reject the causal argument. If the other possible cause accidentally accompanies the potential cause under investigation, then reject premise (5). (This is what happened in Example 4.) If this other possible cause might independently cause both the cause and the effect being investigated, then there is a possible common cause and you should reject (4). (This is what happened in Example 2.) If the answer to both questions is no, then you should accept the argument (assuming [1] and [3] are acceptable).

B2. Nonrandomized Experiments

Sometimes we can't do a randomized experiment to identify the cause of some effect. There can be practical or moral considerations that require some other kind of experiment. For example, given what is known about some suspected cancer-causing substances (e.g., cigarettes), it would be wrong to do an experiment in which people are

randomly assigned to an experimental group in which they are exposed to some substance that is almost surely a carcinogen. In other cases, there are practical problems. Suppose you want to know if short people are discriminated against in employment interviews. To compare how well short and tall people do in employment interviews, you can't randomly assign people to the two groups (you'd have to shrink or stretch them). In cases such as these, you have to rely on self-selection or let nature "choose" the groups; that is, you let people decide whether to smoke or not to smoke and then see what happens to them, or you let nature determine the size of people and then see how they do in employment interviews.

Whenever you evaluate a causal argument based on a ***nonrandomized experiment***, one that uses a nonrandom sample, you know there is something other than merely having the suspected cause that distinguishes the experimental group from the control group (so the answer to question 1 above is yes). For example, if you are testing for the effects of smoking and let people choose whether to smoke or not, then all the smokers have in common the fact that they chose to smoke and whatever collection of factors led them to that choice. The nonsmokers lack those features. It is possible, but not necessarily likely, that these other factors are responsible for whatever differences turn up in the two groups (thus the answer to question 2 need not be yes). In the example about tall and short people, the two groups differ with respect to whatever genetic and environmental factors determine one's height. It is possible that these factors also cause people in one of these groups to be better interviewees or more suited for the jobs in question. Again, this is merely a possibility, and without additional information we need not grant that these alternatives are likely causes of the effects that are discovered.

One way to minimize potential problems in nonrandomized experiments is by carefully selecting the individuals who are in the control group and the experimental group. If we make the two groups as similar as possible, except that one group is exposed to the suspected cause and the other is not, then we reduce the likelihood of noncausal correlations. Suppose for example, that smokers are more commonly stressed or less athletic than nonsmokers. Since those factors may be responsible for some of their ill health, rather than their smoking, it is best to compare the results in groups of stressed, unathletic nonsmokers and stressed, unathletic smokers. To do this is to *control* for stress and athleticism. One can also control for age, location, type of work, and so on. Any factor that distinguishes smokers from nonsmokers (other than smoking) that may be a cause (anything that makes the answers to questions 1 and 2 above yes) should be controlled for by making sure that the two groups are alike with respect to that factor.

Similar considerations apply to the example on height and job interviews. By comparing groups of tall and short people who are otherwise as much alike as possible in ways that are relevant to the measured outcome—equally intelligent, personable, articulate, and so on—we increase the likelihood that any difference found between the two groups is a consequence of the interviewer's reaction to their height.

C. Reports of Scientific Studies

Newspapers and magazines regularly contain reports of scientific studies. Much of the public's information about medical, environmental, political, and social matters comes from these reports. The information contained in these articles often gives you enough information to reconstruct a standard causal argument but unfortunately, it often leaves you in a position in which your evaluations of the premises of the arguments must be rather tentative.

To illustrate some commonly encountered features of newspaper articles about scientific research, consider the following example:

Example 5

Controversial Studies Link Violence with Low-Fat Diets

Researchers looking at cholesterol-reduction studies have stumbled upon a curious phenomenon: What's good for your heart may not be so great for those around you.

Both humans and monkeys on cholesterol-reducing programs may be more prone to violence than those who remain on a more typical high-fat diet, according to two research reports, which many researchers say are yet to be confirmed. Researchers also said they do not know why cholesterol-reducing diets might lead to violence-prone behavior. . . .

The first [study], presented at the American Psychosomatic Society's annual meeting last fall, looked at data from studies of monkeys conducted in the early 1980s. It found that monkeys shifted from a high-fat diet (43 percent of calories from fat) to one similar to that endorsed by the American Heart Association (30 percent of calories from fat) were about 50 percent more likely to start fights than monkeys who remained on the high-fat diet. . . .

[One of the researchers] said it was not a case of monkeys getting meaner as they got leaner. They were all the same weight at the beginning and end of the study, they all consumed the same number of calories. Nor was it a case of the animals on rich diets getting sluggish as their arteries were getting clogged. The increased aggressiveness was present in monkeys during the first three months of the study as well as during the rest of the two-year study. . . .

[The second study], published August 11, used a technique called meta-analysis to look at death rates in six different heart-disease-prevention studies. It found that people who adopted cholesterol-reducing regimens— such as going on low-fat diets or taking medications such as gemfibrozil and cholestyramine—were as likely to die during the study as people who did not take steps to lower their cholesterol.

Why? Because the death rate from suicide, homicide, or accidents for people on a cholesterol-reduction program turned out to be 1.76 times higher than that of people who did not adopt a cholesterol-reducing

regimen. Their rate of death from cancer was the same, while their rate of death from heart disease was significantly lower.[16]

There are several points to notice about what is, and is not, included in this article. First, the headline uses the word "link." This is a notorious weasel word. Does the headline mean that low-fat diets *cause* violence, or is the linkage merely a statistical correlation? The fact that causal claims are at stake becomes clear early in the article, however. The first paragraph says that low-fat diets may be "good for your heart" but "not so great for those around you." These are implicitly causal claims. They say, in effect, that low-fat diets may cause healthy hearts but may also cause violent behavior. The last sentence of the second paragraph says that the low-fat diets may "lead to" violent behavior, and this too is implicitly causal.

A second noteworthy fact about the report is the absence of detailed numerical results. It does include some numbers: monkeys on low-fat diets are 50 percent more likely to start fights than monkeys on high-fat diets, and people on low-fat diets or taking cholesterol-lowering medication are 1.76 times more likely to die from suicide, homicide, or accidents than are people not on the diets or taking the medication. Such facts make this report more complete than many you will encounter. Still, few details about the size of the study, the nature of the diets, or the exact results are given. Thus, it is difficult to reconstruct the statistical arguments for the correlations with much confidence. In effect, the correlation claims are supported by testimonial arguments.

A third notable fact about the report is its tentativeness. Notice how many times the words "may" and "might" occur in the first two paragraphs. While reports are often tentative in stating their conclusions, there is sometimes a discrepancy between what scientists say in their own articles in professional journals and the reports in the popular press describing those articles. The popular press, looking for something exciting and sensational to report, sometimes makes more general and extravagant claims than the researchers do. Popular reports often come across as far less tentative than the original reports. The article reproduced here seems relatively accurate. In reconstructing causal arguments from these reports, it is best to omit the qualifiers and simply consider the merits of the argument for the causal claim in question.

Finally, the fourth paragraph contains information in support of premises (3)–(5) of the standard causal argument suggested by this report; that is, it considers and rejects alternative explanations of the correlation. Reports often contain some brief mention of these alternatives. When you evaluate the argument, it is your job to think of other alternatives.

The argument based on this report can be reconstructed as follows:

16. Erin Marcus, "Controversial Studies Link Violence with Low-Fat Diets," *Rochester Times-Union*, September 5, 1990, p. C1. © 1990, The Washington Post. Reprinted with permission.

Argument 5

1. Reducing one's cholesterol *(R)* is positively correlated with behaving violently *(V)* among monkeys. (EP)

2. If *R* is positively correlated with *V* among monkeys, then *(a)* *V* causes *R* in monkeys, *(b)* *V* and R are causally independent consequences of some third factor, *(c)* *V* and *R* are causally unrelated and the correlation is accidental, or *(d)* *R* causes *V* in monkeys. (IP)

3. *V* doesn't cause *R* in monkeys. (IP)

4. *R* and *V* are not independent consequences of a third factor. (EP?)

5. The correlation is not accidental. (EP?)

6. *R* causes *V* in monkeys. (1)–(5)

The point of the fourth paragraph is to rule out some objections to (4) and (5). One might have thought, for example, that losing weight ("getting leaner") was associated with going on the low-fat diet. It might have been that the monkeys on that diet lost weight and being hungry caused them to become angry and violent. If that were the case, then the correlation between low-fat diets and violence is an accident. The causal connection is between hunger and violence. Sluggishness is also introduced as an alternative causal factor, but it too is rejected.

All things considered, Argument 5 appears to be fairly strong. Assuming the reported data are accurate and the correlation reported in (1) is true, there is little information available (to us now) to undermine any of the remaining premises. The conclusion of the argument is worthy of tentative acceptance.

EXERCISES AND STUDY QUESTIONS

*1. True or false: Some arguments following the standard pattern for causal arguments are not valid (e.g., ones in which the correlation is purely accidental).

*2. Suppose a study finds a positive correlation between factors *C* and *E*, and the study was done by randomly assigning subjects to the experimental group or the control group.
   a. It is very unlikely that the correlation is a result of a common cause. Why?
   b. It is not so unlikely the correlation is accidental, in the sense described in the text. Why?

*3. Why is it that whenever people self-select or nature selects subjects for the experimental group and the control group, we have some reason to think that some factor other than the experimental factor caused the measured effect?

4. The following paragraphs contain fictitious reports of studies designed to support causal claims. Reconstruct and evaluate the causal arguments suggested by these reports.

*a. Carrot Juice and Headaches

To test her theory that drinking carrot juice cured headaches, Dr. B. Leave conducted a study. She often saw patients who complained of frequent headaches. Prior to seeing a patient with this problem, she tossed a coin. If it came up heads, she told the patient to drink carrot juice daily and to drink an extra glass whenever a headache was coming on. She assured the patients that this was a cure for headaches. If the coin came up tails, she told the patient that there was no cure for headaches. She asked all her patients to call her one month later to report on how they felt. During the time of the study, she saw 200 headache sufferers. Of these 100 were put on the carrot juice cure and 100 were told that there was no cure. Of the patients in the first group, 80 checked back a month later, and 20 reported decreased trouble with headaches. Of the second group, 60 checked back a month later, and 5 of them reported improvement. Dr. B. Leave concluded that her cure works.

b. Sleeping with the Lights On

Recent reports suggest that studying with the lights on causes students to fall asleep. Investigators secretly installed cameras in the dorm rooms of twenty-five students. The investigators noted each time one of the students sat down at his or her desk to study and whether the student turned on the light or used only natural illumination (sunlight) coming in through a nearby window. (They selected for the study only students whose desks were near windows that let in a considerable amount of light.) During the period of the study, there were 175 occasions on which students studied. Of these, 125 times the student turned on a light and 50 times the student used adequate natural light. The students using lights fell asleep within a half hour 40 times, while the students not using lights fell asleep only 10 times. It seems clear that using the lights caused the students to doze off.

*5. Professor R. Q. Ment (see Example 4) now wants to know whether her method of teaching reasoning works better than a rival method advocated by one of her colleagues. To find out, she divides her class into two sections. She teaches one of the sections and her colleague teaches the other, each using his or her preferred method. At the end of the semester, Ment makes up a test and gives it to all the students in both sections, as well as to students who have not yet taken any reasoning course. She discovers that her students perform best on the test, that students in the other section are in the middle, and students who haven't taken the course do the worst. She concludes that her method works better.

*a. The causal claim at issue here is a comparative claim. What is it?

*b. Formulate Ment's argument for this comparative causal claim.

*c. Evaluate her argument. (Hint: It isn't very good.)

 d. How could she design a better study to test the effectiveness of her method. (Note: This is very hard.)

Reconstruct and evaluate the statistical and causal arguments in exercises 6–16 reports.

*6. Marijuana Linked to Accidents

Marijuana use may impair a driver's judgment and cause more auto accidents than has been generally suspected, according to a recent study. . . .

The study looked at 497 persons treated at area hospitals for injuries suffered in auto accidents between May 1979 and September 1980. Twenty-five percent of the drivers sampled had some alcohol in their blood and 9.5 percent had THC (the active drug in marijuana) in their blood.

About 85 percent of the drivers who had been using marijuana were under the age of 31. About 69 percent of the drivers with alcohol in their blood were under 31.

Drivers in the study who were legally intoxicated with alcohol were responsible for 74 percent of the accidents in which they were involved. Marijuana users were found by the researchers to be responsible for 53 percent of the accidents in which they were involved. Drivers who had not used any drugs were responsible for 34 percent of their accidents.

The report recommends that government safety experts should take a closer look at the potential hazard of marijuana use among drivers.[17]

7. Smoking Found Connected to Development of Cataracts

Researchers at the Johns Hopkins Wilmer Eye Institute in Baltimore report that giving up smoking may cut by half the chance of developing severe cataracts in the center of the eye lens. The study of 838 Chesapeake Bay watermen showed that those who smoked were at greater risk of the cataracts; in addition, as the dose of cigarette smoke increased, so did the risk and severity.[18]

*8. Recent Study Says Personality Determines Who Buys Designer Signature Goods

A marketing study conducted in New York, Philadelphia, Washington D.C., and Baltimore indicates it's what's on your mind—not on the pocket of your jeans—that determines whether you'll pay a premium to wear someone else's name on your derriere.

Rolph E. Anderson and Marvin A. Jolson of the University of Maryland's marketing department surveyed more than 600 customers with charge accounts at large department stores and trendy boutiques in sample cities along the East Coast.

Customers were given simulated advertisements showing two versions of six items such as sweaters, jeans, neckties, and shirts. Although each pair was almost identical, one of the items included a prominent designer symbol.

17. Tom Williams, "Marijuana Linked to Accidents," *Rochester Times-Union*. Reprinted with permission of Gannett Rochester Newspapers.

18. "Smoking Found Connected to Development of Cataracts," *Rochester Times-Union*. Reprinted with permission of Gannett Rochester Newspapers.

Prices, in separate sets of questionnaires, were either identical or set at 15 percent to 25 percent higher for signature goods. Nearly 80 percent of the customers were indifferent about designer symbols, while 9 percent indicated a strong preference for notable initials and 10 percent showed an aversion to signature goods, Anderson said.

Responses were matched with personality questionnaires to arrive at a composite of the "signature-goods-prone" shopper. . . . The signature goods buyer is likely to be female or black, and one who enjoys entertainment with flair—horse racing, gourmet dining, and dancing.[19]

9. Smoking Hastens Facial Wrinkling, Study Finds

A new study has confirmed that people who smoke are more susceptible to facial wrinkles than nonsmokers.

The study, by Dr. Donald P. Kadunce, a dermatologist, and five colleagues at the University of Utah Health Sciences Center, involved 109 smokers and 23 people who had never smoked, all between the ages of 35 and 59.

The scientists used photographs to assess facial wrinkling and grouped the participants according to pack-years of smoking. For example, a person with one pack-year has smoked a pack of cigarettes a day for one year or a half-pack a day for two years. People who reported smoking more than 50 pack-years were considered heavy smokers; participants reported up to 125 pack-years of smoking.

After taking sun exposure, age and sex into account, the scientists found that premature wrinkling increased with cigarette use. People who had smoked more than 50 pack-years were nearly five times as likely to show excessive skin wrinkling as nonsmokers.[20]

10. Kids Who Are Cuddled Become Happy Adults, Study Says

Want your kid to grow up happy? The solution may be simple, according to a new look at a 40-year-old study by psychologists: Hug and cuddle them while they are young.

If this scarcely sounds revolutionary, it was not standard advice in 1951 when the study of 379 Boston-area 5 year olds was begun. In those days, prominent child-development specialists advocated strictness over warmth.

In the original study, Harvard psychologists interviewed the children's mothers about child-rearing practices, including whether the father hugged or kissed the children when he came home from work and whether he spent time with them on weekends. Mothers were asked how they responded when their children cried and whether they played with them. Researchers also interviewed teachers about how the children related to their peers.

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19. Adapted from "Is There Secret Message in Designer Signatures?" *Rochester Democrat and Chronicle*, December 14, 1980, p. 6C. Reprinted with the permission of the Associated Press.

20. "Smoking Hastens Facial Wrinkling, Study Finds," *New York Times*, July 2, 1991, p. C3. Copyright © 1991 by The New York Times Co. Reprinted by permission.

Even in 1951, researchers found that parental warmth had the strongest effect on the 5 year olds' behaviors; coldness was linked to bed-wetting, feeding problems and aggression.

In 1987, psychologists from Harvard, Boston and Adelphi universities conducted a follow-up study on 94 of the original subjects. Their results, reported in the *Journal of Personality and Social Psychology*, found that the children of affectionate parents fared far better than those with distant parents. As adults, they were "able to sustain long and relatively happy marriages, raise children, and be involved with friends outside their marriage."

Other child-development experts cautioned that although having affectionate parents is important to children, it is no guarantee of adult happiness.[21]

11. Potential Papas Beware

Research and long-ignored studies suggest that fathers also are responsible for many birth defects that were previously attributed to mothers, according to American Health (April 1991). Men who work in glass, clay, stone, textile, and mining industries have twice the average risk of fathering premature infants. Children of men who work with hydrocarbons, solvents, spray paints, and toxic metal fumes have increased rates of cancer and birth defects. And wives of men exposed to vinyl chloride have elevated miscarriage rates.[22]

12. Tennis and Confidence

I became interested in how tennis players react to adversity. Thus, my colleagues and I conducted a study in which adversity was defined as losing the first set (in a two-out-of-three set match). Losing the first set is a good test of a player's ability to overcome psychological momentum and come back to win the match. The results of approximately 20,000 USTA matches of male and female players from the under 12's to the professionals produced some interesting results. First, in general, players were not very successful in winning the match after losing the first set, with the loser of the first set winning the match only 12% of the time. Second, when comparing men with women, the results showed that after losing the first set, men came from behind to win the match 14% of the time whereas women came back to win only 8% of the time. Thus men seemed to be able to reverse the momentum more often than women, although neither was likely to win the match after losing the first set.

In a follow-up study, we wanted to see if these findings would hold up for the top players in the world. We looked at the top 20 ranked male and female professional players. Interestingly, there was no difference between the men and women with both groups coming from behind to win after losing the first set approximately 37% of the time. This is far greater than the 12% we found in our first study.

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21. Sandy Rouner, "Kids Who Are Cuddled Become Happy Adults, Study Says," *Rochester Times-Union*, July 19, 1991, p. 3C. © 1991, The Washington Post. Reprinted with permission.

22. Reprinted in *Utne Reader*, July/August 1991, p. 26.

So, the question remains: Why can the top players in the world come back to win so much more often than other talented players? The answer appears to lie in the elusive concept of confidence. Of course, the top 20 players have great physical talent, but, then again, so do many other players. Our studies have suggested that one of the most consistent differences that separates the top players from the rest is their belief in their own abilities. This conclusion is based on the fact that when they lose the first set, top players do not throw in the towel, convinced that they can't win. On the contrary, they see the situation as a challenge and usually put forth more effort and determination to try to win the match. Confident players never give up until the final point is lost, and the great champions rarely, if ever, lose their confidence.[23]

13. Shorter Men More Prone to Have Heart Attacks

Heart attacks strike short men more often than tall men, a new study reported here today has found. The apparent reason is that short men have smaller arteries that are more vulnerable to the damage from fatty deposits that lead to most heart attacks.

Men 5 feet 7 inches or shorter had a 60 percent greater risk of developing a first heart attack than men 6 feet 1 inch or taller . . . [the report said]. There was a continual correlation of height and heart attack risk in the study, which . . . involved more than 22,000 men who are doctors. . . .

More short men were overweight, had higher cholesterol levels and high blood pressure. Yet, data analyses showed that height alone was a risk factor. Height was independent of other risk factors, like frequency of exercise, cholesterol level, smoking and age.[24]

14. To Avoid Catching a Cold, Don't Worry about It

Medical researchers have confirmed what many people instinctively believe: you are more likely to catch cold when you feel "stressed out."

In the clearest demonstration yet of the relationship between emotions and infections, researchers in Pittsburgh and Britain found that high levels of psychological stress could nearly double a person's chances of catching a cold by lowering resistance to viral infection.

In the current study, directed by Dr. Sheldon Cohen, . . . three measures of stress were used to derive a total stress index that would reflect how distressed the people were at the time of the study.

The three measures were events in the past year that the subject perceived as having a negative effect on his or her psychological state, the degree to which the subject perceived current demands to exceed his or her ability to cope and an index of current negative emotions or feelings.

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23. Robert S. Weinberg, *The Mental Advantage* (Champaign, Ill.: Leisure Press, 1988), pp. 132–133.

24. Lawrence K. Altman, "Shorter Men More Prone to Have Heart Attacks," *New York Times*, November 21, 1991, p. C9. Copyright © 1991 by The New York Times Co. Reprinted by permission.

In an interview yesterday, Dr. Cohen said the technique avoided the assumption that particular events necessarily caused distress, since people do not always react adversely to the same events.

The volunteers—154 men and 266 women, all of whom were healthy at the start—were housed in isolated areas of the cold unit for two days before and a week after they were deliberately exposed to a nasal wash containing one of five cold viruses or an innocuous salt solution. . . . After exposure to the cold viruses, the researchers examined the volunteers' upper respiratory secretions for evidence of viral infection. Among those at the low end of the stress index, 74 percent showed infection by the virus involved. At the high end of the stress index, 90 percent were infected.

The researchers then looked at which volunteers actually developed clinical symptoms of a cold. In the low-stress group, 27 percent did, but in the high-stress group, 47 percent developed colds.[25]

15. Study Suggests Head Start Helps Beyond School

With the effectiveness of Head Start under attack, a widely followed long-term study suggests that the Federal program for poor children and others like it can make a difference beyond the children's school years.

The survey, by the High/Scope Educational Research Foundation of Ypsilanti, Mich., has tracked 62 people since the late 1960's, when the participants were 3- and 4-year-olds and enrolled in the Perry Preschool Program in Ypsilanti. Sixty-one students in a control group not enrolled in a preschool program were also tracked. Both groups of children were monitored from ages 3 to 11 and again when they were 14,15 and 19, years old. The Perry program, though not part of the Head Start program, was patterned after it.

The participants who attended Perry, now 27 years old, have had greater earning power, more stable marriages and fewer children out of wedlock than those in the control group, according to the latest installment of the study, which was released Sunday in Boston at a meeting of the Education Writers of America.

The participants who attended Perry also had fewer drug problems and arrests than those in the control group, the study said.

"The biggest surprise is that I would have thought these kids would have been impacted by drugs and crime in the 1980's to a greater degree than they were," David P. Weikart, president of High/Scope, said of the former Perry students. "The other surprise for us is the indications of growing family stability. These kinds of things are secondary benefits that we never expected."

The continuing survey has been widely followed as a national yardstick of the effectiveness of preschool programs. But the most recent installment of it has drawn even greater attention because it comes at a

25. Jane E. Brody, "To Avoid Catching a Cold, Don't Worry about It," *New York Times*, August 29, 1991, p. A24. Copyright © 1991 by The New York Times Co. Reprinted by permission.

time when Head Start is being criticized as ineffective by some experts in early childhood education.

Mr. Weikart acknowledged that Head Start could be more effective, but the study's findings, he asserted, showed that "it's apparent that kids can benefit" from such programs when they are fully financed.

"In no way are we saying this is what we get from Head Start as currently structured, but what we can get from Head Start," Mr. Weikart said.

Head Start's critics say the findings from the Perry survey have never been replicated in a Head Start program or others modeled after it. They also say the findings are invalid because the Perry program spent twice as much money as Head Start programs did in the 1960's. The critics also maintain that poverty today is a much deeper problem than it was 25 years ago.

"I am a great supporter of Head Start," said Douglas J. Besharov, an expert in early childhood education at the American Enterprise Institute for Public Policy Research. "But we have absolutely no evidence that Head Start can have an impact like this on kids."

Indeed, Mr. Besharov and other critics say Head Start's biggest problem is that while children in the program post higher test scores in the early grades, they lose their advantage between the ages of 8 and 10, when they test at similar levels with youngsters who did not attend Head Start or other similar programs.

But supporters of Head Start said the study indicates that a well-financed preschool program can replicate the success of the Perry students.

In the study, 29 percent of the 62 people who attended Perry made $2,000 or more a month, as against 7 percent of the 61 people in the control group. Thirty-six percent of those who attended Perry owned their homes, as against 13 percent in the control group. And while 59 percent of the Perry students required the help of some social services, like welfare, in the last decade, 80 percent of those in the control group required social services over the same period, the study said.

Mr. Weikart said that every $1 spent on programs like Perry saved $7.16 that would later accrue for crime, educational failure or welfare.

Head Start, which is administered by the Department of Health and Human Services, remains sorely underfinanced, both supporters and critics say. With a budget of $2.8 billion in the current fiscal year, the program serves just half of the nation's eligible 3- and 4-year-olds.

President Clinton has proposed $4.1 billion for the program for fiscal year 1994, and $7 billion for fiscal year 1995.[26]

16. Churchgoing Affects Office Ethics (But Few Are Truly Saints)

A survey of over 2,000 workers has shown that the more often people go to church, the less likely they are to steal the company postage stamps or call in sick on the first sunny day in March.

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26. William Celis III, "Study Suggests Head Start Helps beyond School," *New York Times*, April 20, 1993, p. A23. Copyright © 1993 by The New York Times Co. Reprinted by permission.

What will science find out next?

Not long ago, no one would have thought that a sociological study was required to prove that religiously active employees were apt to be honest. That was before Jim Bakker and Jimmy Swaggart.

"Many people told us they didn't think there were any differences between churchgoers and non-churchgoers," said Robert P. Wuthnow, a sociologist of religion at Princeton University who directed the survey of religious beliefs and economic behavior.

"In fact, a lot of people had become so cynical because of the scandals surrounding television evangelists that they thought ethics had gone out the door," Professor Wuthnow said. "I also interviewed a lot of clergy, and many of them think that their congregants leave their faith at the church door on Sunday, and on Monday behave just like everyone else."

Actually, Professor Wuthnow's study found that regular churchgoers often do behave like everyone else. Although more likely than other Americans to endorse strict ethical standards in the workplace, they are still not so strict about questionable behavior that employers can replace their auditors with choirmasters.

But the study did find that Americans belonging to small religious groups that meet frequently and that usually have fewer than 20 members are significantly less likely to bend the rules at work or approve of those who do.

Such "religious fellowship groups" are quite widespread, said Professor Wuthnow, whose research was financed by a grant from the Lily Foundation of Indianapolis. About a fifth of the American labor force claimed to be active in a group of this kind, which he said included Bible study groups, prayer groups and some self-help or community action groups with a strong religious basis.

The study surveyed a nationally representative sample of 2,013 workers on their religious activity, moral convictions and workplace behavior, from coming late to lying to cheating on expense accounts.

Long questionnaires were administered in face-to-face interviews by the Gallup Organization from January to April of last year. The study also drew on 175 in-depth interviews.

Professor Wuthnow presented his findings this month in New York at a meeting sponsored by Religion in American Life Inc., an interfaith organization that promotes participation in religion.

About 40 percent of the labor force reported arriving late in the previous month. Over a quarter said that within the month they had used office equipment for personal purposes, covered up others' mistakes, "bent the rules" and "bent the truth" in dealing with people.

Twenty percent reported not questioning things they suspected of being unethical, 14 percent said they had taken unauthorized time off in the previous month and 3 percent reported charging for dubious expenses.

Not all these actions "are necessarily unethical in themselves," Professor Wuthnow said, but they were included in the survey because "they require personal discretion and pose ethical dilemmas."

Among workers who attended religious services weekly, the number who reported ethically questionable acts was generally four to seven

percentage points less than the average. When weekly worshipers were compared with those attending religious service once a year or less, the differences were greater.

Of those who seldom or never attended services, 33 percent reported bending the rules within the month, 31 percent bent the truth and 19 took unauthorized time off from work. The percentages of weekly worshippers reporting those kinds of behavior were, respectively, 22 percent, 21 percent and 8 percent.

Because these actions were reported by only a third or less of the sample the margin of error rates would be about plus or minus three percentage points, Professor Wuthnow said.

The survey showed that 4 percent of the nonreligious workers acknowledged charging for questionable expenses, the mostly clearly unethical act, compared to half as many of the weekly worshippers. But because of the small numbers involved, Professor Wuthnow said, this result is not statistically reliable, although he found it consistent with many other findings.

He noted that 88 percent of employed Americans claimed that they "always behave ethically" in their work, but that one third also claimed to have seen others doing possibly unethical things in the previous month.

Professor Wuthnow explained the discrepancy by the combination of most workers' sense that the norms of the workplace were very uncertain, that ethics were largely a matter of personal feelings and that responsibility for much questionable workplace behavior ultimately rested with superiors.

Ail these factors allow workers to find justifications for actions of their own that they condemn in others, he said.

When asked whether "it is O.K. to bend the rule sometimes at work," over half the workers—churchgoers and non-churchgoers—who were not in religious fellowship groups agreed compared with less than a third of those in such groups. Of weekly churchgoers not in fellowship groups, about 40 percent agreed with the statement.

One of five workers in fellowship groups reported bending the rules in the past month, compared with almost one of three workers not in such groups.[27]

V. COMMON ERRORS IN CAUSAL REASONING

Probably the most common error in causal reasoning is to infer a causal connection from the mere existence of a correlation, but there are a few other arguments about causation that deserve brief mention.

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27. Peter Steinfels, "Churchgoing Affects Office Ethics (But Few Are Truly Saints)," *New York Times*, February 28, 1993. p. 29. Copyright © 1993 by The New York Times Co. Reprinted by permission.

Example 6

Smoking doesn't cause lung cancer. Uncle Al smoked three packs a day for ninety years and never got lung cancer.

This argument has an explicit premise and conclusion that are easy to identify. The implicit premise, linking the explicit premise to the conclusion, seems to be

If C causes E, then everyone who gets (or has) C gets E.

So, the whole argument is

Argument 6

1. If C causes E in people, then every person who gets (or has) C also gets E. (IP)

2. Uncle Al is a person who smoked. (EP)

3. Uncle Al did not get lung cancer. (EP)

4. Smoking does not cause lung cancer in people. (1), (2), (3)

As we have seen, the implicit premise is false. When we say C causes E, we mean only that C is a causal factor for E, that it is among the things that lead to E. We do not mean that C is a sufficient factor all by itself or that everyone who gets C gets E.

Example 7

Everyone who uses heroin started with marijuana. Therefore, smoking marijuana causes heroin use.

Again, it is obvious what the explicit premise and the conclusion are. The premise is that everyone who uses heroin (the effect) smoked marijuana (the alleged cause). The conclusion is that smoking marijuana causes heroin use. The implicit premise in this case seems to be

If everyone who gets E does C, then C causes E.

So, the whole argument is

Argument 7

1. Every person who uses heroin smokes marijuana. (EP)

2. If every person who gets E does C, then C causes E in people. (IP)

3. Smoking marijuana causes using heroin in people. (1), (2)

Argument 7 is weak because (2) is clearly false. Consider, for example, the fact that everyone who uses heroin drank milk as a child. If (2) were true, this would show that drinking milk also causes heroin use.

Example 8

During my administration we have seen a reduction in inflation and interest rates, a lower unemployment rate, and increased economic growth. That is proof that my economic policies, which were intended to bring about these results, were successful.

The conclusion here is not simply a restatement of the premise. Rather it claims that "my policies caused these results." The implicit premise is

If *C* is done for the purpose of bringing about *E*, and *E* happens after *C* is done, then *C* caused *E*.

The whole argument is

Argument 8

1. My economic policies were done (or implemented) for the purpose of bringing about lower inflation, lower interest rates, lower unemployment, and increased economic growth. (EP)

2. After my economic policies were implemented, there was lower inflation, lower interest rates, lower unemployment, and increased economic growth. (EP)

3. If *C* is done for the purpose of bringing about *E*, and *E* happens after *C* is done, then *C* caused *E*. (IP)

4. My economic policies caused lower inflation, lower interest rates, lower unemployment, and increased economic growth. (1), (2), (3)

But (3) is false. If I spray some antielephant spray in my backyard and then find that no elephants show up in my backyard, it would be a mistake to conclude that the spray was effective. It is possible that what one is trying to make happen does happen but not because of one's efforts.

EXERCISES AND STUDY QUESTIONS

*1. There is a way to interpret the conclusion of the argument in Example 6 that makes the argument valid. What is that interpretation? Reconstruct the argument with the revised conclusion.

2. What additional information about heroin use would you want to have before you accepted the conclusion of the argument in Example 7?

*3. Notice that there is no population specified in the causal claim in Argument 8. Why not?

4. Evaluate the following claim.

> It's interesting to note that, of 443 arrests for growing marijuana over the past 18 months, only two individuals were found to have other drugs in their homes. So much for the notion that pot leads to harder drugs.[28]

*5. In his book *Abortion: The Clash of Absolutes*, Laurence H. Tribe writes:

> A second familiar but still-underutilized approach to reducing the number of (unwanted pregnancies) is, of course, to prevent pregnancy through the only proven means for doing so: sex education and the wide availability of birth control. Some will no doubt think that the only moral means of pregnancy prevention is abstention from sex. But it doesn't work as policy because people don't abstain. This is lesson of human history.[29]

In a review of this book, Brian Robertson writes:

> Where has this man been for the last 25 years? (Well, Cambridge, Massachusetts, which perhaps explains everything.) He has clearly not been paying attention to the tragic results of similar policy recommendations already in action. Sex education is being taught in public schools to younger and younger kids, and contraceptives have never been more widely available and more widely used. Yet the rates of illegitimacy, teen pregnancy, and abortion continue to rise.[30]

> Comment on Robertson's criticism.

6. Several years ago a study appeared suggesting that drinking coffee caused cancer of the pancreas. One coffee producer, Chock Full o' Nuts, responded by running an advertisement in which the following three claims were made: (1) Animals have cancer of the pancreas. They don't drink coffee. (2) The disease is rare in children, but they do have it. Children don't drink coffee. (3) Cancer of the pancreas is no more prevalent in countries where the people drink a lot of coffee than in countries with a low per capita consumption of coffee. Data supporting point (3) were included in the advertisement. Do these points show that drinking coffee does not cause cancer of the pancreas? Discuss each point separately.

7. Tobacco companies sometimes contend that the causal connection between smoking and lung cancer has not been demonstrated. They say that all that has been

28. Letter to the editor, *Utne Reader*, July/August 1991, p. 8.

29. Laurence H. Tribe, *Abortion: The Clash of Absolutes* (New York: W. W. Norton, 1990), p. 212.

30. Brian Robertson, review of *Abortion: The Clash of Absolutes*, by Laurence H. Tribe, *National Review*, July 9, 1990, p. 48.

found are statistical correlations. What fact about causation are they relying on? What might they mean by "demonstrated"?

8. Opponents of gun control sometimes say, "Guns don't kill. People kill." Do any of the ideas about causation discussed in this chapter help you to understand and evaluate this claim? Explain.

9. Comment on the argument in the following letter to the editor.

Solutions Can Be Hazardous

Physicians should be held liable for false advertising and spreading unsubstantiated knowledge. They should be removed from the public pulpit and returned to the field of objective science.

Recently, Dr. Joel Nitzkin, Monroe County health director, stated that between 5,000 and 50,000 deaths have occurred annually from passive tobacco smoke.

I question Dr. Nitzkin's factual information concerning passive tobacco smoke and his right to spout it off publicly as if it was unrefuted scientific knowledge. Given the variables that could be related to these deaths, how could any physician or scientist target passive tobacco smoke as the primary cause.

Did those godly scientists take into account each person's genetic history? How about their diets or the possible harm caused by pesticides, pollution and environmental waste?

What about the possible ill effects from unhealthy family and sociological relationships? Were the chemicals that are pumped into our meat and water supply variables in these studies?

Or is it, as I suspect, personal or political bias being empowered by unquestionable truths. . . . Let us not forget as we travel from one non-smoking area to another that the building we work in and the cars we drive and cherish are spitting out toxic chemicals faster than we can suck them up. Nuclear power plants are given governmental approval while civil leaders . . . use their authority to infringe on our rights.

It is possible that our solutions can become more hazardous than our problems.[31]

VI. SUMMARY

Learning the causes of the events in the world around us contributes to our ability to control, predict, and understand the things that happen. There are several different kinds of causal statements. Some causal statements say that one specific event caused another. Other causal statements are general; they say that events of one kind cause events of another kind. General causal statements can usually be expressed in sentences conforming to the following standard form:

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31. Louis J. Guada, "Solutions Can Be Hazardous," *Rochester Times-Union*.

C causes *E* in *P*.

The simplest interpretation of general causal sentences takes them to be incomplete sentences with a missing quantifier. So sentences in the standard form amount to the claim

In some (or many) cases, being *C* has caused a member of *P* to get *E*.

Some causal statements express comparisons of causal factors. The typical patterns for such statements are

C1 is more effective than *C2* as a cause of *E* in *P*.
C is more effective as a cause of *E1* than as a cause of *E2* in *P*.

Sometimes when we use noncomparative general causal sentences, the proposition we intend to express is really a comparison of this sort.

The primary way to determine whether a general causal statement is true is to test to see if there is a correlation between *C* and *E*.[32] However, the mere existence of a correlation between *C* and *E* does not establish that *C* causes *E*. Instead, it could be that *E* causes *C*, that both *C* and *E* are independent consequences of some third factor, or that the correlation is accidental and the factors are causally unrelated. The best way to establish a general causal claim is by means of a controlled experiment.

Scientific studies are often designed to test for causal claims. The best of these studies are randomized studies, in which individuals are randomly assigned to a group that is exposed to the suspected cause or to a group that is not exposed to the suspected cause. The frequency with which the effect turns up in the two groups is then measured. If the effect is more common in the group exposed to the cause than in the other group, the study suggests that the suspected cause does cause the effect in question. In nonrandomized studies, individuals are not assigned to their groups on a random basis. This tends to weaken the evidence for a causal conclusion.

Arguments for causal claims are best reconstructed in accord with the standard pattern for general causal arguments:

Standard Pattern for Causal Arguments

1. *C* is positively correlated with *E* in *P*.

2. If *C* is positively correlated with *E* in *P*, then either the causal factors are reversed in this correlation (*E* causes *C* in *P*), or this correlation is the result of a common cause (some third factor causes both *C* and *E*, but neither *C* nor *E* causes the other), or this correlation is accidental (*C* and *E* are causally unrelated), or *C* causes *E* in *P*.

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32. For the sake of simplicity, references to the population are omitted here.

3. The causal factors are not reversed.

4. The correlation is not the result of a common cause.

5. The correlation is not accidental.

6. *C* causes *E* in *P*. (1)–(5)

To evaluate these arguments, we must consider the possibility that the correlation is one in which the causal factors are reversed, the correlated factors are products of a common cause, or that the correlation is accidental. If there is a correlation between two factors and these alternatives can reasonably be eliminated, then the argument succeeds and its general causal conclusion is established.

A good way to go about evaluating a causal argument is to ask yourself the following questions.

1. Is there anything other than being exposed to the suspected causal factor that is correlated with being in the experimental group and not correlated with being in the control group. In other words, is there a difference between the two groups other than that one group received *C*?

2. If the answer to question 1 is yes, is there any reason to think that this other factor, rather than the suspected cause, *C*, brought about the effect?

If the answer to both questions is yes, then you can suspect one of the premises of the causal argument, usually (4) or (5). If the answer to question 1 or question 2 is no, then the argument is strong.

There are several fairly common errors in reasoning about causation. Typically, these errors involve false assumptions about the connection between causes and effects. For example, the mistaken assumptions might be that if one factor causes a certain effect, then everything exposed to that factor will show that effect, or that if everything that is exposed to some factor shows a certain effect, then that factor is a cause of the effect.

CHECKLIST OF KEY TERMS

- causation
- explicitly causal statement
- implicitly causal statement
- singular causal statement
- general causal statement
- distant cause
- immediate cause
- causal chain

- partial cause
- complete cause
- stronger cause
- comparative causal statement
- causal factors reversed
- common cause
- accidental correlation
- randomized experiment
- experimental group
- control group
- nonrandomized experiment

CHAPTER EXERCISES

1. Is it true that no one can ever directly observe a causal connection? If not, why not?
2. Sometimes researchers are interested in finding out whether something is a consequence of environmental factors or genetic factors. Why are identical twins especially useful for this purpose?
3. Reconstruct and evaluate the causal arguments suggested by the examples in exercise 3.
4. This exercise has been intentionally removed from the text.
5. Consider the following report:

   ### Fatalities Higher on Crowded Jets

   In a study of major airline crashes in the United States over a 15-year period, experts at the Massachusetts Institute of Technology have concluded that the chances of dying in a crash are significantly increased if the flight is heavily booked. . . . A primary conclusion of the investigation was that in airliners involved in major crashes, an average of 84.7 percent of the seats were occupied. The average occupancy of flights not involved in crashes was 59.4 percent. Major crashes were defined as the 10 crashes in the 15-year period in which at least 20 percent of the passengers were killed. . . .

   Dr. Arnold Barnett [the author of the report] said the correlation in no way demonstrated that heavy passenger loads caused crashes—merely that they were associated with crashes. Among possible reasons for the link cited by the report was greater pressure on crews and airport controllers to "keep things moving" when there is heavy traffic, "conditions that can lead to diminished conservativism in operating procedures." . . . A spokesman for the Federal Aviation Administration . . . said that the correlation must be a

coincidence. . . . Dr. Barnett responded, "We're not saying that crowding causes crashes. But there are emergency situations in which the weight of a full passenger load would increase the take-off distance a plane would need, or increase its stall speed by a small amount, making an already dangerous situation worse—enough worse, perhaps, to cause a disaster."[33]

This article seems to be about the causal claim "Being crowded causes crashing in airplanes." Reconstruct the argument for this conclusion. Then consider Dr. Barnett's comments. What, exactly, do you think he is saying about the study's conclusion?

6. Read the following report on SAT scores and TV and the editorial that follows.

Low SATs Fuel Debate of TV Effect

Television has long been blamed for the decline in students' reading ability. And once again, those accusations were made in the wake of the release Monday of the verbal scores of 1991 college-bound seniors on the Scholastic Aptitude Test, which hit an all-time low.

"There is a direct correlation" between TV viewing and declines in reading skills "after two hours of television watching," said William M. Honig, superintendent of public instruction in California. "The more television you watch, the lower your reading ability."

A new report indicated that students seem to prefer television to books. Sixty-nine percent of the fourth-graders interviewed for the report said they watched three hours or more of television a day, while less than half, 46 percent, reported reading for pleasure daily.[34]

The Television Time Bomb

For the toddlers, it's gangs of cartoon mice dynamiting a menacing cat. Elementary schoolers sit rapt while superheroes wield special powers to dispatch evil. And by the time they're in junior high, American kids regularly witness barroom fistfights, knifepoint rapes, drug-deal shootouts and terrorist attacks.

All on television, of course. But for years parents have worried about the effects of such violence, fanciful as it may be, on developing minds. Now a Seattle psychiatrist, Brandon Centerwall, offers a theory that, if corroborated by other researchers, suggests good reason for worry.

In a recent issue of the *Journal of the American Medical Association,* Dr. Centerwall describes how he sought to measure the relationship between television and violence by comparing the United States with South Africa, where an affluent Westernized white population remained without TV programming until 1975.

In the U.S., Dr. Centerwall writes, the homicide rate among white Americans nearly doubled between the introduction of television in the

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33. Malcolm W. Browne, "Fatalities Higher on Crowded Jets," *New York Times*, November 1, 1991, p. A16. Copyright © 1991 by The New York Times Co. Reprinted by permission.

34. "Low SATs Fuel Debate of TV Effect," *Rochester Times-Union*, August 28, 1991, p. 3A. Copyright © 1991 by The New York Times Co. Reprinted by permission.

1950's and 1975. The biggest surge in American homicides occurred after 1965, just as the first generation of children to grow up with television reached adolescence.

The psychiatrist asserts that he considered the effects of age distribution, urbanization, economic conditions, alcohol consumption, capital punishment, civil unrest and the availability of firearms. Yet "none provided a viable alternative explanation for the observed homicide trends."

Thinking that the American civil rights movement or the Vietnam War might have had some effect, he looked at similar figures for Canada. It introduced television at the same time the U.S. did but never had a big civil rights problem and didn't send troops to Vietnam. The Canadian homicide and TV use statistics rose in striking parallel with those for the U.S. The homicide figures for white South Africans, meanwhile, remained flat between 1950 and 1975.

But by 1987, as South Africa's first television generation came of age, the homicide rate had more than doubled. In the U.S. and Canada, meanwhile, homicide rates among whites between 1974 and 1987 remained relatively stable.

Dr. Centerwall concludes that long-term childhood exposure to television is a causal factor behind half of the homicides committed in the United States, or about 10,000 homicides annually.

That's a sobering conclusion, yet Dr. Centerwall suggests possible responses that wouldn't raise any censorship issues: educating pediatricians and parents about the problem, rating TV shows for violence and requiring that all new TV sets be equipped with time-channel locks that would let parents block reception of violent shows in advance. The problem also argues for more day care and after-school programs, which would allow working parents to make less use of TV as a baby sitter.

Those are useful ideas in any case. However much television violence may serve the needs of the entertainment industry, it fully warrants treatment as an issue for public health and social policy, and a special challenge for parents.[35]

These two articles present evidence designed to support causal claims about watching television. Reconstruct and evaluate the arguments suggested by the articles.

7. Read the following report about grief:

Grief May Reduce Body's Defenses, Cause Early Death

People who die of "a broken heart" may be suffering from a reduction in the body's disease defenses caused by grief, doctors say.

In a study of fifteen men whose wives had died of breast cancer, researchers at Mount Sinai School of Medicine in New York found a significant decline in the activity of lymphocytes, white blood cells involved in the body's disease-fighting system.

35. David C. Anderson, "The Television Time Bomb," *New York Times*, July 27, 1992. Copyright © 1992 by The New York Times Co. Reprinted by permission.

Although bereavement over a lost spouse has long been associated with increased sickness and death, especially among men, no one has been sure why, the researchers noted.

The decline in lymphocyte activity came during the two months after the wives' deaths, the researchers said. The widowers' lymphocyte responses did not return to their former levels even after a year.[36]

Does this evidence convince you that grief is responsible for early death in people? Does it follow that it would be a good idea for people whose spouse dies to make an effort to get over their grief quickly and "get on with their lives"?

8. In discussing the possibility that the surgeon general has the factors reversed in the smoking and lung cancer example, the text says that we can safely ignore the possibility that a few nonsmokers take up smoking upon learning that they have lung cancer. How must we interpret the causal claims in the surgeon general's argument if we are going to ignore this possibility?

9. Identify the causal arguments in the examples you have collected for your argument notebook. If you have reconstructed and evaluated any of those arguments, review and check your work.

10. Find some reports of studies that draw causal conclusions. It would be best if these studies are closely related to the main topics of the material you are collecting for your argument notebook. Analyze the arguments in the reports.

11. Find a newspaper report that mentions a scientific journal containing the original description of a study. Look up the original report and see how accurate the newspaper report is.

12. The following essay about guns and violence makes a case for the value of logic and critical thinking. Unfortunately, the reasoning found in the article is less than perfect. Analyze the arguments presented.

Clear Thinking about Guns

Much of the public debate in America today is full of fallacies and illogical thinking—not to mention outright lies.

Lying is a moral issue, though, so let's just examine a few examples of faulty thinking. Thinking is the human being's primary means of survival, and therefore all of us should have an interest in learning to think as correctly and accurately as possible.

Logic is generally the name applied to methods for making sure our thinking is correct, or at least not irrelevant or contradictory. Let's take the proposition that guns cause crime.

Logically, before we can conclude that something is the cause of something else, we must establish that it is both necessary and sufficient. By

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36. Adapted from "Grief May Reduce Body's Defenses, Cause Early Death," *Rochester Democrat and Chronicle*, July 15, 1983, p. 1A. Reprinted with the permission of the Associated Press.

necessary, we mean that the effect cannot take place if this thing is absent; by sufficient, we mean that if this thing is present, the effect must occur.

We know that a firearm is not necessary for a crime to occur because some crimes are committed when no firearms are used. In fact, two-thirds of all violent crime, according to the FBI, does not involve firearms.

Do firearms constitute a sufficient cause? Is crime an inevitable consequence of the presence of a firearm? Again, the answer is no. Only a fraction of a percentage of the existing privately owned firearms are ever used to commit a crime. Guns are neither sufficient nor necessary, and therefore cannot be a cause of crime.

People with common sense, which today often excludes many in politics and the media, know this without going through the exercise of formal analysis. Crime, after all, is a human behavior problem, not a hardware problem. Crime plagued humanity long before firearms were invented.

A serial killer like Ted Bundy was dangerous whether he was armed or not. In fact, as far as I know, Bundy never used a firearm in any of his murders. He was dangerous because of what was going on in his brain. That's true of all violent criminals. The aggression and violence comes from within them, not from a gun store.

A firearm can facilitate the commission of a crime just as a power saw can facilitate the construction of a house, but only someone whose thinking is on the level of those who believe in witches and bad omens would attribute to an inanimate object the power to corrupt human behavior. It is equally fallacious to attribute moral qualities, such as evil, to an inanimate object.

These days, irrational thinking even infects the so-called scientific community. To declare violence a disease or an epidemic, as the Centers for Disease Control has done, is irrational. Except for a tiny percentage of crimes committed by psychotics or people with other brain disorders, crime is a moral problem, not a physiological one. Whitecollar crime, which steals the greatest volume of dollars, is generally driven by greed.

There is, in fact, no one cause of crime because there is no such thing as a homogenous, unitary class of criminals. Much to the dismay of collectivists, criminals are like everyone else—individuals from individual circumstances with individual backgrounds and individual reasons for doing what they do. To suppose that there is one cause of crime—and therefore one solution—is to commit another fallacy.

The sorry state of public discourse—rife with illogical thinking and fallacies—is pretty good evidence that there has been a "dumbing down of America" that has not spared those in high places and with university educations any more than it has the regulars in a neighborhood bar.

There are many good books on logic and clear thinking in the public library. In this age of propaganda, we should all make a continuing effort to improve our ability to think correctly and to spot fallacies. It is a duty of citizenship.[37]

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37. Charley Reese, "Clear Thinking about Guns," *Rochester Democrat and Chronicle*, November 27, 1993. © 1993 by King Features Syndicate, Inc. Reprinted with permission.

ANSWERS TO SELECTED EXERCISES

1a. Working too much and playing too little cause unhappiness in students.
 c. Singular causal statement
 d. Non-causal. (Assuming that the statement merely reports a correlation)
 g. Non-causal
 h. Dirty campaigning causes winning in elections. (Being a dirty campaigner causes being a winner among candidates in elections.)
 j. Overwatering causes poor growth among plants.
 l. Non-causal
3a. Being educated in a Catholic high school is more effective than being educated in a public school as a cause of being well-educated among high school students.
 b. Having a wife causes living a long life among men. (Perhaps the population should be middle-aged men.)

1. Consider the statement

 A. Capital punishment is a deterrent.

 (A) is the statement that often seems to be under discussion in debates about capital punishment. To say that something is a deterrent is to say that it prevents something from happening. In this case, the idea is that using capital punishment causes people not to commit crimes, especially murder. So (A) can be spelled out more fully as

 B. Having capital punishment as a possible punishment for murder causes refraining from committing murder among people.

 It could be that (B) is similar to an incomplete sentence with a missing quantifier, and that quantifier is "some." In that case, (B) is true if there are some people who refrain from committing a crime because of the availability of capital punishment. Understood this way, (B) is almost surely true.

 However, the controversy about capital punishment is not so readily resolved. The controversy may be about whether many people are caused to refrain from crime by the threat of capital punishment. We need more information to know about that.

 It is possible that using capital punishment in a society gives some people the message that killing others is a way to deal with problems. If so, then having capital punishment may deter some potential murderers and encourage others. The controversy about (A) may be about which effect is more pronounced; that is, when people argue about (A), they may be taking it to mean something like

 C. Having capital punishment as possible punishment for murder causes refraining from committing murder more than it causes committing murder among people.

 Again, we need more information to determine whether (C) is true.
3. If we take the statement to say that some people recover as a result of taking the placebo, then it is true. Taking a placebo does cause some people to recover. Presumably, it does so via a causal chain: taking the pill leads to thinking one has done something to cure the disease which leads to recovery.

 Taking a placebo is almost surely a less effective cause of recovery than taking an effective medication. This is because the effective medication will also cause the belief that one will recover. Thus, it can cause recovery in the same way the placebo does, as well as by the more normal medical route.
5. Since every proposition has a truth value, we must assign some truth value to (A). We can't avoid giving it a truth value simply by changing the topic and talking about (B) and (C) instead.

Causal Arguments

There are two ways to interpret (A). The first way requires for its truth merely that some people get lower cholesterol from taking fish oils. In most discussions of (A), however, it is probably the comparative claim which is at issue. This presupposes the second interpretation, according to which (A) is true only if it lowers blood cholesterol in more cases than it raises it.

1. No. The correlations are merely statistical facts, and they can hold even if there is no causal connection between the correlated factors.
2a. The correlation is
     Being a philosophy major is positively correlated with getting a high score on the law boards among students who take the law boards.
    The causal claim intended by the APA is
     Being a philosophy major is more effective than being a major in (almost) any other discipline as a cause of getting a high score on the law boards among students who take the law boards.
    In this causal statement, the point is that being a philosophy major is a more effective cause, in that it brings about the effect in larger percentage of the cases to which it applies than does majoring in other fields. The claim is not about absolute numbers.
         There's a possibility that this correlation is a case in which the two factors are a product of some third causal factor. The ability to reason in a certain way might make a person be interested in (and major in) philosophy and also do well on the law boards. The statistical data by themselves don't show that studying philosophy is what makes philosophy majors do well on these tests.
3. The causal claim at issue here is
     Seeing violent movies causes violent behavior among movie audiences.
    The author's point is that the correlation used to defend this claim may be a result of a common cause. Whatever causes people to be violence prone may lead them both to watch violent movies and to behave violently; the movies themselves may not be a causal factor. This is an interesting point, although it could be that watching violent movies does incite violence-prone people to more violent behavior than they would have engaged in without seeing the movies.

1. False. They are all valid.
2a. Since subjects were randomly assigned to the experimental group, there can be no relevant cause of their being in that group. Thus, there can't be something that independently caused them to get the cause and to get the effect.
 b. The correlation could be accidental, since there could be some other factor, *C1*, that the experimental group got along with *C*. It could be *C1*, rather than *C*, which brought about the effect. In that case, there is no causal connection between *C* and *E*.
3. There must be some factors that caused the people to self-select for exposure to the alleged cause or some natural factors that caused the subjects to be exposed to the alleged cause. Call whatever it is that got the subjects into the experimental group *X*. The experimental group and the control group thus differ with respect to *X*.
4a. Dr. B. Leave's claim is
     Drinking carrot juice causes relief from headaches among headache sufferers.
    The argument for this can be formulated in the standard way. It is true that her study found a positive correlation between these factors, so premise (1) of that argument (limited to the population in the study) is true.
         This is a typical case in which there is likely to be a placebo effect. It is plausible to think that taking the carrot juice caused some people to think that they would get better and that this confidence led to their relief. So, strictly speaking, Dr. B. Leave's conclusion may be

true. However, when B. Leave concludes that her cure "works," she surely has in mind that it works more effectively than a placebo. The study described here provides no basis at all for thinking that this claim is true. All the patients who got her alleged cure were also given reason to think that they would recover. Thus, we have no reason to think drinking carrot juice had any effect independently of what it did by leading people to think they would get better.

5a. At issue here is a comparative causal claim that could be formulated as

> R. Q. Ment's method *(C1)* is more effective than her colleague's method *(C2)* as a cause of good reasoning ability *(R)* among students *(S)*.

b. For the sake of discussion assume that we have previously formulated arguments purporting to show that both *C1* and *C2* cause *R* among the students. We have also shown that *C1* is more strongly correlated than *C2* with *R*. We can then display the comparative causal argument as follows:

The Stronger Cause Argument

1. *C1* causes *R* in *S*. (from previous argument)
2. *C2* causes *R* in *S*. (from previous argument)
3. *C1* is more strongly correlated than *C2* with *R* in *S*. (from previous argument)
4. If (1)–(3), and this stronger correlation does not result from some other causal factor, then *C1* is a more effective than *C2* as a cause of *R* in *S*.
5. The stronger correlation does not result from another causal factor.
6. *C1* is a more effective than *C2* as a cause of *R* in *S*. (1)–(5)

c. There are many possible reasons why Professor Ment's students might do better on the test other than the superiority of her method. One problem is that the argument does not distinguish teaching style and ability from the method of reasoning taught. It is possible that Ment is simply a better teacher than her colleague, and that her students would do better no matter what method was used. Since this is a fictitious example, we can't really find out the truth about this, but in any realistic test of teaching methods it is important to control for quality of teaching. This consideration casts some doubt on (5). Similar considerations could cast doubt on the argument for (1) and (2). In many cases we don't know that the superior performance really is a product of the teaching method at all.

Of greater concern in a study like this is the measure of reasoning ability. It is notoriously difficult to get a good measure of how well one can reason. Different methods make use of different vocabularies and will emphasize slightly different skills. It is difficult, if not impossible, to design a test that is not biased in favor of one method. Since Professor Ment designed the test in this example, it is likely that it asks about things she taught. It may be, therefore, that the stronger correlation results from greater familiarity with the specific terminology and style of reasoning she prefers, and not from any greater ability to reason. Thus, the correlation mentioned in (3) is suspect. What we know is that there is a correlation between being in her class and doing well on the test. Doing well on the test is a measured property and being able to reason well is its associated target property. However, there is considerable doubt that it is a good measure of this target property. Thus, while *C1* may be more strongly correlated than *C2* with doing well on the test, we should be doubtful about the argument leading to premise (3).

6. The best way to begin analyzing a report like this is to identify the causal conclusion. Then you can look to see exactly what was supposed to support it. It is easy to see that the conclusion is roughly that marijuana causes accidents.

Next, we can identify the elements of the statistical argument used to support the causal conclusion.

Measured properties: having THC in your blood *(THC)*, being found responsible for an auto accident *(FR)*, having alcohol in your blood *(A)*

Target properties: being under the influence of marijuana. *(M)*, being responsible for an auto accident *(R)*, being legally intoxicated *(I)*

Sample population: 497 people treated at hospitals for injuries in auto accidents between May 1979 and September 1980 *(SP)*
Target population: all people

The Statistical Argument

Background information from report
1. *Results:*
    a. 53% of the *THC*s in the *SP* were *FR.*
    b. 34% of the people in *SP* who were neither *THC* nor *A* were *FR.* (EP)
2. *Measured correlation in sample:* THC is pos. cor. with *FR* among *SP.* (1)
3. *Accuracy premise: THC* accurately measures *M; FR* accurately measures *R.* (IP)
4. *Target correlation in sample: M* is pos. cor. with *R* among *SP.* (2), (3)
5. *Representativeness premise.* (IP)
6. *Target correlation in target population: M* is positively correlated with *R* among all people. (4), (5)

One can use this correlation claim as the first premise of a standard causal argument for the claim that *M* causes *R* among people.

The statistical argument may be fairly well justified, but this evidence alone does not justify the causal conclusion. The main reason for this is it has to do with the age of the marijuana users. The article says that 85% of the *THC*s were under 31. Presumably, then, the *THC*s were on average younger than the *THC*s. Younger drivers tend to be more careless. So, this could be a common cause. Being young and careless might lead to both *M* and *R*. To tell whether marijuana use is really responsible for causing accidents, we'd have to compare similar groups of people with respect to age and personality (or other relevant factors) and see if the marijuana users are more frequently responsible for accidents.

8. This report makes only a fairly trivial causal claim, that personality is a causal factor for buying designer clothes. It does make a correlation claim that we can examine. We can best analyze it by first identifying the elements of the statistical study.

Measured properties: saying that you prefer signature clothes, saying that you enjoy entertainment with flair
Target properties: preferring signature clothes, enjoying entertainment with flair
Sample population: 600 customers with charge accounts at large department stores and trendy boutiques in East Coast cities
Target population: all shoppers (all people?)

The Statistical Argument

Background information: Sample population responded to questionnaires asking about their interest in signature clothes and to personality questionnaires. (EP)
1. *Result:* Most of the people who say they prefer signature clothes say that they enjoy entertainment with flair. (EP)
2. *Measured correlation in sample:* Saying you enjoy entertainment with flair among the sample population is positively correlated with saying you prefer signature clothes. (1)
3. *Accuracy premise:* Measured properties accurately measure target properties. (IP)
4. *Target correlation in sample:* Enjoying entertainment with flair is positively correlated with preferring signature clothes among the sample population. (2), (3)
5. *Representativeness premise.* (IP)
6. *Target correlation in target population:* Enjoying entertainment with flair is positively correlated with preferring signature clothes among people. (4), (5)

This conclusion is not well-supported by the information provided in the report. The stated results do not support the correlation claimed in (2). To know that there's a correlation, we'd have to know that a higher percentage of those who said they like entertainment with flair also like signature clothes. We know that 9% of the 600 surveyed liked the clothes;

that's 54 people. The report says that the "signature goods buyer is likely to be . . . one who enjoys entertainment with flair." This seems to say that most of the 54 people who liked the signature clothes also liked entertainment with flair, but it does not tell us what percentage of the people who didn't like the signature clothes liked entertainment with flair. So the data don't support the correlation claim.

It is possible that this criticism relies on an uncharitable interpretation of the report. Perhaps the last sentence of the report does not mean to say that most of the signature goods buyers had the properties mentioned, but rather report a correlation.

1. If you take "Smoking causes lung cancer" to mean "Everyone who smokes gets lung cancer as result," then the argument in Example 6 would be valid. Uncle Al would be a counterexample to this universal generalization, and the argument would show that, in this sense, smoking doesn't cause lung cancer. However, as we have seen, the typical way to interpret general causal claims is that the cause brings about the effect in some cases, or in some significant number of cases. To say that smoking doesn't cause lung cancer, then, is to say that it does not cause it in any cases, or in a significant number of cases. The example of Uncle Al does not establish that smoking does not cause lung cancer in this sense.
3. It's a singular causal statement, and thus it is not about a population.
5. Robertson seems to assume that if there is a policy in force designed to rectify a certain problem, and the problem has gotten worse, then policy is responsible for the worsening of the problem. (He says that the policy of providing sex education has had "tragic results." Thus, he attributes the worsening of the problem to the existence of sex education.) He apparently overlooks the possibility that the problem of teen pregnancy would have been even worse without the availability of sex education.

Moral Arguments

Moral arguments are arguments about what is right or wrong, what should or should not be done, or what is moral or immoral. Many familiar arguments fall into this category, including arguments about whether it is wrong to have an abortion, whether we should limit access to handguns, and whether it is immoral to use animals in medical research. The editorial page of almost any newspaper on any day will contain articles whose authors argue for one side or another of issues like these.

In spite of the familiarity of moral arguments, people often find them difficult to understand and evaluate. Dismissive responses are common. People say that moral matters are "relative" or that they are "matters of opinion" about which there is no "absolute truth," and are thus unresolvable. No one seems to be a proper authority on moral issues, so we wonder, "Who's to say what's right or wrong?" Many moral issues require drawing boundaries between those who should be treated in some particular way and those who shouldn't, yet there is often no clear basis for making the required distinctions. Thus, we wonder where to draw the line, for example, between those who should get government subsidies and those who shouldn't. Arguments about moral matters, then, are particularly murky and especially conducive to the use of argument stoppers.

Although moral arguments are often treated dismissively, they are unavoidable. We can't avoid having some policy about abortion, gun control, the use of animals in medical research, and many other matters. Of course, you can choose to do nothing about some issues, and maybe you can avoid having any opinions on some top-

ics. However, avoiding the issues is simply a way of keeping things as they are or leaving decision making to others. It does not make difficult issues go away. Moreover, many of us do have views about moral issues, and we have reasons for our views. We aren't really satisfied with these dismissive attitudes toward our views and arguments on topics we genuinely care about.

Since issues concerning morality are common and nearly unavoidable, we should try to deal with them effectively and rationally. In this chapter we'll begin by looking at some moral propositions in an effort to disentangle the different kinds of claims that are found in moral arguments. We'll then examine the sources of some of the dismissive reactions to moral arguments and identify ways to deal more effectively with those arguments. We'll conclude with an examination of some standard patterns of moral argument and a discussion of suitable ways to evaluate arguments conforming to those patterns.

I. MORAL PROPOSITIONS

One of the reasons moral arguments are difficult to analyze and discussions of moral issues are often frustrating and inconclusive is that moral language is particularly difficult to understand. We saw earlier that the things we say can be vague, ambiguous, or incomplete and that these features of language can lead to confusion in argument analysis. Moral arguments are particularly susceptible to these problems. In addition, it is easy to confuse moral propositions with propositions of other kinds. A good way to begin our discussion of moral arguments, then, is by looking carefully at moral language.

A. Moral Issues

Consider the following excerpt from an essay by columnist Anna Quindlen about the death penalty:

Example 1

Death Penalty's False Promise

Ted Bundy and I go back a long way, to a time when there was a series of unsolved murders in Washington State known only as the Ted murders. . . . By the time Ted finished up in Florida, law enforcement authorities suspected he had murdered dozens of young women. He and the death penalty seemed made for each other.

The death penalty and I, on the other hand, seem to have nothing in common. . . . Simply put, I am opposed to the death penalty. I would tell that to any judge or lawyer undertaking the voir dire of jury candidates in a state in which the death penalty can be imposed. That is why I would be excused from such a jury. In a rational, completely cerebral way, I think the killing of one human being as punishment for the killing of another makes no sense and is inherently immoral.

But whenever my response to an important subject is rational and completely cerebral, I know there is something wrong with it—and so it is here. I have always been governed by my gut, and my gut says I am hypocritical about the death penalty. That is, I do not in theory think that Ted Bundy, or others like him, should be put to death. But if my daughter had been the one clubbed to death as she slept in a Tallahassee sorority house, and if the bite mark left in her buttocks had been one of the prime pieces of evidence against the young man charged with her murder, I would with the greatest pleasure kill him myself.

The State of Florida will not permit the parents of Bundy's victims to do that, and, in a way, that is the problem with an emotional response to capital punishment. The only reason for a death penalty is to exact retribution. Is there anyone who really thinks that it is a deterrent, that there are considerable numbers of criminals out there who think twice about committing crimes because of the sentence involved? . . .

I don't believe that deterrence is what most proponents seek from the death penalty anyhow. Our most profound emotional response is to want criminals to suffer as their victims did. . . . [But] what many people want from the death penalty, they will never get . . . There is nothing anyone could do that is bad enough for an adult who took a 6-year-old boy away from his parents, perhaps tortured, then murdered, him and cut off his head. Nothing at all. Lethal injection? The electric chair? Bah.

And so I come back to the position that the death penalty is wrong, not only because it consists of stooping to the level of the killers, but also because it is not what it seems. . . . The death penalty does not let us have at [murderers] in the way [we want]. What [we] want is for something as horrible as what happened to [their victims] to happen to [them]. And that is impossible.[1]

This essay is clearly argumentative. In part Quindlen is reporting her own attitude toward the death penalty, but she is also arguing against the death penalty. Let us look more carefully at just what she says.

Notice that Quindlen tells us early on that

1. I am opposed to the death penalty.

It would be a mistake to think that the point of her essay is to establish (1). This sentence simply reports Quindlen's attitude toward the death penalty. We can readily agree that she does oppose the death penalty.

Quindlen does not merely report her opposition to the death penalty. She also claims that it is wrong. In fact, at the end of the second paragraph she says:

2. The death penalty is (inherently) immoral.[2]

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1. Anna Quindlen, "Death Penalty's False Premise," *New York Times*, September 17, 1986, p. C12. Copyright © 1986 by The New York Times Co. Reprinted by permission.

2. We won't worry for now about what the word "inherently" adds to her claim.

In the last paragraph she makes a similar claim:

    3. The death penalty is wrong.

There is a third claim which she does not make explicitly in the passage quoted here, but which fits well with (2) and (3):

    4. We should not use the death penalty.

All these count as moral propositions. In general, we will count as a ***moral proposition*** any proposition that says that something is moral or immoral, right or wrong, or should or should not be done. While there may be subtle shades of meaning that differentiate (2)–(4), they all are standardly used to say just about the same thing, so, we can view them as equivalent. We can use any one of these propositions to express Quindlen's main conclusion.

    In this passage, Quindlen gives reasons for her moral claim; that is, she presents a moral argument. Notice the kinds of propositions that serve as her premises. By asking the rhetorical question, "Is there anyone who really thinks that (the death penalty) is a deterrent?" Quindlen is asserting:

    5. Capital punishment is not a deterrent.

She also claims in her final paragraph that

    6. The death penalty is not what it seems.

(By this she may mean that the death penalty does not give people the psychological comfort or satisfaction they seek. She also may mean that it is not a suitable punishment because it does not make murderers suffer as much as their victims.) These two statements serve as her premises.

    Sentence (5) is implicitly causal. It says that having capital punishment does not cause a decrease in the crime rate. Sentence (6) probably makes a claim about the psychological effects of the death penalty. So, to evaluate these claims we would make use of the strategies for evaluating causal statements that you've learned. Other claims in the passage concern the motivation of people who favor the death penalty and the effects other punishments would have. These are also factual claims. So, although Quindlen's conclusion is a moral proposition, her premises are primarily nonmoral claims. We can understand the premises and evaluate them in the ways. The crucial thing to understand about moral reasoning is how these nonmoral premises connect to moral conclusions.

    Distinguishing the variety of questions raised by Quindlen's essay will help to clarify what we mean when we use the term "moral propositions." Among the questions raised in Quindlen's essay are these:

Q1. Is capital punishment immoral? Is it wrong?

Q2. Why do people favor the use of capital punishment?

Q3. How do people feel when a friend or family member is brutally murdered?

Q4. Is capital punishment a deterrent?

Many other questions about capital punishment are often raised, although Quindlen does not mention them in her essay. Several of these other questions have to do with legal matters:

Q5. Is capital punishment a cruel and unusual punishment of the sort prohibited by the U.S. Constitution?

Q6. Has capital punishment been applied by the U.S. judicial system in a uniform and unbiased way, or are blacks convicted of murder more likely to receive the death penalty than whites convicted of murder?

Other questions concern comparisons of attitudes and practices:

Q7. What is the majority view in the United States about the use of capital punishment?

Q8. Which other countries in the world use capital punishment? for what kinds of crimes?

With the exception of (Q1) and possibly (Q5), all these questions are about purely factual matters. Answering them does not require resolving any moral issues. (Q2) and (Q3) raise psychological issues about people's attitudes and motivations. (Q4) asks a sociological question, about the effects a policy would have on people in the society. The questions in (Q5) and (Q6) raise legal issues. Perhaps deciding whether something is "cruel and unusual" requires deciding some moral issues, but the question of bias raised by (Q6) is a purely factual issue that can be resolved by comparing the kinds of punishments given to blacks and whites for similar crimes. The question in (Q7) is best answered by appealing to opinion polls, and (Q8) requires comparison of the practices in various countries.

Answering nearly all these questions, then, requires attention to testimonial, statistical, and causal arguments. The fact that these questions are connected in an important way to a controversial moral question does not in any way change the appropriate method for answering them. Thus, whether capital punishment is a deterrent and whether it has been applied in an unbiased way are issues to be settled by appeal to statistical findings. No doubt, they are difficult matters to resolve and statistical results can be seriously misleading. For example, correlations between the institution of capital punishment and changes in the murder rate may not be indicative of any causal connection between these factors. Nevertheless, these are factual issues, not moral issues. Moral propositions are about what is right or wrong,

moral or immoral, or should or should not be done, and factual propositions are about statistical, causal, psychological, legal, or other matters often used in support of moral claims.

It is especially important to separate moral and legal issues. In the United States capital punishment is legal in many states. In some states it is a matter of considerable controversy and is regularly debated in the state legislature. When the legislators debate the matter, they know what the law is; that is not the topic of their debate. They are debating what the law *should be*. Thus they are debating a moral issue.

B. Incomplete Moral Sentences

One thing that causes difficulty and confusion when discussing moral issues is that many of the moral sentences we use are incomplete. We saw earlier that we frequently use sentences that are missing a quantifier. In many contexts, this doesn't cause a problem, but at times it does. For example, when Quindlen says that capital punishment is wrong, is she saying that it is *always wrong* to use capital punishment, no matter what the circumstances? Or is she saying that it is *typically wrong or wrong in current circumstances*? The passage quoted here does not make the answer clear, nor does the essay as a whole.[3]

If we are to evaluate Quindlen's claim that capital punishment is wrong, we must know just how general a claim she is making. Otherwise, we won't know what considerations are relevant to her claim. For example, suppose we had information showing that in contemporary American society capital punishment is not a deterrent, but that in ancient times it was a deterrent. Whether that affects her argument depends on whether her claim is that capital punishment is always wrong or just that it is wrong in contemporary American society.[4]

It is common in discussions of moral issues to say that some kind of action is immoral or wrong or should not be done. Such claims are always incomplete because a quantifier is not supplied. Context often makes clear what claim is intended, so frequently you will have no difficulty in interpreting the claim. As always, the principle of charity should be applied when interpreting the passages you analyze. In any case, it is crucial when evaluating moral arguments to be clear about exactly what conclusions are being drawn.

C. Actions and Agents

So far we have discussed moral propositions that evaluate an *action* as right or wrong, moral or immoral, or as things that should or should not be done. There is

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3. Possibly, her comment that the death penalty is inherently immoral suggests that she thinks it is always wrong.

4. This is not to say that the morality of capital punishment turns entirely on whether or not it is a deterrent.
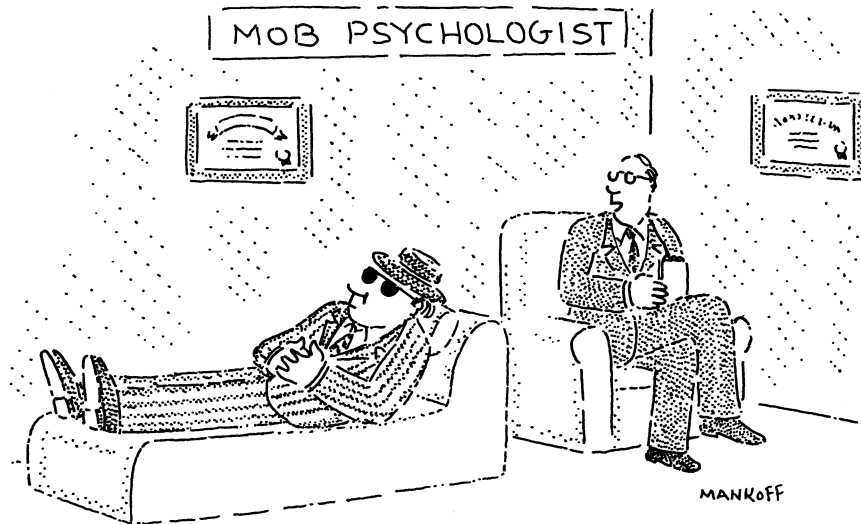
"So, while extortion, racketeering, and murder may be bad acts, they don't make you a bad person."

another kind of moral evaluation that should be distinguished from these: we sometimes say that a *person* is morally good or bad. The connection between moral actions and moral agents raises many difficult questions which we cannot discuss in detail here. In general, though, to say that a person is morally good is to say that, for the most part, the person does what he or she should, or that the person at least tries to do what he or she should. The reason for the latter clause is that we don't judge a person to be bad when the person does the wrong thing because of excusable ignorance or a mistake. Our focus in this chapter is on evaluating actions rather than individuals.

EXERCISES AND STUDY QUESTIONS

*1. What does Quindlen mean when she says, "I am opposed to the death penalty." Is she reporting some belief she has? If so, what belief? If she's not reporting a belief, what is she doing?

 2. Quindlen says, "Whenever my response to an important subject is rational and completely cerebral, I know there is something wrong with it." What does she mean by this? Do you agree?

*3. Quindlen says that she would gladly kill a person who murdered her child. What bearing, if any, does this fact have on the morality of the death penalty?

 4. Quindlen asks, "Is there anyone who really thinks it [the death penalty] is a deterrent, that there are considerable numbers of criminals out there who think

twice about committing crimes because of the sentence involved?" Obviously, these are rhetorical questions, to which the answer is supposed to be no. But, of course, there are people who think that the death penalty is a deterrent, and Quindlen surely knows that. So what is her point in this section? (It is plausible to take her to be giving a brief argument in this passage. Reconstruct and evaluate that argument.)

5. This question has been intentionally removed from the text.

6. In this section we distinguished eight questions associated with the death penalty controversy. Identify several other current controversies (e.g., abortion, euthanasia, the role of women in the military) and distinguish the questions associated with each of them. Characterize the questions as moral, causal, statistical, and so on.

7. In May 1991 the Supreme Court ruled as constitutional a government regulation that prohibits workers at medical clinics receiving federal funds from mentioning abortion as an option for a pregnant woman. The following is an excerpt from an article by Lewis H. Lapham discussing the ruling.

Tyromancy

The Supreme Court ruled in May that people who accept government money must say what the government wishes them to say. The ruling followed from the Court's interpretation of Rust v. Sullivan and forbade mention of the word "abortion" in any of the 4,500 clinics that receive federal funds and provide advice and care to as many as 4 million women in the United States, many of them frightened and most of them poor. The Court imposed its fiat by the narrow majority of 5–4, and relied on a line of reasoning (supplied by Chief Justice William Rehnquist) that defined speech as a function of congressional subsidy. Because the government doesn't choose to fund the practice of abortion, then the government cannot talk about the practice of abortion. Speech becomes a privilege instead of a right.

Any reader who thinks that I exaggerate the arrogance of Justice Rehnquist's argument has only to read the two or three clumsy sentences with which he grinds the First Amendment into the pulp of sophism. As follows:

> The government can, without violating the Constitution, selectively fund a program to encourage certain activities it believes to be in the public interest, without at the same time funding an alternative program which seeks to deal with the problem in another way. In so doing, the government has not discriminated on the basis of viewpoint; it has merely chosen to fund one activity to the exclusion of the other. . . .

The chief justice makes the word "fund" a synonym for the word "viewpoint," and the reasoning is as autocratic as the reasoning that sustains

the government's theory of "classified information." The four justices who joined Rehnquist's opinion . . . presumably share his inclination to recognize only those truths that appear in court with an acceptable financial statement. If the viewpoint is funded, it may be discussed; if the viewpoint is not funded, it cannot be introduced in polite company. A clinic retains permission to talk about abortion only on condition that it does so in a separate building under the disguise of a separate program that receives none of its funding from the federal government.[5]

a. Comment on Lapham's use of language in this essay. What words and phrases does he use to put the Court in a bad light?
b. Distinguish the moral, legal, and other issues involved in this matter. Does Lapham keep the issues clearly separated?
c. In the second paragraph, Lapham complains about Rehnquist's argument. What is Rehnquist's argument (or claim) and what is Lapham's complaint?

II. MORALITY, RATIONALITY, AND TRUTH

There are several views and attitudes about moral propositions and moral arguments that get in the way of good reasoning about them. These views and attitudes have in common the idea that moral propositions are somehow radically different from other propositions and that, as a result, our usual principles regarding truth and rationality don't apply to them. While some of these views raise deep and important questions that can only be pursued in detail in a course on ethics, none of them shows that you cannot profitably apply the method of argument analysis to moral arguments.

A. Doubts about Moral Reasoning

Four common claims are made by those who doubt that we can effectively reason about moral issues. We will look at these claims individually.

A1: Disputes about Morality Are Unresolvable

When two people disagree about something and there is no chance that they can come to agreement by means of rational discussion, then they have an ***unresolvable dispute***. Anyone studying recent debates about practices such as abortion and affirmative action is likely to come to the conclusion that these controversies cannot be resolved. Those who are "pro-choice" believe that women have a right to control their own lives and should not be required to have babies they don't want. Those on the "pro-life" side

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5. Lewis H. Lapham, "Tyromancy," *Harper's Magazine*, August 1991, p. 6. Copyright © 1991 by *Harper's Magazine*. All rights reserved. Reproduced from the August issue by special permission.

believe that we should not permit abortion because it is unjustified murder of human beings. The affirmative action dispute centers on the question of whether members of groups that have been denied equal treatment in the past should be given preferential treatment now. What makes this matter so delicate is that the particular individuals who receive preferential treatment need not themselves be victims of past discrimination. The apparent unresolvability of such disputes has led some people to conclude that moral arguments are unlike other arguments in important ways.[6]

While it is true that some moral disputes are extremely hard to resolve and that parties to the disputes may never come to any agreement, this does not show that moral arguments are in general unlike nonmoral arguments. Some arguments about plainly factual matters are also extremely hard to resolve. In some cases, the inability of disputants to come to agreement may be a consequence of obstinacy on the part of one of them. Some people simply refuse to accept good arguments, whether they are about moral or nonmoral matters. Dedicated members of the Flat Earth Society may refuse to accept decisive evidence showing that the earth is round. They may contend that satellite photographs are phony, that the testimony of astronauts is part of a conspiracy, and so on. Conspiracy theorists often believe that certain significant events, such as assassinations of political leaders, are the result of conspiracies, no matter what the evidence to the contrary happens to be. The existence of such people does not show that standard practices for analyzing arguments should not be applied to arguments about the shape of the earth. Similarly, the mere fact that obstinate people won't agree about moral matters doesn't show that moral arguments require special treatment.

Other factual issues are hard to resolve because they are difficult and the evidence concerning them is inconclusive. For example, disagreements about events from the distant past occur when the historical record is unclear. Scientists differ widely about the cause of the extinction of dinosaurs; other people disagree about the literal accuracy of biblical stories. So, some nonmoral disputes are as unresolvable as moral disputes. Unresolvability, therefore, does not distinguish moral from nonmoral issues.

Furthermore, we should not exaggerate the extent to which moral issues are unresolvable. While some contemporary moral debates do involve highly controversial issues and are unlikely to be resolved soon, not all moral disputes are so complex and controversial. The ones we most often read and hear about tend to involve difficult issues. Indeed, the difficulty of the issues is part of the reason they receive so much attention. However, many moral propositions are not at all controversial. For example, no sane person denies that it is always wrong for an adult to torture innocent children for fun. Furthermore, over time we do resolve some controversial issues. For example, there used to be serious disagreement in the United States about the morality of slavery, but that dispute was resolved. Thus, moral disputes can be resolved, and people do at times reach agreement as a result of moral argumentation.

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6. For discussion of this issue, see Robert Fogelin, "Deep Disagreements," *Informal Logic* 7 (Winter, 1985): 1–8.

A2: Morality Is Relative

Societies have sets of rules regulating the way people are supposed to behave. These rules constitute the ***moral code*** of a society. Some aspects of a moral code are reflected in the legal system of the society, but other aspects are not. A striking fact is that moral codes vary widely. For example, the way people dress varies enormously from one culture to another; in some places it is a moral flaw to expose certain parts of the body that are not considered private or indecent in other places. There are enormous differences in the way old people and children are treated in different societies; the roles of the sexes also vary greatly from one society to another. The fact that value systems and moral codes around the world vary so much leads some people to believe in the ***relativity of morality***. If this term just refers to the fact that varying moral codes exist, then there is no doubt that this belief is correct. But some people take the idea further; they think that moral propositions are never simply true or false. Instead, they believe that the truth value of moral propositions varies from one person or society to another.

Consider, for example, the proposition

   7. It is wrong for a man and a woman to shake hands when they are first introduced.

We would be likely to say that in contemporary Western societies this is false, that cross-gender handshaking is perfectly acceptable. In some places in the world, (7) is true. Thus, one might conclude that (7) doesn't have any definite truth value; its truth value is relative.

There is something correct in this observation about propositions such as (7), but the same point can be made about nonmoral propositions, such as the following:

   8. It is common for a man and a woman to shake hands when they are first introduced.

Proposition (8) doesn't have anything to do with morality: it simply reports an alleged fact about common behavior. But like proposition (7) it seems to be true in some places and not in others. As a result, it is difficult to assign any definite truth value to (8).

As we have seen earlier, what causes confusion about sentences like (8) is incompleteness. In most contexts in which someone would use a sentence such as (8), it is clear what the person means. If you were describing to a visitor the standard practices in the United States in the late twentieth century, a more complete account of what you said would be

   8a. It is common in the United States in the late twentieth century for a man and a woman to shake hands when they are introduced.

In other contexts (8) might be filled out in different ways. Propositions such as (8a) do have a definite truth value.[7] Moreover, we can present and analyze statistical arguments concerning propositions such as (8a) in the usual way.

Similar considerations apply to (7). It says that actions of a certain kind are wrong. Does that mean that all actions of that kind are wrong, that most of them wrong, that those done in certain contexts are wrong, or what? Taken out of context, (7) is difficult to interpret. In context it might be quite clear how the proposition is to be filled out. Thus, when someone says (7), a full expression of what is meant might be

> 7a. In most cases in contemporary American society, it is wrong for a man and a woman to shake hands when they are first introduced.

Given this meaning, (7) is probably false. When filled out in other ways, with reference to other cultures, (7) might be true. Because moral sentences are often incomplete, and thus it is unclear exactly what propositions they express, we should be careful in interpreting them when we consider moral arguments. If moral propositions are relative, they are so only in the sense in which all incomplete sentences are relative. None of this shows that moral propositions are importantly different from nonmoral propositions or that the method of argument analysis does not apply to them in the usual way.

In addition, we are not saying here that it must be that all actions of a particular kind are morally right or that they are all morally wrong. The circumstances surrounding the action affect their moral status. For example, some cases of telling a lie are wrong and others are not wrong. The different conclusions depend on individual features of the cases.

A3: Morality Is a Matter of Social Practice

When we judge the truth value of some moral propositions, such as (7a), we consider dominant social practices and the prevailing attitudes toward them. What makes it wrong for a man and a woman to shake hands in a particular place, if it is wrong, is that people would take offense at such behavior. Perhaps in some places people would take offense at the failure to shake hands, since that might be taken as a sign of disrespect. Thus, it might seem that morality is simply a matter of social customs, practices, and attitudes.

However, this general conclusion is unwarranted. There are other situations in which dominant social practices are not all that we think about in making moral judgments. While owning slaves was at one time widely accepted in at least some parts of the United States, we don't regard that behavior as acceptable. We think that it was wrong for those people to own slaves, even if they didn't think so.

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7. Ignore for now the vagueness due to the quantifier "it is common."

Moreover, even where custom does decide what is right or wrong, there may be some underlying general principle about treating people courteously and respectfully that is common to all these situations, and what varies from place to place is just how to do that. So, the fundamental moral principle at work is not one that is relative.

Finally, and most importantly, it is not true that in making moral claims we are simply describing social practices or attitudes. Notice that propositions (2), (3), and (4) simply say that a certain practice, capital punishment, is immoral, or wrong, or shouldn't be done. They don't say anything about what is actually done anywhere; that is, moral propositions such as these are not descriptions of existing social practices. It is consistent with (2)–(4) that capital punishment is widely practiced, and it is also consistent with (2)–(4) that capital punishment is not used at all. These propositions don't say how things are; they say how things ought to be.

Just as (2)–(4) are not descriptions of social practices, they are not descriptions of attitudes toward social practices. When Quindlen asserts (2), she is not saying that most people oppose capital punishment, or anything else about what people in general think of capital punishment. This can be seen clearly by noticing that it would be perfectly sensible for her to say, "Even though most people approve of capital punishment, it is immoral and should be banned."

If moral claims were claims about social practices or attitudes, we could determine their truth value by finding out what people do or by taking opinion polls. We could find out, for example, if using animals in medical research is wrong by taking an opinion poll on the topic. Surely, however, the view that it is wrong to use animals in medical research is not disproved by producing an opinion poll showing that most people approve of that research. Moral claims just aren't claims about prevailing practices or attitudes.

A4: Morality Is a Matter of Opinion

A common attitude toward moral propositions is that they are merely expressions of an individual's opinion or attitude. Thus, one might say that a proposition such as "Capital punishment is immoral," is an opinion, whereas proposition (5), "Capital punishment is not a deterrent," if true, is a fact. (If (5) isn't a fact, then its negation, the proposition that capital punishment *is* a deterrent, is a fact. For the purpose of the present discussion, however, it does not matter whether it is (5) or ~(5) that is true.) The question we want to ask is, What exactly is supposed to be the important difference between (2) and (5) that makes the former mere opinion and the latter a fact?[8]

When something is described as an opinion, it may be that it is being characterized as a belief that is not particularly well supported by any available evidence. For example, someone who had little information about the acceptance rate at some college might say, "In my opinion, 40 percent of the applicants are accepted at that college, but I'm not sure that is correct." Notice that there is a

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8. See the sidebar on Facts and Opinions for some additional comments on this topic.

truth about the acceptance rate at the college, and there may even be some people who know what it is. It's just that the speaker doesn't know, and so describes her judgment as mere opinion.

Suppose that we apply this way of thinking about facts and opinions to moral propositions. In that case, if someone says that a moral proposition is just an opinion, then the person is saying that the proposition does have a truth value but that the person who asserted the proposition does not have a particularly good reason to think that the proposition is true. Thus, in our example, to describe Quindlen's conclusion as "opinion" is to say that she doesn't have very good reasons to think capital punishment is immoral but that her proposition must have some truth value.

To react to Quindlen's essay in this way is to refuse to engage in rational argument with her. She has written an essay in which one of her aims is to show that the death penalty is immoral. She has given reasons in support of that conclusion. It may be that her reasons aren't good ones, but that is not something we can conclude until after we have identified and examined those reasons. To dismiss them without examination is an obvious violation of the standards of argument analysis.

Furthermore, it is plainly mistaken to say that no one ever has a good reason to believe a moral proposition. Suppose you see someone horribly torturing a young child. You say:

9. It is wrong for that person to torture that child.

In this situation it is true that (9) is your opinion in the sense that you believe it to be true. However, it is not an opinion in the sense that it is a belief unsupported by evidence. No doubt you have excellent reasons to think that (9) is true, since you know that torturing children causes them pain, that they are defenseless, and that no greater good comes from subjecting them to this pain. There are many other moral propositions for which you have equally good reasons. Thus, it just isn't true that moral propositions differ from others in that we never have good reason to believe moral propositions whereas we can have good reasons to believe other kinds of propositions.

It is likely that people who say that moral judgments are merely opinions do not mean that they do have truth value but that they are poorly supported. Rather, they may mean to suggest that sentences such as (2) do not have any truth value at all, that they are not the sort of thing that can be either true or false. If that's the case, then moral propositions aren't the sort of thing about which you can have an opinion either. If (2) doesn't have a truth value, then it doesn't make sense for anyone to have the opinion that it is true.[9] So, people who think that moral proposi-

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9. This claim may not be exactly right. Perhaps people who mistakenly think that moral propositions have truth values can believe them to be true. But if you think that moral propositions don't have truth value, then you can't consistently believe any moral propositions (i.e., you can't also believe that some of them are true).

tions lack truth value need to find a better way to express their view than to say that such propositions are "mere opinion."

None of the four claims considered in this section shows that moral arguments are in some important way different from nonmoral arguments or that the standard method of argument analysis does not apply to them. The claims, however, do raise deep and difficult questions in ethics that go well beyond the scope of this text. However, as we will see in the next section, applying the method of argument analysis to moral arguments does not depend entirely on the adequacy of the replies to these claims.

B. Reasoning about Morality

Any doubt about the applicability of the method of argument analysis to moral arguments can be resolved by looking carefully at the way people actually do deal with moral issues. People do reason about morality, and they go about it largely in the same way they go about reasoning about other issues. To illustrate this point, look again at Example 1.

Notice that this passage displays all the characteristics of other argumentative passages that we have discussed earlier. Quindlen is not merely reporting or describing her opposition to the death penalty; she *argues* that the death penalty is wrong. The author clearly and consciously gives reasons supporting the conclusion that capital punishment is immoral. Among the reasons are the (alleged) facts that capital punishment is not a deterrent, that to execute criminals is to stoop to their level, and that capital punishment "is not what it seems." A preliminary formulation of Quindlen's argument is

1. The death penalty is not a deterrent. (EP)

2. The death penalty does not provide psychological comfort to the families of victims. (EP)

3. The death penalty is wrong. [We should not use the death penalty.] (1), (2)

As stated, this argument is ill-formed—it needs a linking premise to get from the explicit premises to the conclusion—and there are a variety of ways in which the argument could be fine-tuned and improved. But what is important to realize at this point is that there is an argument here and that the method of argument analysis can be applied to it. Thus, we can ask what exactly Quindlen's conclusion is and what her reasons for it are. We can ask what assumptions she must be making to get from these premises to her conclusion. Finally, we can evaluate her argument by asking whether the reasons Quindlen cites are good reasons to think that capital punishment is immoral. In other words, her argument, and moral arguments generally, are susceptible to the same kind of analysis that other arguments are. While some features of moral arguments make them particularly difficult to analyze, they do not belong to some special realm of mere opinion to which argument analysis is inapplicable. They are arguments with conclusions, explicit premises, and implicit premises. The premises can be true or false, and they can be good reasons or not so good reasons for the conclusions.

Some of those who doubt that the method of argument analysis can be applied to moral arguments have a view of arguments that is different from the one emphasized in this text. According to this other view, arguments are mainly tools used in disputes, and their main purpose is to help convince one's opponents. Looked at in this way, moral arguments do seem generally less effective than nonmoral arguments. We often have a very hard time convincing our opponents in moral disputes, and this fact may lead to the view that moral arguments are somehow immune to ordinary analysis.

One of the most fundamental ideas behind the method of argument analysis developed in this text is that formulating and analyzing arguments is a way to help an individual figure out what to believe. If your goal in thinking about moral arguments is to figure out what the best view about some issue is, rather than to resolve a dispute with an opponent, many of the worries about moral arguments dissipate. When you hear an argument about some moral issue, ask yourself whether it gives you good reason to believe its conclusion. Don't worry about whether other people would be convinced by the argument. Even if morality is, in some yet to be discovered sense, a matter of mere opinion, you still can examine the reasons available for the various opinions and form your beliefs accordingly. You do that by examining the available arguments.

If you still find yourself unconvinced by the responses to the four challenges to moral reasoning, think carefully about your own attitude toward moral propositions and moral arguments. Think about some issue that you genuinely care about. Suppose you care about whether or not it is right to eat animals. To explore this issue, you'll need to consider the various factors relevant to the issue, such as how much the animals suffer and whether people need to eat meat to be healthy. The dismissive claim that moral propositions are only matters of opinion is of no help to you. You want to figure out what you should do, and you need to consider the relevant arguments and evidence to do so.

EXERCISES AND STUDY QUESTIONS

*1. According to the text, there *is* a sense in which morality is relative. In what sense is it relative? Are nonmoral, clearly factual matters also relative in this sense?

 2. What does it mean to say that an issue is resolvable? Are moral issues any more or less resolvable than other issues?

 3. Comment on the following claim:

   Most people in society *X* do *A*. Therefore *A* is right according to the moral code of *X*.

 4. Reconstruct and evaluate the argument against the claim that morality is just a matter of social practice in the paragraph beginning "If moral claims . . ."

*5. Comment on the following argument:

   I am violently and passionately opposed to all cases of euthanasia. Therefore, all cases of euthanasia are wrong for me.

   What do you think the conclusion of this argument means? Is the argument strong?

6. In discussing the objection that morality is a matter of opinion, we said that if moral sentences don't express propositions with a truth value, then one can't believe them or have the opinion that they are true. Explain this point.

*7. Consider the following claim:

> There's no right way for a husband and wife to allocate household chores. It's something that each couple should work out for itself.

Does this imply that the theory of truth doesn't apply to propositions about how to allocate household chores in marriage? Does the second sentence in the claim imply that there is a right way for each couple to allocate chores?

8. There is a difference between saying that an action is immoral and saying that it is illegal. Can you think of any actions that are uncontroversially immoral but legal in the United States? Why wouldn't a society make illegal everything it regards as immoral?

9. Formulate and assess any reasons not discussed in the text for thinking that the usual methods of argument analysis don't apply to moral reasoning.

III. ANALYZING MORAL ARGUMENTS

Analyzing moral arguments involves the same basic steps as analyzing other arguments: identifying explicit premises and conclusions, adding implicit premises, evaluating arguments for their form and strength. Moral arguments can follow nearly any pattern. For example, moral arguments can follow the pattern of argument by elimination or that of testimonial arguments. In general, to analyze a moral argument you can follow the techniques developed earlier in this text. There are, however, some fairly common ways in which people go about arguing for moral conclusions. We will examine some of them here.

A. Harms and Benefits

One way we reason about what we should do involves examining the nature and consequences of the things we can do. It counts against doing something that it would be costly or unfair. It counts in favor of an action that it saves lives or promotes cost efficiency. Factors such as these are known as the harms and the benefits of an action. Some of the harms and benefits of an action include its consequences, the things that will happen as a result of the action. Harms and benefits also include things that are features of the action itself, such as whether it is fair.[10] Thus the ***harms***

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10. The distinction between consequences and other features of an action is by no means clear. Since all factors count in the evaluation of an action, there is no need to try to make the distinction precise.

of an action are the consequences or other features of the action that are bad or undesirable. The ***benefits*** of an action are the consequences or other features of the action that are good or desirable. In many cases, then, when we reason about whether we should do something, we look at the harms and benefits associated with the action.

B. Simple Moral Arguments

One common way to argue about moral issues is to point out that an action has some benefit and on that basis conclude that it should be done. Equally common is to argue that something should not be done because it has a harmful feature. For example, people argue that we should institute gun control because it would save lives or that we shouldn't pollute the environment because it causes disease and suffering. Arguments that conclude that some action should (or should not) be done simply because it has some property are called ***simple moral arguments***.

We can extract a simple moral argument from Anna Quindlen's essay in Example 1. Quindlen says that one reason the death penalty is wrong is that by using it the government is "stooping to the level of the killers." Her idea may be that by using the death penalty the government is doing the same thing that killers do, namely, intentionally causing the death of another person.[11] Thus, an initial reconstruction of her argument might be

> **Argument 1**
>
> 1. When the government imposes the death penalty, it intentionally causes the death of someone. (EP?)
>
> 2. The government should not impose the death penalty. (1)

Argument 1 is ill-formed. To make it well-formed, there must be a premise linking (1) and (2). Any such premise must connect the action of intentionally causing someone's death with being a thing that should not be done.

It is possible to make Argument 1 valid by resorting to cheap validity, or adding a conditional saying that if (1) is true, then (2) is true. However, it is far better to get at the underlying idea of the argument by adding a linking premise containing a generalization. The generalization must say that all (or most or typical) actions of a certain kind should not be done. This kind of statement is a ***general moral principle***.

In the case of Argument 1, we might add a generalization to the effect that no person or group should ever intentionally cause the death of anyone else. The resulting argument looks like this:

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11. Our goal in examining this argument is to see how simple moral arguments work. Whether Quindlen really defended this argument is not crucial for us now.

Argument 1a

1. When the government imposes the death penalty, it intentionally causes the death of someone. (EP?)

2. No one (an individual or the government) should intentionally cause the death of anyone. (IP)

3. The government should not impose the death penalty. (1), (2)

Now the argument is valid. Notice that the implicit premise is a general moral principle, saying that all actions of a certain kind should not be done. The pattern of argument here is a familiar one:

1. All *A*s are *B*s.

2. All *B*s are *C*s.

3. All *A*s are *C*s.

To make the argument follow this pattern explicitly, we can rewrite it as follows:

Argument 1b

1. All executions of murderers are actions that intentionally cause the death of another person. (EP?)

2. All actions that intentionally cause the death of another person are actions that should not be done. (IP)

3. All executions of murderers are actions that should not be done. (1), (2)

Argument 1b is an example of a simple moral argument. One premise of this kind of argument picks out a feature, a particular action, or kind of action. The second premise says that all actions having that feature are right, or should be done, (or that they are wrong, or should not be done).

Thus, simple moral arguments often follow this pattern:

Simple Moral Arguments (Pattern 1)

1. Action *x* has property *P*.

2. All actions having property *P* are right (wrong).

3. Action *x* is right (wrong). (1), (2)

You can replace "right" or "wrong" in this argument with "should be done" or "should not be done" or "moral" or "immoral" or any other term of moral evaluation. It is also possible to form cogent arguments by replacing "all" with a different quantifier.

In the pattern above, the argument is about a single action. Simple moral arguments can also be about kinds of actions. They can be about all actions hav-

ing some particular feature, as we saw in the case of Quindlen's argument. The general pattern here is

Simple Moral Arguments (Pattern 2)

1. All actions of kind *A* have property *P*.

2. All actions having property *P* are right (wrong).

3. All actions of kind *A* are right (wrong). (1), (2)

Notice that simple moral arguments have both moral and nonmoral propositions as premises. In general, any well-formed moral argument will have at least one moral premise. Typically, but not always, the moral premise will be implicit. Thus, when you reconstruct a simple moral argument from a written passage, you will often have several options for the moral generalization to include in the argument. The principles of charity, faithfulness, and generality govern the choice, just as they do in any other case.

Let's turn now to the evaluation of simple moral arguments. Although Argument 1b is valid, it is doubtful that it is strong. Premise (1) is unquestionably true. But there are good reasons to question premise (2). Since (2) is a universal generalization, we can refute it by finding counterexamples. A moment's thought reveals that there are compelling counterexamples to this principle. It seems clear that there are times when it is not wrong to kill another person intentionally. For example, if that is the only way to defend oneself or to prevent a great many deaths, then taking the life of another person seems to be morally acceptable. To take an extreme example, if the only way to prevent a person from setting off a powerful bomb that would kill millions of people is to kill the person, then it is morally acceptable to kill the person.

Defenders of Argument 1b might respond to this criticism by revising their principle. The process here is the same as we have seen in other cases, in which an argument is refined in response to criticism. Perhaps defenders of the argument would say that it is always wrong to cause a death except in self-defense or when doing so prevents even more deaths. Their revised argument would look like this:

Argument 1c

1. All executions of murderers are actions that intentionally cause the death of another person. (EP?)

2. All actions that intentionally cause the death of another person and are not done in self-defense or to prevent even more deaths are actions that should not be done. (IP)

3. All executions of murderers are actions that are not done in self-defense and are not done to prevent even more deaths. (IP)

4. All executions of murderers are actions that should not be done. (1)–(3)

This argument is also valid. Notice that premise (3) had to be added to make the general principle in (2) apply to executions. The pattern is

1. All *E*s are *I*s.

2. All *I*s that are neither *S*s nor *P*s should not be done.

3. All *E*s are neither *S*s nor *P*s.

4. All *E*s should not be done.

Argument 1c is a stronger argument than its predecessor. One might object to (2) on the grounds that there are other exceptions to any general prohibition on murder, and one might contend that (3) is false on the grounds that the point of executions is to prevent more deaths. There are, then, debatable premises in this argument, and further analysis is possible. However, the discussion so far is sufficient to illustrate that the general principles of argument analysis, including the refinement of general principles in response to counterexamples, apply to simple moral arguments.

Consider next another example:

Example 2

Nomore Shots thinks that it is wrong for the government to require that all children be vaccinated against various infectious diseases of childhood such as measles, mumps, and chicken pox. He argues as follows: "I am opposed to the government's requirement that children be vaccinated against these diseases. Some children have adverse reactions to the shots and some of them even die as a result. The government shouldn't do anything that causes the death of innocent children."

We can begin our reconstruction of this argument by identifying Nomore's conclusion. The first sentence in the quoted argument comes closest to stating the conclusion, but it is stated indirectly. What he says is "I am opposed to the vaccination requirement." However, Nomore isn't trying to prove that he's opposed to the vaccination requirement. We would all accept his claim that he's opposed. Nomore's point isn't about his own attitude. Rather, he's trying to show that the vaccination requirement is wrong or that there should be no such requirement. So the conclusion is

The government should not require that all children be vaccinated against infectious diseases such as measles, mumps, and chicken pox.

Nomore mentions two points in support of this conclusion. The first concerns an effect of the vaccinations, namely, the death of some innocent children. The second point is a general moral principle saying that the government shouldn't do anything having that effect. Putting these together, we get the following argument:

Argument 2

1. By requiring that children be vaccinated against measles, mumps, and chicken pox, the government is doing something that causes some innocent children to die. (EP)

2. The government should not do anything that causes innocent children to die. (EP)

3. The government should not require that children be vaccinated against measles, mumps, and chicken pox. (1), (2)

This is a valid argument. It could be rewritten in the pattern of a simple moral argument:

Argument 2a

1. The government's requiring that all children be vaccinated against measles, mumps, and chicken pox is a case of the government doing something that will cause some innocent children to die. (EP)

2. All actions that are cases of the government doing something that will cause some innocent children to die are actions that should not be done. (EP)

3. The government's requiring that all children be vaccinated against measles, mumps, and chicken pox is an action that should not be done. (1), (2)

To evaluate (2), you must consider possible counterexamples, of which there are many. Consider the action of building a highway. If the government builds a highway, then people will use it. Inevitably, there will be some accidents, and some of the accidents will lead to the deaths of innocent children. Thus, building a highway is a government action that will lead to death of innocent children; but it is obviously an action that in some cases should be done. If (2) were true, it would follow that the government should not build highways—a highly implausible conclusion. So (2) is not justified and this argument against the vaccination requirement is weak. Naturally, it is possible to revise the argument with the aim of improving it, but we will leave that project to the exercises at the end of this section.

C. The Overall Value Principle

While simple moral arguments argue that an action is right or wrong because it has some particular harmful or beneficial feature, more complex moral arguments involve a weighing of harms and benefits. When you add up the harms and benefits associated with an action, you are assessing its *overall value*.

Much of our thinking about what to do involves weighing the pros and cons of an action, or determining its overall value. Going to college is costly and time-consuming and requires hard work. However, it can make one more employable and

better prepared to lead an interesting life. When deciding whether to go, we compare these factors and try to determine its overall value.

Although the decision about going to college may not be of particular moral significance, the same sort of weighing of harms and benefits goes on in more explicitly moral reasoning. When we appeal to such complex arguments in our moral thinking we are using the overall value principle:

OVP: If the overall value of the harms and benefits of an action, *A*, is positive then *A* should be done, and if the overall value of the harms and benefits of *A* is negative, then *A* should not be done.

Another way to say what (OVP) says is that you should do something when its benefits outweigh the harms and you should not do it when the harms outweigh the benefits.

Although (OVP) might initially seem to be a plausible principle, it quickly runs into serious problems, as in the following:

Example 3

Ken I. Help is walking home one day when he notices an elderly man struggling to jack up his car to change a flat tire. It is clear to Ken that the man is uncertain how to proceed and that he may not have the strength to do the job himself. Ken offers to help the man, and when his offer is accepted, Ken clearly explains to the man exactly how to use the jack and change the tire. Ken then continues on his way home. (Assume that Ken could easily change the tire himself and that he has nothing else important to do at the time.)

Ken can do two things whose benefits outweigh their harms: he can give instructions and he can help change the tire. (He also has another option: he can just walk by.) Even though both options have benefits that outweigh their harms, one (changing the tire) is far better than the other, and that is the thing Ken should do. (If you don't think that this accurately describes the case, make up another example that does have this structure.)

Now, consider what (OVP) suggests about this case. Since both giving instructions and changing the tire have positive overall value—the benefits of each outweigh the harms—(OVP) has the absurd consequence of requiring that Ken should do both of these things. But, clearly, Ken should help the man change the tire; he should not just give advice.

The problem with (OVP) is that it looks at only the harms and benefits of a single action. It doesn't take into account how that action compares to alternative actions. Although two of Ken's options are beneficial overall, one action is far more beneficial than the other and that is the action he should take. Similarly, sometimes,

contrary to what (OVP) says, it is right to do a thing with negative overall value. This happens when the best you can do is the "lesser of two evils."

An improved overall value principle would say that you should perform an action just in case its overall value is higher than the overall value of the other things you could do instead. We can formulate this revised ***overall value principle*** as follows:

> **OVP1:** Person (or group) S should do action A if and only if the overall value of the harms and benefits of action A is greater than the overall value of the harms and benefits of any alternative to A that is available to S.

This is a plausible principle, which is used in some of the best moral arguments.

D. Overall Value Arguments

To use (OVP1) in an argument, the premises must state that the conditions specified in (OVP1) obtain. Thus, it isn't enough to point out that some action has harmful (or beneficial) consequences, or even that its overall value is low (or high). Instead, the premises must compare the overall value of an action to the overall value of its alternatives. Thus, an ideal argument showing that an action should be done would take this form:

Complex Moral Arguments (Pattern 1)

1. The only available alternatives for S are actions A_1, A_2, . . .

2. The harms and benefits of A_1, A_2, . . . are C_1, C_2, . . .

3. The overall value of C_1 is greater than the overall value of C_2, and C_3, and . . .

4. (OVP1)

5. S should do A_1. (1)–(4)

An argument using (OVP1) to show that an action should not be done would follow this pattern:

Complex Moral Arguments (Pattern 2)

1. The only available alternatives for S are actions A_1, A_2, . . .

2. The harms and benefits of A_1, A_2, . . . are C_1, C_2, . . .

3. The overall value of C_1 is lower than the overall value of C_2, and C_3, or . . .

4. (OVP1)

5. S should not do A_1. (1)–(4)

Although the moral arguments we typically encounter fall short of these ideal patterns, not all of them do. The following example does conform to the pattern.

Example 4

There are certainly many kinds of animal research that seem justified by any reasonable utilitarian calculus. A case in point is the . . . [work done by] . . . a man named Charles Sterling, who is studying a parasite that causes diarrhea in both animals and humans and kills many children in the Third World every year. There is no way fruitfully to study this parasite in, say, a cell culture, so he uses mice, infecting them with the parasite and thereby inducing a non-lethal spell of diarrhea. . . . Sterling is one of a handful of workers in this area, and he figures, in over-the-phone, off-the-cuff calculations, that all together they cause around 10,000 to 20,000 mice-weeks of diarrheal discomfort every year. The apparently realistic goal is to find a cure for a disease that kills more than 100,000 children a year. Sounds like a good deal to me.[12]

The argument suggested by this passage can be reconstructed along the lines of ideal pattern 1.

Argument 4

1. Sterling's only alternatives are to do his research using mice (*R*) and not to do his research at all (*N*). (EP)

2. The benefit of *R* is that he might find a cure for a serious disease and the harm is that there will be 10,000–20,000 mice-weeks of diarrheal discomfort annually. (EP)

3. The harm of *N* is that 100,000 children will continue to die annually from the disease. (EP)

4. The overall value of the harms and benefits of *R* outweighs the overall value of the harms and benefits of *N*. (EP)

5. (OVP1) (IP?)

6. Sterling should do *R*. (1)–(5)

Evaluating overall value arguments might seem difficult. How can you ever tell whether one action has greater overall value than another? The general principles of argument analysis, however, still serve us well.

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12. Robert Wright, "Are Animals People Too?" *New Republic*, March 12, 1990, pp. 20–27.

Sidebar: Consequences and Possible Consequences

As (OVP1) is stated, it seems to evaluate alternatives in terms of what would actually happen if they were performed. However, in the case of Argument 4, an alleged benefit of Sterling's research is that it *might* lead to a cure for a serious disease. So curing the disease is merely a possible benefit of the research. How do such possible consequences figure into the calculations required to by (OVP1)?

This is a difficult and complex issue. One possibility is to replace (OVP1) by a more complex principle that evaluates alternatives in terms of the quality and likelihood of their consequences. Thus, a small chance for something very good may turn out equal in value to a high chance for something only slightly good. Instead of modifying (OVP1), we can regard the possibility of something good happening as an actual benefit of an action. Thus, Sterling's research has an actual benefit: the possibility of finding a cure for the disease. This possibility is an actual benefit, even if the research turns out in the end not to lead to a cure. There are other ways to deal with possible consequences, but they are best taken up in courses on ethics or moral philosophy. Here we will assume that features such as the possibility of leading to a cure for a disease count as benefits in assessments of actions.

Argument 4 is valid. We can assume for the sake of discussion that premises (1)–(3) correctly identify Sterling's alternatives and their harms and benefits.[13] In effect, we have only Wright's testimony for these premises, which is itself based on what Sterling told him. In this context, those are reasonable premises to accept. So (1)–(3) are all acceptable. Premise (5) is our general principle for moral arguments, and it is acceptable. The key issue, then, is premise (4).

Premise (4) requires comparing the value of two options. Wright's claim is that the overall value of the research is high, that the potential benefit to people outweighs the harm to the mice and thus makes doing the research better than ceasing to do it. This is a reasonable premise, and Wright's argument is strong. Given the available options, there is going to be some pain and discomfort no matter what we do. The issue is which is worse: imposing some minor discomfort on some mice or allowing many children to die and their families to suffer. It seems clear that, in this case, continuing the research has the greatest overall value.

To say that continuing the research is better in this case is not to say that all research involving animals is worthwhile. There could be cases in which the harm to the animals outweighs the benefit of the potential gain for people.

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13. We will not worry about whether he could do research on some other disease instead, or whether it would be better if he took up a different career altogether. It is acceptable in this context to consider only the most reasonable and relevant alternatives.

Some people find it difficult to make judgments of comparative value. While there is no simple formula available to use in such matters, comparisons must be made if we are to decide what to do. If you think that no amount of animal suffering is acceptable, or that the amount of suffering caused by this research is unacceptable, you are not avoiding making a comparative judgment. Rather, you are saying that purposely causing the animals to suffer is worse than allowing 100,000 children to die annually. Difficult as these judgments may be, they are unavoidable if we are to make reasonable decisions about what to do.

Additional information could affect our evaluations of Argument 4. If we learned that there were ways to do the research that did not require any animal suffering, we might then conclude that Sterling has an additional option and that that option has greater overall value. In this case, we would reject premise (1) of the argument, since it incorrectly states the available alternatives. If we learned that the research was extremely unlikely to lead to a cure, we might lower our assessment of its overall value. However, given our present information, the argument is strong.

Evaluation of overall value arguments thus involves the same general procedures as the evaluation of other arguments. Successful evaluations require attention to claims about the nature and consequences of alternative actions. They also require attention to claims about the value of these actions. While judgments about the overall value of actions can be controversial, we can and do form reasonable beliefs about such matters. Successful analysis of moral arguments requires that we think carefully about the arguments and that we apply the standard rules for argument analysis.

EXERCISES AND STUDY QUESTIONS

*1. What would be the consequences of adopting a principle saying that we should never do anything that has a harmful consequence?

2. Simple moral arguments often appeal to universal moral generalizations. These are claims saying that all actions of a certain kind are wrong (or right). A person who thinks that an action of a particular kind is always wrong (or right) thinks that being an action of that kind is an *unoverridable moral factor*. They think that being of that kind is so significant that it always outweighs competing factors. Consider the following universal moral generalizations.
   a. It is always wrong to tell a lie.
   b. It is always right to donate extra money to charity.
   c. It is always wrong to take another person's life.
   Are these generalizations true? If not, are there any unoverridable moral factors?

*3. Principle (OVP) says that you should never do anything whose harms outweigh its benefits. What reason was given for thinking that this principle is false? Give an example illustrating the point.

4. In the text, some possible objections to Argument 1c are mentioned. Explain the objections in more detail. Are they good objections?

*5. According to (OVP1), a person or group should always do that action which has the highest overall value. With this principle in mind, answer the following questions.

    a. Suppose the government can adopt plan *A* or plan *B*. There are no other options. More people benefit from plan *A* than from plan *B*. Does it follow that the overall value of plan *A* is greater than the overall value of plan *B*? Explain.

    b. Suppose that the government can either do nothing or adopt plan *A*. Some people benefit from plan *A*, but more people are harmed by plan *A*. Does it follow that the government should not adopt plan *A*? Explain.

*6. Consider the following objection to Argument 2a:

> It's true that some children will be harmed as a result of mandatory vaccination, but even more would be harmed if there were no mandatory vaccinations.

An objection to the argument is suggested in this comment, but it is not stated in proper form. Which premise is it an objection to? Formulate the proposed objection more precisely and state which premise of the argument it is directed against. Evaluate the objection. When you formulate the objection, identify the general moral principle the objection relies on.

*7. Consider the following comment on Argument 4:

> We can't resolve these issues by looking at the numbers of people saved and animals harmed. Would the author say that the research was right if 40,000 animals suffered, if 100,000 suffered, if a billion suffered? Surely it would be wrong to cause 1 billion mice major discomfort to give one person minor pleasure. Since there is no place to draw the line between this case and any others, we should not permit any amount of mouse discomfort for the purpose of helping people.

    a. As stated, this objection does not apply to any premise in the argument. Does it indirectly cast doubt on some premise? If so, which one?

    b. Suppose someone replied to the critic by saying:

> Surely it would be right to permit the research if it required only 1 mouse to suffer minor discomfort and a billion people were thereby saved. Since we can't draw the line between this case and any others, we should permit any amount of mouse discomfort if it helps people.

> From these two "where do you draw the line" arguments, what can you conclude about the effectiveness of such criticisms?

    c. How would you evaluate Argument 4?

8. Senator Alan Cranston and four other senators became known as the "Keating Five" because of their involvement with Charles B. Keating, a savings and loan

executive accused of a crime. The Senate Ethics Committee singled out Cranston for possible punishment by the Senate and recommended that the entire Senate hear his case. The following passage is from an article about this case.

"What Cranston is arguing is that his case should not go to the floor because what he did was no different in substance from what the other Senators did," Murray S. Flander, Mr. Cranston's press secretary, said today.[14]

Reconstruct and evaluate Flander's argument.

9. People sometimes feel uneasy about imposing their views on others or are reluctant to interfere in the lives of others. The following example raises this issue.

Biz E. Body has good reason to think that his friend, Ms. Take, is about to do something morally wrong.

Is it true that, according to (OVP1), if Biz knows that Ms. Take will do something wrong unless he interferes, then Biz should interfere and prevent her from doing that thing?

Reconstruct and evaluate the arguments in the following passages.

*10. In class one day the teacher announces that there will be a test the following Monday. One of the students, D. Lay, argues that the test should not be given on Monday. Here is his argument:

Some students in the class have other tests on Monday. We won't be able to study adequately for these other tests. We will therefore be at a disadvantage compared to other students in the class. A teacher should never do anything that is disadvantageous to some students in the class. So you shouldn't give a test on Monday.

11. If people are given the freedom to make choices as children, they will grow up to be responsible and thoughtful adults. People should be responsible and thoughtful adults, so they should be given the freedom to make choices as children.

12. If we allow children to watch TV as much as they want to, they spend most of their time watching TV and don't do anything worthwhile. But we want children to do worthwhile things. It follows that we shouldn't allow them to watch TV as much as they want to.

13. Smoking on elevators is harmful to nonsmokers. Moreover, most people support a ban on smoking on elevators. Therefore, there should be a ban on smoking on elevators.

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14. Richard L. Berke, *New York Times*, July 22, 1991, p. A11.

14. Legalization is not the answer [to the drug problem] . . . without laws the number of deaths related to use of narcotics would rise. Laws don't kill people, drugs and alcohol do.

People often mention that organized crime dropped when alcohol became legal but hide the fact that unorganized crime such as rape, domestic violence and DWI went up. There are clearly more people addicted to alcohol now than there were in the days of Prohibition. That proves that legalizing a chemically addictive substance will cause the use of that substance to increase.[15]

15. This exercise has been intentionally omitted from the text.

IV. COMMON PROBLEMS IN MORAL REASONING

There are a wide variety of ways in which people's attempts at moral argumentation go wrong. Here we will discuss a few kinds of errors that are especially common. One goal here is to show how to keep some moral discussions from degenerating into name calling.

A. Moral Inconsistency Arguments

The following illustrates an extremely common sort of moral argument.

Example 5

The Issue of Animal Rights

Before anyone gets self-righteous with me and starts pontificating that people who wear furs are not socially responsible, they had better look at all the "socially responsible" choices they are making. For instance, they'd better be wearing no synthetic fibers, because chemicals used to process fibers pollute the atmosphere. And they better be wearing no cotton because it depletes the soil and requires tons of pesticide. And they had better not own any gold or diamonds because 90 percent of that stuff comes from South Africa.

They'd better wear no leather, use no soap and wear no silk. Of course, they can't eat meat, chicken or fish.

So next winter, if you want to give me a hard time about my fur coat (which I will probably be wearing for 15 years), I promise to be a good listener. But only if you are dining on roots and wearing something extremely attractive in hemp.[16]

In this essay the author clearly wants to make some point about the animal rights issue. There are numerous ways to attempt to formulate her claims as an argument.

15. William F. Beyerbach, Letter to the editor, *Rochester Times-Union*, September 14, 1989, p. 9A.

16. Judy Markey, *Rochester Democrat and Chronicle*, June 18, 1989, p. 10D. Reprinted with the permission of Creators Syndicate.

One possibility is that her target is animal rights activists who criticize people for wearing furs. She seems to think that if these people make that criticism, then they must avoid all the other activities she mentions. Perhaps her idea is that critics of fur wearers are inconsistent if they do any of the other things she lists in her essay. If this is her point, her argument might go something like this:

Argument 5

1. Anyone who criticizes others for wearing furs is inconsistent if he or she wears synthetic fibers, cotton, or leather or owns gold or diamonds or uses soap or eats milk, meat, chicken or fish. (EP?)

2. Almost everyone who criticizes others for wearing furs does wear synthetic fibers, cotton, or leather [and so on]. (IP)

3. Almost everyone who criticizes others for wearing furs is inconsistent. (1), (2)

Arguments like this are known as *moral inconsistency arguments*. There may be some sense of "inconsistent" in which premise (1) is true, and perhaps this is a strong argument. But a striking fact about Argument 5 is that, taken literally, it tells us nothing about the morality of wearing furs! Presumably, the writer thinks that it is not wrong to wear furs; her argument seems to be intended to support that conclusion. However, as we've formulated her argument, it's simply about the consistency of opponents of wearing fur.

It's not too difficult, however, to reformulate the argument so that it addresses the issue rather than the people, as follows:

Argument 5a

1. If it is wrong to wear furs, then all of the following things are also wrong: wearing synthetic fibers, cotton, or leather; owning gold or diamonds; using soap; and eating milk, meat, chicken or fish. (EP?)

2. It is not the case that all these other things are wrong. (IP)

3. It is not wrong to wear furs. (1), (2)

This argument is valid. Premise (2) isn't all that silly; most of us would accept it. Notice that to accept (2) is just to agree that at least some of the items on the list are not wrong. But where does (1) come from? What would make all these different actions have the same moral status?

We can get part of the way toward answering these questions by assuming that the author is attributing to animal rights defenders the following animal rights principle:

AR: It is wrong to do anything that causes harm to animals or requires that animals be harmed.

Animal rights activists could use (AR) to argue against wearing furs in a straightfor-
ward way. Their argument would be

1. Wearing furs requires that animals be harmed.

2. (AR)

3. It is wrong to wear furs.

The author may be trying to show this argument is weak by showing the extraordi-
nary consequences it has. Several of the things she lists are also harmful to animals,
and thus they would be wrong as well.

Of course, the writer goes a bit overboard in her list of things that opponents
of wearing fur must also avoid. She seems to lump animal rights activists with envi-
ronmentalists and attributes to them a principle saying that it is wrong to do anything
that harms the environment in any way. She groups these things together under the
heading of "social responsibility." (Of course, it's unlikely that she thinks a person has
to avoid all these things in order to be socially responsible.) It's probably most char-
itable to just drop this aspect of the argument from the reconstruction altogether. Ani-
mal rights defenders can plausibly argue that the reason to avoid harming animals is
that they suffer and feel pain, whereas the environment doesn't, so the two cases are
not analogous. Tossing in the points that seem to be about environmental damage is
probably best viewed as a rhetorical ploy on the writer's part. It is best to drop it from
our reconstruction.

If the author's point is to make an argument about principle (AR), we can recon-
struct her reasoning as follows:

Argument 5b

1. If (AR) is true, then it is also wrong to wear leather or eat milk, meat,
chicken or fish (and all things that involve harm to animals).

2. But these other things are not wrong.

3. (AR) is not true.

Thus, she may think that she has refuted the main argument of those who oppose
wearing fur. By this interpretation, she isn't arguing directly for the conclusion that it
is morally permissible to wear fur; she is just refuting an argument for the conclusion
that it is wrong to wear fur.

In evaluating Example 5, we should consider the role of rhetoric in the essay.
Any principle that implies that all the things on the author's list are wrong is
extremely dubious. It's very hard to see how wearing cotton or using soap is wrong.
But since those actions have nothing to do with the question at hand, we eliminated
them from our final reconstruction. At most, the animal rights defenders need only
appeal to a principle such as (AR), and so the writer must use as a premise the claim

that it is not wrong to eat animals. That premise is not obviously true, so, stripped of the rhetoric, her argument looks weaker.[17]

Furthermore, opponents of wearing fur don't have to appeal to a principle as broad as (AR). They don't have to say that *all* cases of harming animals are wrong. They can accept the author's argument against (AR) and instead appeal to (OVP1), arguing that the pain caused to animals by trapping them for furs just isn't worth it. They might concede that the value to people of eating animals makes their use for that purpose justifiable. So, we might admit that the author has made a good case against (AR) but deny that she has shown that opponents of wearing furs have no strong arguments on their side. She hasn't shown that wearing furs must be evaluated in the same way as eating meat or fish.

This discussion illustrates some common points about moral arguments, and about argumentation generally. First, as we've interpreted the essay, the author argues by refuting an argument she thinks her opponents endorse. However, the argument she is refuting is left implicit in her discussion; the reader must figure it out. Attributing to her the various arguments we have is going a bit out on a limb, but we must often do that in order to extract anything of interest from a passage.

Second, the initial interpretation of the argument made it a relatively uninteresting case against the people who hold an opposing view. It was not about the issue itself. In our next reconstruction, we extracted from her comments an argument that at least is about an important issue. The advocates of animal rights are inconsistent if they don't follow all the implications of their own principle. But that's just a point about them. If this letter is to be of any interest to us, it should tell us something about what we should do. Is it okay for us to wear furs? That's the interesting question. This letter contributes to that discussion by refuting an argument for the view that we shouldn't wear furs. As a general rule, it's a good idea to keep your discussion focused on the issue rather than on the people who take one side or the other.

Even a simple example like Example 5 can be used to begin a discussion of serious issues. We started with what the author actually said, which seemed to be an emotional outburst against opponents of wearing fur. But we used this to get to a discussion of what the underlying issues are, to explore whether opponents of wearing fur really do have any strong arguments on their side. One goal of analyzing moral arguments is to get a position in which you can identify and discuss the best arguments.

B. Moral Principles

In defending moral arguments people often appeal to moral principles that they think can be used to establish the truth about some moral issue. Sometimes these princi-

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17. There are further complications. Presumably one must harm an animal in order to prepare it for dinner, but it is less than clear that cows must be harmed for people to drink milk. So perhaps drinking milk doesn't belong on her list.

ples are difficult to understand, and the arguments based on them can be confusing. The following example illustrates this sort of argument.

Example 6

The Libertarian Principle and Smokers' Rights

It seems to me that the controversy over the rights of smokers vs. those of non-smokers is very readily resolved. One need only look to the libertarian viewpoint for the solution: each person has the right to behave in any manner he wishes so long as his actions do not infringe upon another person's equal right.

    Let's apply the logic to smoking in airplanes (it will also apply in any other circumstance). By paying for a ticket, the individual has purchased the right to act in any manner he chooses so long as his actions do not infringe upon the rights of those around him. He can read, he can play cards, he can do anything which can be confined to his own airspace. He may not stretch himself across two seats; he may not play a trumpet; he may not set off sticks of dynamite. All of these actions infringe upon the rights of those occupying the surrounding space.

    Smoking falls into this latter category. He may smoke if he wishes, just as long as the smoke is confined to his own airspace. As soon as it drifts into the space of other passengers, he is violating their rights.[18]

The author claims that the libertarian principle resolves the controversy about the right of people to smoke on airplanes. His letter implies that there is some strong argument that has the libertarian principle as a premise and has as its conclusion the proposition that people do (or do not) have the right to smoke on airplanes.

    Let's begin by trying to identify the libertarian principle. The author writes:

> Each person has the right to behave in any manner he wishes so long as his actions do not infringe upon another person's equal right.

The problem here is the phrase "so long as." If it means the same as "if," the principle is

L: If by doing something you do not infringe on another person's equal right, then you have the right to do that thing.

(L) is a general principle. Applied to smoking on an airplane, it yields

A.   If by smoking on an airplane you do not infringe upon another person's equal right, then you have the right to smoke on an airplane.

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18. Jerry C. Nelson, Letter to the editor, *Rochester Times-Union*.

Let's assume for the moment that (L) is the premise and that the author wants to derive (A) from it. This gives him a principle about smoking on an airplane.

Next, we should try to identify the writer's conclusion. People reading this letter might disagree about exactly what he means, but most would probably say that the conclusion is that you do *not* have a right to smoke on an airplane.[19] As a first stab at his argument, then, we might try the following:

Argument 6

1. If by doing something you do not infringe on another person's equal right, then you have the right to do that thing. (EP)

2. If by smoking on an airplane you do not infringe on another person's equal right, then you have the right to smoke on an airplane. (1)

3. You do not have the right to smoke on an airplane. (2)

This argument is ill-formed. Although (2) does follow from (1), (2) is a conditional; by itself, it does not imply (3).

You might think that you could improve the argument by adding a premise saying that by smoking on an airplane you do infringe on another person's equal right. The whole argument then would look like this:

Argument6a

1. If by doing something you do not infringe on another person's equal right, then you have the right to do that thing. (EP)

2. If by smoking on an airplane you do not infringe on another person's equal right, then you have the right to smoke on an airplane. (1)

3. By smoking on an airplane you do infringe on the equal rights of other people. (EP)

4. You do not have the right to smoke on an airplane. (2), (3)

Evaluate this argument before reading on.

Argument 6a is also ill-formed. The inference from (2) and (3) to (4) is one of the invalid patterns. In terms of necessary and sufficient conditions, (2) states one sufficient condition for having a certain right, while (3) says that that particular sufficient condition is not satisfied. It does not follow that you lack the right. The pattern here is

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19. Some readers might be tempted to think that the conclusion is that you do have the right to smoke on an airplane provided you can keep the smoke in your own airspace. But notice that the author says that smoking falls into the same category as playing a trumpet and this is something an airplane passenger "may not" do.

If *P* then *Q*.
~*P*
~*Q*

There are several ways we might try to fix things up. The best option is to revise the libertarian principle. Our first version said that if you don't infringe on the rights of others, then you do have a right to do a thing. We might turn this premise around to say that if you do infringe on the rights of others, then you don't have a right to do a thing. The revised argument would look like this:

Argument 6b

1. If by doing something you infringe on another person's equal right, then you do not have the right to do that thing. (EP)

2. If by smoking on an airplane you infringe on another person's equal right, then you do not have the right to smoke on an airplane. (1)

3. By smoking on an airplane you infringe on the equal rights of other people. (EP)

4. You do not have the right to smoke on an airplane. (2), (3)

This argument is valid. The first premise, perhaps, states the libertarian principle in a plausible way, and the argument reaches what does seem to be the intended conclusion.

But before we conclude that the letter has resolved the controversy about smoker's rights, we would do well to look at premise (3). How did the writer arrive at the claim that by smoking on an airplane you infringe on the equal rights of others? That may seem like a sensible claim, but how, exactly, can it be defended?

You might think that (3) is a plausible premise. By smoking on an airplane, you cause nonsmokers to breathe smoked-filled air. You might think that they have a "right" to air without smoke. The author, in fact, seems to give a brief argument for this conclusion. He says that a person "can do anything which can be confined to his own airspace." Since smoking can't be confined to one's own airspace, we can't do it. Let's reconstruct the airspace argument.

Argument 7

1. If an activity can be confined to your own airspace, then by doing that activity you do not infringe on the equal rights of others. (EP)

2. Smoking on an airplane can't be confined to your own airspace. (EP)

3. Smoking does infringe on the equal rights of others. (1), (2)

The problem here should be obvious. This airspace argument is ill-formed, just like Argument 6a about smoking on an airplane. We might try revising it in a manner similar to the way in which we revised that one.

Argument 7a

1. If an activity can't be confined to your own airspace, then by doing that activity you do infringe on the equal rights of others. (EP)

2. Smoking on an airplane can't be confined to your own airspace. (EP)

3. Smoking on an airplane does infringe on the equal rights of others. (1), (2)

This argument is valid, and combining it with Argument 6b may effectively reconstruct the author's intended argument. In other words, he uses airspace Argument 7a to establish that smoking on an airplane does infringe on the equal rights of others. He then uses this premise, along with the libertarian principle, in Argument 6b to establish his main conclusion about smoking on an airplane.

Such a reconstruction might seem fairly persuasive. Unfortunately, premise (1) in Argument 7a is preposterous. Before reading on, see if you can figure out what's wrong with it.

The problem is quite simple. There are any number of activities that can't be confined to one's own airspace. When you breathe, the air you exhale goes into the airspace of others. When you eat, the smell of your food enters the airspace of others. If you wear a colorful tie, light reflects off it into the airspace of others. Premise (1) implies that all these activities violate the equal rights of others. Since this proposition is absurd, Argument 7a is weak.

Many of us are likely to agree with the claim that we violate the rights of others on an airplane when we play a trumpet or stretch across two seats. Many of us may think that smoking is indeed comparable to these actions. However, the hard question is what separates these actions, which we agree are not allowed, from breathing, eating, and wearing a loud tie, which are allowed. Nothing in the letter explains why smoking fits into this objectionable category. Libertarian principles, by themselves, don't resolve this issue. Perhaps the overall value of some of these activities, such as breathing and eating, is sufficiently great to make it best to permit them. In the case of loud ties (or smelly foods), which can be somewhat annoying, this annoyance is not sufficient to warrant restricting the freedom of others. But in the other cases, smoking included, the overall balance may favor prohibition. In any case, the libertarian principle does not "very readily resolve" this issue, as the author claims.[20]

In this example, we've seen how the method of argument analysis can be applied to a fairly interesting moral argument. The example also shows how we can revise and improve on a reconstruction and illustrates the difficulty of using relatively simple moral principles to resolve complex issues.

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20. Even if the author's intended conclusion were that you can smoke on airplanes, the point made here would still apply. Why would this activity, which does violate the airspace of others, be permitted, when playing a trumpet, for example, is not? The writer provides no answer.

EXERCISES AND STUDY QUESTIONS

1. Are the criticisms of the arguments in Example 5 good ones? Is there a better way to interpret the passage?

2. Are the criticisms of the letter in Example 6 good ones? Is there a better way to interpret the letter?

3. Discuss the following criticism, which has been directed at some opponents of feminism.

> You say that women should stay at home and care for their families. But you don't follow that advice yourself. You write books and travel around the country giving lectures. That refutes your antifeminist teachings.

4. Analyze the arguments in the following letter.

We Can't Turn Animals into Parts Shops

The transplantation of a baboon liver into a human being (front page, June 29) has serious and disturbing implications. The advent of animal-to-human organ transplants, along with genetic engineering techniques that manipulate the bodies of animals to produce biological products, has made real the possibility that the animal kingdom will become nothing more than spare parts supply houses and drug-producing factories for humankind. This will entail enormous suffering for animals. It is science without ethics.

A chilling glimpse Into the thinking behind such science was provided in an interview in the *Sacramento Bee* last November with David Larson, co-director of the Center for Christian Bioethics at Loma Linda University, home of the Baby Fae experiment, which transplanted a baboon heart into a human infant.

According to Mr. Larson, who sat on the committee that approved the dramatically unsuccessful transplant, the value of a life can be measured by the capacity for "self-determination." He stated: "If a primate's capability was higher than that of a human—say, a severely mentally handicapped child—I think it would be appropriate to support the opposite approach of Baby Fae, a transplant from a child to save the life of a healthy baboon or chimpanzee." Such bankrupt ethics devalue all life and encourage the exploitation of the weak to benefit the strong.

Medicine's penchant for dramatic and expensive interventions, which benefit the few who can afford treatment, must be replaced by preventive medicine and universal health care to benefit the many. This will lead to a healthy population and to decreases in the disorders that these risky and draconian procedures are designed to remedy.[21]

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21. Suzanne E. Roy, Letter to the editor, *New York Times*, July 16, 1992.

V. SUMMARY

Moral propositions are propositions saying that some action is right or wrong, moral or immoral, or should or should not be done. Moral arguments are arguments that have moral propositions as their conclusions. Moral arguments are common, but they are particularly difficult to deal with and often evoke argument stoppers.

One way to deal more effectively with moral arguments is to carefully identify their conclusions. It is easy to confuse arguments about what should or should not be done (genuine moral arguments) with other arguments about what the law on some topic is, what majority opinion on a topic is, what the consequences of some action would be, and other nonmoral issues. Furthermore, people often use incomplete sentences to state their moral conclusions. A sentence such as "Capital punishment is wrong" is incomplete, since it lacks a quantifier. To make it complete, you must add a quantifier so that it says that all cases of capital punishment are wrong, most cases are wrong, or cases of some specified type are wrong. Some of the confusion and controversy over moral issues results from the use of incomplete moral sentences.

People often respond to moral arguments with argument stoppers such as "That's a matter of opinion" or "That's an unresolvable dispute" or "Morality is relative." While some of these remarks have some point, none of them constitutes a good response to a moral argument. In each case, the response fails to take up any specific claim in the argument. The temptation to respond to moral arguments in these ways can be reduced by thinking of moral arguments as tools you can use to come to your own conclusions (rational beliefs) about moral issues rather than as a means of convincing others and resolving moral disputes. Even if morality is, in some sense, mere opinion or relative, individuals need to have beliefs about what they should do, and those beliefs are best formed on the basis of good arguments rather than bad arguments. So, to arrive at your own beliefs, you must evaluate moral arguments carefully and not dismiss them with argument stoppers.

When analyzing moral arguments, all the standard elements of argument analysis apply. We identify conclusions and premises, clarify them, add implicit premises, and assess the resulting arguments for validity and strength.

In arguing about a moral issue we often consider the harms and benefits of possible actions. Simple moral arguments argue for or against doing something on the grounds that the action has some beneficial or harmful feature. They follow these patterns:

Simple Moral Arguments (Pattern 1)

1. Action x has property P.

2. All actions having property P are right (wrong).

3. Action x is right (wrong). (1), (2)

Simple Moral Arguments (Pattern 2)

1. All actions of kind A have property P.

2. All actions having property P are right (wrong).

3. All actions of kind A are right (wrong). (1), (2)

You can replace "right" or "wrong" in these arguments with "should be done" or "should not be done" or "moral" or "immoral" or any other term of moral evaluation. It is also possible to form cogent arguments by replacing "all" with a different quantifier.

More complex moral arguments compare the overall value of an action with the overall value of its alternatives. These arguments make use of the overall value principle:

OVP1: Person (or group) S should do action A if and only if the overall value of action A is greater than the overall value of any alternative to A that is available to S.

This principle best fits into arguments following these patterns:

Complex Moral Arguments (Pattern 1)

1. The available alternatives for S are actions A_1, A_2, . . .

2. The harms and benefits of A_1, A_2, . . . are C_1, C_2, . . .

3. The overall value of C_1 is greater than the overall value of C_2, and C_3, and . . .

4. (OVP1)

5. S should do A_1. (1)–(4)

Complex Moral Arguments (Pattern 2)

1. The available alternatives for S are actions A_1, A_2, . . .

2. The harms and benefits of A_1, A_2, . . . C_1, C_2, . . .

3. The overall value of C_1 is lower than the overall value of C_2, or C_3, or . . .

4. (OVP1)

5. S should not do A_1. (1)–(4)

Many moral arguments do not conform to any of these patterns, although it is often possible to recast arguments so that they do.

An evaluation of a moral argument proceeds in the standard way. You should first assess arguments for validity and cogency. Once the argument is well-formed, you

should focus on individual premises. The most troublesome part of the evaluation of moral arguments is often the evaluation of premises asserting the overall value of things. Although there are no simple rules to use when evaluating such premises, you should evaluate them on the basis of whatever information you have and come to the most reasonable conclusion you can. Our fallibility and lack of complete information are not grounds for casually dismissing moral arguments.

There are several fairly common ways in which moral arguments, and discussions of moral issues, go astray. One common problem is to confuse arguments about the character or consistency of the people who take one side of an issue with a discussion of the issue itself. Keeping clear about the conclusion of a moral argument, and the significance of any proposed conclusion, can help you avoid this sort of confusion. Moral arguments often appeal to moral principles of various sorts. Simplistic general principles often are incorrect, and careful analysis will reveal their flaws.

CHECKLIST OF KEY TERMS

- moral argument
- moral proposition
- unresolvable dispute
- moral code
- relativity of morality
- harm
- benefit
- simple moral argument
- general moral principle
- overall value
- overall value principle
- moral inconsistency argument

CHAPTER EXERCISES

1. Review your argument notebook to find discussions of moral issues. Do you find that people use argument stoppers? Do you find that people confuse moral and nonmoral issues?

2. In the material you've collected, find an example of a moral argument in which someone argues for or against something on the basis of a single harm or benefit. Find an example in which someone compares the overall value of alternatives. Reconstruct the arguments.

3. Pick several essays from your notebook, or find some new ones, about moral issues that you find especially interesting. Analyze the arguments in these essays, paying careful attention to keeping clear about the exact issues under discussion.

4. Review the arguments people sometimes give for thinking that the standard method of argument analysis does not apply to moral arguments. Find the reply that you find most confusing or unpersuasive. Treat the reply as an argument for analysis. Reconstruct and evaluate the argument.

Each of the following passages contains a discussion of some question of morality or social policy. In each passage, identify clearly the issue under discussion, distinguishing moral issues from nonmoral issues. Reconstruct and evaluate the arguments you find. (Some of the moral arguments may not conform to the standard patterns discussed in this chapter.)

5. *Background:* Shortly before the scheduled publication of the novel *American Psycho* by Bret Easton Ellis, the prospective publisher, Simon and Schuster, decided to withdraw publication on the grounds that its descriptions of murder and sadism were too gruesome. A controversy concerning this decision ensued. Among the issues that arose was one concerning an apparent inconsistency on the part of the company that owns Simon and Schuster, Paramount Communications. That company also owns Paramount Pictures, which regularly releases extremely violent gangster and horror movies. What follows is an excerpt from an article by Richard Bernstein discussing this issue.

"American Psycho," Going So Far That Many Say It's Too Far

Mr. Snyder [Simon & Schuster's editor in chief] also argues, defending his decision to cancel publication of Mr. Ellis's novel, that, strange as it may seem, a book makes a deeper impression than a movie, and thus, in a sense, a different standard legitimately applies to the different media.

"There's a lot of gratuitous violence in movies, and you also read about a lot of gruesome events in the newspapers," he said. "Unfortunately, perhaps, you get sort of inured to it. But, when you really have to sit down and in the privacy of your own mind read a book word by word, it's a more powerful experience. The violence has a greater impact. You become the person you are reading about."

Is there, in fact, an inherent greater power in books to involve the mind and the emotions? It could certainly be argued that however violent and even stomach-churning some movies are these days, they lack one essential ingredient of horror. None of the large studio productions contain any real exploration of the mind, of the psychological interiors of the characters carrying out murders. Movie goers may be inundated with gore, but they are not led to make an identification between their own unconscious and those of the character on the screen.

. . . Watching a movie, moreover, is a largely public experience, something that is done in a large room in the presence of other people. If it involves fright, horror, disgust, it involves those things in company. Reading

is by its very nature private and intimate. The effect may be less immediate, less spectacular, but it is, perhaps, deeper and more enduring.[22]

6. Free Speech Not Issue in Misogynist Book

The Authors Guild and many publishers are crying "censorship" in the wake of Simon & Schuster's cancellation of Bret Easton Ellis's book *American Psycho*. But censorship is not the issue in the publisher's late change of heart. There is an important distinction between censorship and editorial judgment. Publishers are supposed to be gatekeepers, to exercise judgment, and to invest their resources in promoting the best work they can find.

Simon & Schuster made the right decision for the wrong reasons when it canceled Mr. Ellis's misogynist novel only after criticism of the book's graphic violence against women became public. Some are concerned that corporate control of the print and electronic media led to cancellation of this book. More worrisome is corporate pressure to create best sellers out of thin air and the latest literary fashion.

Simon & Schuster's error was not in canceling the book but in having accepted the manuscript. Those who equate our negative response to Mr. Ellis's shocking misogyny with the naive readings of those who censored James Joyce's *Ulysses* and D. H. Lawrence's *Lady Chatterley's Lover* are missing the point.

Surely, arbiters of taste in the future are not going to praise works that connect dismembered female bodies with erotic pleasure. If that's where publishing is headed, God help us all.[23]

7. Keep Prayer and Penicillin Separated

David and Ginger Twitchell were found guilty last week of "reckless and wanton" conduct, involuntary manslaughter, because they treated their son Robyn with prayer instead of medicine. . . . When their 2½-year-old was sick and in pain, they called upon the church instead of the doctor. And when their 2½-year-old died, it was because of a simple, curable, bowel obstruction. . . .

However open-minded our post-modern attitudes are toward healing, however skeptical we are toward doctors, when we act as a society in the courts or legislatures, we have to distinguish between prayer and penicillin.

Faith and reason may both have their place in healing, but not the same place. The state must remain neutral between religions, defending everyone's right to believe. But that doesn't mean it must remain neutral between "treatments," as if spiritual healing and science were equal options for curing a bowel obstruction.

Believing in laetrile doesn't make it cure cancer. Rejecting the germ theory doesn't make it less a fact. We cannot equate a church practitioner with

22. Richard Bernstein, " 'American Psycho,' Going So Far Many Say It's Too Far," *New York Times*, December 10, 1990, pp. C13 and C18. Copyright © 1990 by The New York Times. Reprinted by permission.

23. Wendy J. Strothman (Director, Beacon Press), Letter to the editor, *New York Times*, November 28, 1990, p. A20.

a surgeon any more than we can equate the story of creation with the theory of evolution.

So we come down to the hard facts. To sympathize with the Twitch-ells is natural human emotion. But to side with them in the "treatment" of their son is to abandon both Robyn and reason.[24]

8. If Unborn Have Rights, Those Must Be Equal

Repeatedly we have heard President Bush (and Vice President Quayle) condemn abortion except in those instances when pregnancies have resulted from rape or incest. To this point, I ask: if abortion is ever murder, then isn't it always so?

To maintain that the destruction of a human fetus is a criminal act in one breath, yet permissible under the circumstances of rape or incest in the next breath, is not logically or morally defensible. If the right to exist is a right that dawns at the moment of conception, every fetus is deserving of this right. If a fetus is an innocent victim when aborted during a pregnancy that arose from "ordinary circumstances," is it any less innocent if conceived during rape or incest?

Apparently, President Bush, and those who share this view, believe the unborn's inviolable right to life is not inviolable after all. What else explains why some would not be privy to it? With this in mind, one cannot help but wonder what basic principle stands behind such a belief. If there is an ideal supporting this position, I cannot identify it. It simply represents unsound thinking.

Perhaps if those who hold with this empty principle of exceptions were shown its intrinsic fallaciousness, they would be forced to rethink their position. They thus might see that abortion is an issue with no middle ground. There are two sides and between these only a dark chasm.

Were this issue more frequently painted in its two proper colors, black and white, I believe that a majority of Americans would side with the woman and her right to choose. To most, the "injustice" of a Government forcing the victims of rape and incest to deliver the offspring of their assailants would be far less tolerable than the "injustice" of abortion.[25]

9. Vengeance Remains Sole Reason to Support the Death Penalty

[Your editorial] notes that New York's Governor Mario M. Cuomo "can't tolerate the thought of executing an innocent person." This is an excellent reason for Mr. Cuomo and all of us to oppose the death penalty.

Innocent people have been and will be executed. According to a 1987 study, more than 350 people have been erroneously convicted of crimes potentially punishable by death in this century; 116 of them were sentenced to death, and 22 were executed. New York has the dubious distinction of leading all states with 8 wrongfully executed defendants.

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24. Ellen Goodman, "Keep Prayer and Penicillin Separated," *Rochester Democrat and Chronicle*, July 14, 1990, p. 6A. © 1990 Washington Post Writers Group. Reprinted with permission.

25. David Allison, Letter to the editor, *New York Times*, January 9, 1992, p. A22.

There are numerous other reasons to oppose the sanctioned, premeditated killing of offenders. The only legitimate argument that could be advanced for the death penalty, that it is a deterrent, is easily refuted, and it may result in more killings.

In Texas, which has executed more people than any other state in the last decade, the state's Attorney General (its chief law enforcement officer) concluded that the death penalty did not have a deterrent effect. Having interviewed almost all who were executed, he concluded that the death penalty never crossed their minds when their crimes were committed. In another study, not one of 145 convicted murderers thought of being sentenced to death before committing the crime.

A study in New York of more than 600 executions between 1907 and 1963 showed that on average there were two more homicides than usual in the month following an execution, one more in the second month.

Just as there is no evidence that the death penalty acts as a deterrent, executions also do not prevent the tragic killing of police officers. It may result in more police officers being killed. Federal Bureau of Investigation statistics show law-enforcement officers are killed at an 80 percent higher rate in states that execute than in those without a death penalty.

The death penalty operates in a highly discriminatory manner. Studies have found that murder defendants charged with killing white victims have been at least 4 times, and as much as 11 times, more likely to receive a death sentence than those charged with killing black victims.

Further, estimates in several states, including New York, indicate that the cost of execution exceeds the cost of imprisoning prisoners for life and also imposes an incredible burden on the criminal justice system. The criminal justice section of the New York State Bar Association, comprising prosecutors and defense lawyers, opposes the death penalty in view of the huge costs.

Vengeance is the sole reason left for supporting the death penalty. The New York State Legislature must not allow vengeance to dictate public policy. It must resist the temptation to assuage our understandable frustration with crime and murder by playing on the misperception that is held by many of us that the death penalty will be a partial solution. Lives are at stake.[26]

10. Can Animals Have Rights?

H. J. McCloskey argues that animals cannot have rights because they are incapable of having interests. There is an important insight expressed in the requirement that a being can have rights only if it has interests. This can be appreciated if we consider just why it is that mere things cannot have rights. Consider a very precious "mere thing"—a beautiful natural wilderness, or a complex and ornamental artifact, like the Taj Mahal. Such things ought to be cared for, because they would sink into decay if neglected, depriving some

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26. David C. Leven, Letter to the editor, *New York Times*, July 3, 1991, p. A18.

human beings or perhaps even all human beings, of something of great value. Certain persons may even have as their own special job the care and protection of these valuable objects. But we are not tempted in these cases to speak of "thing-rights" correlative to custodial duties, because, try as we might, we cannot think of mere things as possessing interests of their own. Some people may have a duty to preserve, maintain, or improve the Taj Mahal; but they can hardly have a duty to help or hurt it, benefit or aid it, succor or relieve it. Custodians may protect it for the sake of a nation's pride and art lovers' fancy; but they don't keep it in good repair for "its own sake," or for "its own true welfare," or "well-being." A mere thing, however valuable to others, has no good of its own. The explanation of that fact, I suspect, is that mere things have no conative life; neither conscious wishes, desires, and hopes; nor urges and impulses; nor unconscious drives, aims, goals; nor latent tendencies, directions of growth, and natural fulfillments. Interests must be compounded somehow out of conations; hence mere things have no interests. A fortiori, they have no interests to be protected by legal or moral rules. And without interests a creature can have no "good" of its own, the achievement of which can be its due.[27]

11. The Forests and the Fees

In an effort to pressure Congress to increase the National Park Service budget, the Wilderness Society has distributed a list of cutbacks Americans are likely to encounter at their favorite parks this summer.

Though Congress appropriated more than $1 billion for fiscal 1993, the National Park Service says it is not enough to maintain services at 1992 levels. So, Yosemite is closing two campgrounds, Cape Hatteras National Seashore is reducing lifeguard service and Shenandoah National Park delayed opening a campground by three months.

There's an answer to these problems: raise entrance fees to a level that begins to cover operating costs.

Environmentalists don't want their constituents to pay the costs of services at the national parks. But they should pay their way. Here's why.

Higher fees can help reduce the deficit.

The subsidies to hikers and backpackers are huge. Fees collected from national parks and campgrounds totaled $60 million in fiscal 1992, less than 25 cents per visitor. If each of the more than 250 million visitors had paid around $3.50, the National Park Service would have been self-supporting.

Higher fees will give recreation users clout they lack now.

Higher fees can improve resource management—if a share is left with the parks and forests where they are collected. Most recreational fees go directly to the Treasury, leaving park managers to grovel before Congress, sometimes with poor results. Consider Yellowstone. Its $17 million annual operating budget is appallingly small for such a heavily used park. In addition, there is a backlog of road construction and building-maintenance projects totaling $250 million.

27. Adapted from Joel Feinberg, "On the Rights of Animals and Unborn Generations," in Regan and Singer (eds.), *Animal Rights and Human Obligations* (Englewood Cliff, N.J.: Prentice Hall, 1976), pp. 190–96.

As for the Forest Service, its recreation fees go to the Treasury or to states and counties, not to the agency. One reason timber interests have so much influence in Forest Service policy is that the agency keeps 25 percent of the revenues from timber sales. If hikers, hunters and other recreational users were paying customers, their payments would capture the attention of the agency, too.

Higher fees are morally right.

An argument often raised against recreational fees is that higher fees would deny the poor an opportunity to enjoy nature. This is as bogus as arguing that agricultural subsidies preserve the family farm. By and large, it unfortunately isn't the poor who use our parks; it is the affluent.

A survey reported in the *Journal of Leisure Research*, for example showed that 61 percent of wilderness users in 1985, the most recent year for which data are available, had incomes over $25,000 (a year when the median income was $23,618). Fifty-seven percent listed their occupation as "professionals." Readers of *Sierra*, the magazine of the Sierra Club have household incomes twice that of the average American. Environmental magazines are more likely to feature Rolex and BMW than Timex and Volkswagen advertisements.

Even less developed countries recognize that travelers will pay for parks. Guatemala charges $5 per person per day to visit Tikan, the Mayan ruin. Environmentalists and outdoor enthusiasts who use Federal lands must start paying their fair share The result would be better-managed parks and at least a crimp in the deficit.[28]

12. Assisted Suicide Puts Us All at Risk

"All social engineering," writes a contemporary moral theologian, "is usually preceded by verbal engineering." So it is in the current debate over the so-called "right to die."

All human beings have certain inherent rights, simply by virtue of their humanity. The writers of our nation's Constitution believed such rights to be God-given.

A human being needs rights in order to prevent another or others from denying or depriving something which is rightfully his or hers. A person can be denied the opportunity to exercise free speech; therefore, a right is needed to protect it. Someone can attempt to deprive you of your very life. Therefore, we all have an inherent right to life.

But death is of a different order than the above-mentioned. Death is not a positive good; it is the negation of one—life. The utter inevitability of death cannot be denied. Ultimately, no human has the power to deprive you of the experience of death.

My reason for stating this obvious fact is to assert that where the possibility for a given human good to be deprived does not exist, there can be no positing of the existence of a human right. Thus, to claim the existence

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28. Terry L. Anderson, "The Forests and the Fees," *New York Times*, June 28, 1993, p. A17. Copyright © 1993 by The New York Times Co. Reprinted by permission.

of a "right to die" amounts to philosophical nonsense, or worse, semantic chicanery.

Let us be linguistically honest. What physician-assisted suicide is really about is the further extension of an erroneously reasoned (but nevertheless granted) legal "right" to murder. Tragically, in 1973, the U.S. Supreme Court, in *Roe v. Wade*, decided to extend just such a "right" to those who perform abortions. This was the first step onto the proverbial slippery slope of moral and cultural decline, the slope atop which our society now unsteadily stands.

Today, those such as Dr. Jack Kevorkian and the Hemlock Society are seeking a judicial extension of legalized murder to include not only the pre-born, but the terminally ill as well. They seek an expansion of the logic which yielded the decision in *Roe v. Wade*.

That decision drove a terrible wedge into a U.S. legal code which previously had been informed by the Judeo-Christian mores of our Western heritage, a heritage which holds as a first principle the inviolability of all human life at all stages of development. Roe is a step backward on the cultural-evolutionary scale, a tragic regression to a pagan era where human life was something cheap and therefore easily and cavalierly disposed.[29]

13. There's Plenty Wrong with Gun Registration

Re "Treat Guns Like Cars" (editorial, May 16):

For you to disparage as "a simplistic view of safety" those Los Angeles citizens who, in the absence of effective police protection, arm themselves against the potential of mob violence to person and property is disturbingly elitist and out of touch.

Your proposal for universal gun licensing is equally so. How could universal licensing, for example, stop the black market, from which the vast majority of criminals get their guns? And how would it prevent gun smuggling from other countries?

You say a fear of registration as a precursor to confiscation makes no sense. But your own city is using registration records of so-called assault weapons to confiscate them, despite promises to the contrary when registration was imposed. The District of Columbia used registration records to enforce its ban on private ownership of firearms, again, despite assurances that they would never be used for that purpose.

The tired old analogy of auto registration as a model for gun control is patently false. Vehicle operation is a governmentally dispensed privilege, not a constitutionally protected right. A better analogy would be the requirement of tests for sanity, criminal history, drugs, American history and literacy before one could exercise the right to vote.

Besides, in crimes where cars are concerned, we don't impose drug tests, waiting periods and bans on models used; nor do we allow the police absolute and arbitrary control over who can and cannot get licenses to drive.

29. Eric D. Smith, "Assisted Suicide Puts Us All at Risk," *Rochester Times-Union*, October 11, 1993.

Perhaps most illuminating of the bankruptcy of your views is this: despite all of the registration, screening, testing and insurance requirements, automobile drivers still kill and injure many times more people each year than gun owners do.

Where, finally, is your credibility when your own hometown, which has since the turn of the century had very strict gun registration and licensing of the type you propose, is consistently among the top crime cities in the country?[30]

ANSWERS TO SELECTED EXERCISES

1. Most likely, she is making the moral claim that the death penalty is wrong. She is not simply reporting the fact that she believes that the death penalty is wrong.
3. The fact that she would gladly kill the murderer of her child has little or nothing to do with the morality of the death penalty. One of Quindlen's central points in this essay is that the main reason people want the death penalty is to gain revenge. However, she thinks that it fails to accomplish that end. In any case, the fact that she would kill a murderer does not show that she should do that or that it is right to do it. Quindlen seems to be well aware of this point.

1. Morality is relative in the sense that many moral sentences are incomplete and they can be filled out in different ways, some of which yield truths and others falsehoods. The same is true of incomplete nonmoral sentences.
5. Most likely, when a person says, "X is wrong for me," the person means that he or she believes that X is wrong. Thus, if I say, "Euthanasia is wrong for me," I mean that euthanasia is wrong according to me. If this is what is meant by the premise, then the premise says the same thing as the conclusion. So the argument is valid but pointless, since it doesn't get us anywhere. If the speaker is sincerely reporting his or her view, then the premise (and, therefore, the conclusion) are true.

   Of course, the conclusion only states what the person's belief is. It doesn't say anything about the actual moral status of the action in question. So the argument is hardly of any interest.
7. Most likely, what's meant by the claim is that there is no one way that is right for all couples. For example, each of the following statements would be false:
   a. It is right for all couples to share household chores equally.
   b. It is right for all couples to have the wife do 75% of the household chores.
   Most likely, all such universal generalizations are false.

   The second sentence in the claim does suggest that there is a right way for each couple to allocate chores. (It may be that there are a few acceptable ways for many couples.)

1. The consequence would be that we should almost never do anything, because almost every action has some harmful consequence.
3. Sometimes you are in a situation in which all of your options are relatively bad; that is, no option has consequences which are overall positive. In such a situation, we often say that you should choose "the lesser of the evils." However, (OVP) implies that you should

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30. Eric S. H. Ching, Letter to the editor, *New York Times*, June 8, 1992.

choose nothing in such a situation. It implies that every choice is wrong, since every choice has harms outweighing benefits.

5a. No, it doesn't follow. Suppose lots of people benefit a very little bit from plan *A* and some people are greatly harmed by it. A smaller number of people benefit significantly from plan *B*, and no one is harmed by it. Plan *B* could have a higher overall value. The mistake in thinking that plan *A* must be better is to assume that the overall value of an option is determined entirely by the number of people who benefit from it. That number matters, but it also matters how much they benefit.

b. No, it doesn't follow. Again, it depends on how much the people benefit. Consider an action such as raising taxes to build a shelter for homeless people. Lots of people lose a little bit by paying more taxes, and a smaller number of people (the homeless) benefit by having a place to stay. It could be that their gain is enough to outweigh the minor harm to the larger number.

6. To simplify the reconstruction, use the following abbreviations:
RV: Requiring vaccinations
NRV: Not requiring vaccinations
We can formulate the argument this way:

The Antivaccination Argument

1. All government actions that cause the death of innocent children are actions that should not be done.
2. *RV* is a government action that would cause the death of innocent children.
3. *RV* is an action that should not be done. (1), (2)

   The objection that is given in the question is a common sort of objection to a moral argument. As stated, the objection does not address the premises of the argument directly. It surely cannot be made into an objection to (2), which is plainly true. Since the argument is valid, if the objection has any merit, it must be an objection to (1).

   Most likely, the critic is attempting to show that *RV* is better than *NRV*. That's arguing against the conclusion, not against a premise. This is a common, but mistaken, strategy in argument analysis.

   We can try to extract an argument for *RV* from this passage. It might be a two-stage argument like this:

Argument 1

1. If more children would be harmed by *NRV* than by *RV*, then the overall value of the harms and benefits of *RV* is greater than the overall value of the harms and benefits of *NRV*. (IP)
2. More children would be harmed by *NRV* than by *RV*. (EP)
3. The overall value of the harms and benefits of *RV* is greater than the overall value of the harms and benefits of *NRV*. (1), (2)

Argument 2

1. The government's options are *RV* and *NRV*. (IP)
2. The overall value of the harms and benefits of *RV* is greater than the overall value of the harms and benefits of *NRV*. (Argument 1)
3. (OVP1)
4. The government should do *RV*. (1)–(3)

The general principle behind the argument is (1) of Argument 1. See question 5 for discussion.

7a. It is difficult to see which premise this objection is relevant to. Perhaps it is supposed to make us doubtful of our claim about comparative overall value in (4). Perhaps it is supposed to make us think that (OVP1) is wrong.

b. They are worthless. These examples enable us to see that there is a series of cases. At one extreme are those in which the animal research is clearly not worthwhile. At the other extreme are cases in which it clearly is worthwhile. In between, there are more difficult cases. The existence of extreme cases and the fact that there is no clear boundary does not show that all cases are right (or wrong). Analogous reasoning could be used to show that everyone is tall, since some people are clearly tall and there is no clear boundary between being tall and not tall.

10a. The argument can be reconstructed as a simple moral argument:

1. Giving a test on Monday is a thing the teacher could do which is disadvantageous to some students in the class. (EP)
2. All things that the teacher could do which are disadvantageous to some students in the class are things the teacher should not do. (EP)
3. Giving a test on Monday is a thing the teacher should not do. (1), (2)

This argument is valid, and let us assume that premise (1) is true. In fact, D. Lay argues for this premise, but we need not concern ourselves with that part of the argument. By granting premise (1) we are not admitting that giving the test on Monday is wrong, just that giving the test is disadvantageous to some students.

The merits of the argument thus turn on (2), which does have some initial plausibility. It seems right that teachers should not do things that favor some students over other students in their class.

A teacher might respond to this argument in the following way: "It is true that I should try to avoid doing things that are disadvantageous to some students in my class. But, whichever day I choose for the test, there will be some students who have other tests on that day, or for some other reason would be disadvantaged by having the test on that day." As stated, this reply does not conform to the rules for criticizing an argument, since it does not explicitly question the validity of the argument or any of its premises.

What the response really suggests, however, is that (2) is false. If a teacher is in a situation in which whatever she does is going to disadvantage some students, then she should do something that disadvantages some students. You might think that giving no test would not disadvantage anyone, but it would: it would disadvantage those who need or want the chance to improve their grades in the course. Giving the test on any day would work against some students but not others. So, no matter what the teacher does, she will disadvantage some students. It seems clear, then, that she should do something–perhaps give the test on the day that is disadvantageous for the fewest students. Suppose that day is Wednesday. It follows that she should give the test on Wednesday, even though that would disadvantage some students. So, she should do something that would disadvantage some students, and (2) is false.

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