ASKING THE RIGHT QUESTIONS

M. Neil Browne / Stuart M. Keeley


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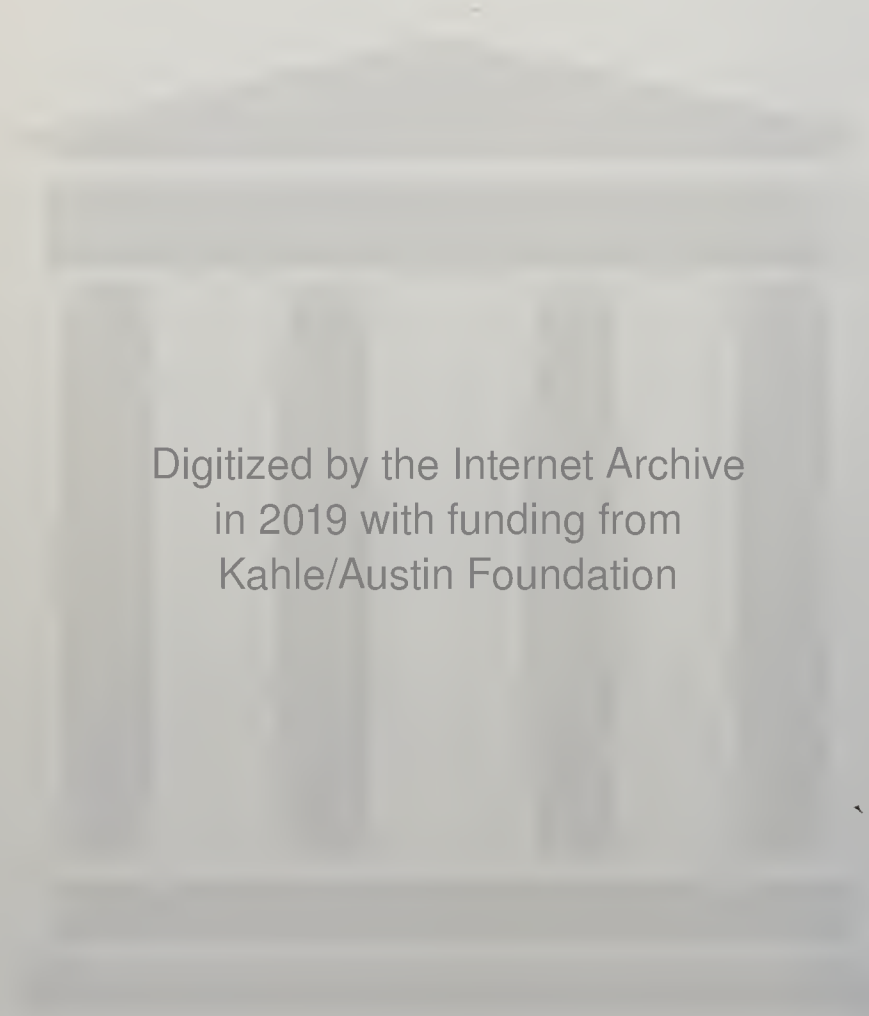

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To my grandparents, Gladys and Hoy,
for their legacy of independence and love;
To Gretchen and Shannon,
with the hope the legacy will be maintained.

M. N. B.

To Barb and the kids for their patience.

S. M. K.

Contents

Preface

We were motivated to write this book by a variety of personal experiences and observations. First, we are impressed with the degree to which students and acquaintances show an increasing dependence on experts—textbook writers, teachers, lawyers, politicians, journalists, and TV commentators. As the complexity of the world seems to grow at an accelerating rate, more of us become passive absorbers of the information we encounter—uncritically accepting what we see and hear. We are concerned that too many of us are not actively participating in making personal choices about what to accept and what to reject.

Second, our experience in teaching critical thinking skills to our students for the past eight years has convinced us that when individuals with diverse abilities are taught these skills in a simplified format, they can learn to apply them successfully in diverse situations, and in the process develop a great deal of self-confidence in their ability to make rational personal choices about certain social issues even though at the same time they recognize that they have not been formally trained to respond to that particular controversy.

A third factor motivating the book was our being unable to find the "right" book as we searched for a book which taught the skills we wanted students to learn. We did not want a philosophy text. We wanted a book which was informal in nature and at the same time would outline explicitly, concisely, and simply, in an integrated fashion, basic critical reading skills. We did not find such a book.

Thus, we set out to write a book which we think does a number of things that other books for the most part have failed to do. The book

presents an integrated format of question-asking skills which can be applied to a wide variety of reading material from textbooks to magazine essays.

These skills are developed in a very readable, informal fashion. (We write to a general audience, not any specialized group.) In addition, we provide many opportunities for the reader to apply the skills and to receive immediate feedback following the practice application. The book is replete with interesting illustrations of writings related to interesting controversial topics. The breadth of topics in the illustrations introduces the average reader to writings on numerous controversies with which he or she may have little familiarity.

The book is well integrated in that critical questions are discussed in a sequential manner as the reader moves from asking questions to making personal decisions. In addition, the book integrates cognitive and value dimensions—a very important aspect of critical reading and personal decision making.

Who would find *Asking the Right Questions* especially beneficial? Because of our teaching experiences with readers representing many different ability levels, we have difficulty envisioning any academic course or program for which this book would not be highly useful. There are a few uses for the book that seem especially appropriate. Teachers in general education programs may want to begin their courses by using *Asking the Right Questions* as a coherent response to their students' requests to explain what is expected of them.

Several types of courses would especially profit from a concise, systematic discussion of critical reading skills. English courses that emphasize expository writing could use *Asking the Right Questions* as both a format for evaluating arguments prior to constructing an essay and as a checklist of problems that the writer should attempt to avoid as he or she writes.

Courses training prospective teachers should find the book especially functional because it makes explicit many of the behaviors which teachers will want to encourage in their students. Courses in study skill development may be enriched by supplementing their current content with a specific step-by-step description of the process of critical reading and thinking. *Asking the Right Questions* can also be used as the central focus of courses designed specifically to teach critical reading and thinking skills.

While *Asking the Right Questions* stems primarily from our classroom experiences, this book is written so that it can guide the reading habits of anyone. The skills that are developed are those that any critical reader needs to possess if reading is to serve as a basis for rational personal decisions. The critical questions stressed in the book can enliven the

reading of anyone regardless of the extent to which he is formally educated.

Our greatest intellectual debt is to our colleague and friend, Paul Haas. His enthusiasm for the importance of critical reading as well as his insights into the process of cognition stimulated us throughout the writing process. Our frequent conversations with him about learning problems have contributed significantly to the tone and content of *Asking the Right Questions.*

Numerous colleagues, friends, and students have aided us as the book evolved. Especially helpful have been our students and fellow faculty members in The Little College at Bowling Green State University. The sense of community we derived from having been involved in an important innovation to which both teachers and learners were dedicated has given us a source of identifiable strength.

ASKING
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I

The Benefit of Asking the Right Questions

A. INTRODUCTION

EACH OF US IS BOMBARDED WITH INFORMATION. Every day we encounter new facts and opinions. In textbooks, newspapers, and magazines, writers present ideas they want us to accept. One social scientist tells us violence on television is bad for our children. Another tells us it does no harm. One economist argues for reducing taxes to stem inflation; another argues that we should increase interest rates. One educational critic recommends eliminating the "frills," such as foreign language and physical education requirements; another recommends we expand such "necessities." All areas of knowledge have issues about which experts in those fields disagree. You as a reader have the tough job of deciding which authority to believe. Whether you are reading a nursing journal, a critique of a poem, a textbook, or even the sports page, you will be faced with the problem of deciding which conclusions to accept and which to reject.

As a reader you must make a choice about how you will react to what you read. One alternative is to passively accept what is written. This approach automatically results in your making the writer's point of view your own. A more active alternative consists of asking questions of yourself in an effort to reach a personal decision about the worth of what you have read. This book is written for those who prefer the second alternative. We are confident that you want to know how to better pick and choose from among those things you read, carefully accepting only those opinions that are reasonable.

Reading critically, that is, reacting to what you read through sys-

tematic evaluation, requires a special set of skills. One way of thinking about these skills that we have found especially effective is to think of them as a series of critical questions. These questions are useful whenever you want to react to what you are reading. This book presents these question-asking skills in a simple, understandable form. As presented, these skills will be helpful to you as a citizen or as a student.

As a citizen, they should be especially helpful in (a) shaping your voting behavior and your purchasing decisions, and (b) improving your self-confidence by increasing your feelings of intellectual independence—you don't have to rely only on experts to tell you what to think and do. As a student, they should be especially useful whenever you are asked to:

1. react critically to an essay or to evidence presented in a textbook,
2. form an argument,
3. write an essay based on a reading assignment,
4. participate in class.

B. THE FILTER AND THE SPONGE: ALTERNATIVE THINKING STYLES

One approach to reading is similar to the way in which a sponge reacts to water: ABSORB IT! This commonly used approach has some clear advantages. First, it is relatively passive. The reader's job is finished after discovering what the writer said. Little thinking is required by readers who use the sponge method. Thus, reading like a sponge is quick and usually easy. The primary mental effort required is concentration and memory. Another advantage of the sponge model is that it can be a useful thinking style. If you absorb a lot of information, you have a knowledge base that can help you do more complex thinking at a later time.

However, the sponge model has a serious disadvantage. It provides you with no method for deciding which information and opinions to believe or reject. If a reader relied on the sponge model all the time, he would believe whatever he *last* read.

We think you would rather *choose* for yourself what to absorb and what to ignore. To make this choice you must read with a special attitude—a question-asking attitude. Such a thinking style requires *active* input from *you*. The writer is trying to speak to you, and you should try to talk back to the writer. Even though the writer is not present, you need to interact with him. We call this interactional approach the filter

model. The term "filter" is used to emphasize the actions of the reader in separating out "impurities," in seeking to find the essential elements, and ultimately, in determining the worth of the elements. The emphasis of this model is on *asking questions* and *thinking about* material.

Let us more closely examine how the two models lead to different behavior. What does the individual who follows the sponge model do when he reads material? He reads sentences carefully, trying to *remember* as much as he can. He may underline or highlight key words and sentences. He may take notes summarizing the major topics and major points. He checks his underlining or notes to be sure he is not forgetting anything important. His mission is to find out and understand what the author has to say.

What does the reader who follows the filter model do? He asks himself a number of questions. He looks for certain logical steps in the material. He looks for important omissions. He frequently questions why the author makes various claims. He writes notes to himself in the margins indicating problems with the reasoning. He is continually interacting with the material. His mission is to critically evaluate the material and formulate personal conclusions based on the evaluation.

C. AN EXAMPLE OF THE FILTER MODEL IN ACTION

One topic we all get excited about is the size of our taxes. Recently, the president of the Chamber of Commerce of the United States called for a whopping $40 billion tax cut. Do you think he has a terrific idea? Here is a summary of the reasoning he used to support his proposal. Take a look at it and then decide whether he has been convincing.

> Poll results show that the public is very unhappy with the President's performance. The size of our burdensome taxes is one of the factors that upset the voters. Again and again government taxes money from us to create jobs for the unemployed. The problem is there's no net gain in jobs because taxes destroy jobs in the private sector since they reduce the amount of money we have to spend. Worse yet it's well-known that jobs created by the government are inefficient.
>
> In 1962 President Kennedy proposed a massive tax cut. Some experts criticized the idea as irresponsible. They were wrong. The Kennedy tax cut touched off the longest sustained expansion in modern history. Because of that growth in the

> economy, the government actually came out $54 billion ahead, rather than $89 billion behind as some experts had claimed.[1]

If you apply the sponge model to the passage, you probably would try to remember the reasons why you should favor a tax cut and perhaps try to understand them. You will have absorbed some knowledge. However, are you sure that you should find those reasons convincing? You cannot evaluate them until you apply the filter model, that is, until you have asked the right questions.

By "asking the right questions" you would discover a number of possible weaknesses in the proposal for a tax cut. For instance, you might be concerned about all of the following:

1. What *benefits* are gained from using tax money to create jobs?
2. Does $1 million used to create jobs in the private sector create *exactly* the same number of jobs as would be created by a $1 million expenditure by government?
3. What is the basis for saying that governmental jobs are inefficient?
4. Does "inefficient" mean fewer jobs per dollar *or* is it simply a label meaning that the writer does not like government expenditures in general?
5. Just because those who criticized a tax cut in 1962 may have been wrong, does it make sense to conclude that those who criticize one now are wrong?
6. Are there factors that caused the tax cut to be successful in 1962 that are different now?
7. Are there alternative ways to create economic growth that would cause less harm?
8. Is it even desirable to try to achieve more economic growth?

If you want to ask these kinds of questions, this book is especially for you. The primary purpose of *Asking the Right Questions* is to help you know when and how to ask questions that will enable you to decide what to believe.

[1] R. L. Lesher, "Full Employment Without Inflation: A Tax Cut Now." Speech delivered to the Toledo Area Chamber of Commerce, Toledo, Ohio, January 3, 1978.

The most important characteristic of the filter model is *active* involvement on the part of the reader. With the appropriate filter you can learn to depend on your own reasoning ability to make tough decisions.

Clearly, there are times when the sponge model is appropriate. Most of you have practiced the sponge model regularly and have acquired various levels of success with it. It is much less likely that you are in the habit of practicing the filter model—in part, simply because you have not had the filters. This book will not only help you develop these filters, but also will provide frequent opportunities for practicing their use.

D. ACTIVE FILTERING: ASKING CRITICAL QUESTIONS

It would be nice if what other people really were saying was obvious, if all their essential thoughts were clearly labeled for us, and if the writer never made an error in his or her reasoning. If this were the case, we could sit back passively and apply the sponge model. We could let others do all our thinking for us. However, the true state of affairs is quite the opposite. Reasoning frequently is not obvious. Important elements are often missing. Many elements that *are* present are unclear. Other elements that are present do not even belong there. Consequently, critical reading is a sorting process through which you must identify what makes sense and distinguish this clear thinking from the sloppy thinking that characterizes much of what you will read.

What's the point? The inadequacies in what someone says will not "leap out" at you. You must be an *active* searcher. You do this by *asking questions.* The best search strategy is a critical-questioning strategy. Throughout the book we will be giving you the critical questions to ask. A powerful advantage of these questions is that they permit you to ask revealing questions even when you know very little about the topic being discussed. For example, you do not necessarily need to be an expert on child care to ask important critical questions about the adequacy of day-care centers.

E. THE MYTH OF THE "RIGHT ANSWER"

Those issues that require the closest scrutiny are usually those issues about which "reasonable people" disagree. In fact, many issues are interesting exactly because there is strong disagreement about how to resolve them. This should tell you something very important. There will be more than one position in a controversy. Several positions may be supported with good reasons. Thus, when you engage in active reading, you should be seeking the position which seems the *most reasonable* to

you. There will seldom be a position on a social controversy such that you will be able to say, "This is clearly the *right* position on the issue." If such were the case, "reasonable people" would not be debating the issue.

F. QUESTIONS FIRST; EMOTIONAL INVOLVEMENT LAST

As you approach many issues, you will find yourself emotionally involved in some of them. You will have very strong feelings about certain positions. It is only natural to have strong feelings about many issues. Indeed, successful active learners have strong feelings, but they do their best to generate such feelings *after* they form a *reasoned* opinion. This is important because many positions on issues are not especially reasonable ones. They are opinions given to us by others, and over many years we develop emotional attachments to them. Indeed, we frequently believe that we are being *personally* attacked when someone presents a conclusion contrary to our own. The danger of being emotionally involved in an issue prior to any active thought about it is that you may fail to consider potential good reasons for other positions—reasons which might be sufficient to change your mind on the issue if you only would listen to them.

Remember: Emotional involvement should not be the basis of accepting or rejecting a position. Optimally, emotional involvement should occur *after* reasoning has occurred. Thus, when you read, try to avoid letting emotional involvement cut you off from the reasoning of those with whom you initially disagree. A successful active learner is one who is willing to change his or her mind. If you are to change your mind you must be as open as possible to ideas that strike you as weird or dangerous when you first encounter them.

G. EFFICIENCY OF ASKING THE QUESTION, "WHO CARES?"

Asking good questions is difficult, rewarding work. Some controversies are much more important to you than others. When the consequences of a controversy for you and your community are minimal, regardless of what position you finally choose, you will want to exert less time and energy thinking critically about that controversy than you will for more important controversies such as the energy crisis or the spread of nuclear weapons. Thus, we recommend that one of the first questions you ask is, "Who cares?" If the resolution of the issue is inconsequential, it is inefficient to spend time critically evaluating it.

For example, it makes good sense to critically evaluate arguments for

and against the building of nuclear energy plants since different positions on this issue lead to important consequences for society. You would like to know what is the best way to vote on such an issue.

It makes less sense to devote energy to critically evaluating a position on the controversy of whether or not blue is the favorite color of most corporation executives. Although this issue may be important to advertisers, there is little payoff in the average learner's spending a great deal of time evaluating it.

Your time is valuable. Before taking the time to critically evaluate an issue, ask the question, "Who cares?"

H. THE FUN OF USING THE FILTER MODEL

Doing is usually more fun than watching. *Doing well* is typically more fun than simply doing. If you start using the interactive form of reading taught in this book, you can feel the same sense of pride in your reading that you normally get from successful participation.

Critical readers find it exciting to know when to say "no" to an idea or opinion and to know why that response is appropriate. Think of the increased confidence you will have in your personal decisions if you regularly use the filter model. Before anything gets into your head it must first pass through the filters you are using. Thus, you are systematically testing information and opinions. Only when what you read gets through the filters does it make sense to believe it. But when an idea or belief *does* pass the tests developed in *Asking the Right Questions*, it makes sense to agree with it—at least until something better comes along.

Imagine how good you will feel if you know *why* you should ignore a particular bit of advice. Frequently, those faced with an opinion different from their own respond by saying, "Oh, that's just your opinion." But the key question should not be whose opinion it is, but rather, "Is it a good opinion?" Armed with the critical questions discussed in this book, you can experience the joy of knowing why certain advice is nonsense.

The sponge model is often satisfying because it permits you to gain more information. That's certainly productive. However, you can get so much more excitement from being a full participant in a meaningful dialogue with the writer. Reading becomes so much richer as you begin to see many things that the author may have missed. You start to go beyond what the writer is encouraging you to learn as you question the correctness of his reasoning. No one wants to be at the mercy of the last expert he meets, and as you learn to select information and opinions systematically you will probably have the urge to read more and more in a lifelong effort to decide which advice makes sense.

I. THE IMPORTANCE OF PRACTICE

Learning new critical-reading skills is a lot like learning new physical skills. You cannot learn simply by being told what to do or by watching others. You have to practice, and frequently the practice is both fun and hard work. Our goal is to make your learning as simple as possible. However, it will initially take a lot of practice to acquire the habit of critical reading.

Practice exercises at the end of each chapter are an important part of *Asking the Right Questions*. Try to do the exercises and *then* compare your answers with ours. Our answers are not necessarily the *only* correct answers, but they provide proper illustrations of how to apply the question-asking skills.

J. THE RIGHT QUESTIONS

To give you an initial sense of the skills that *Asking the Right Questions* will help you acquire, we want to list the critical questions for you. After you have studied this book you should know when and how to ask the following questions productively:

1. What are the issue and the conclusion?
2. What are the reasons?
3. What words or phrases are ambiguous?
4. What are the value conflicts and assumptions?
5. What are the definitional and descriptive assumptions?
6. Are the samples representative and the measurements sound?
7. Are there flaws in the statistical reasoning?
8. Are the causal explanations adequately supported?
9. Are there any errors in reasoning?
10. What significant information is omitted?
11. What alternative conclusions are consistent with the strong reasons?
12. What are your value preferences in this controversy?

II

Recognizing the Writer's Organization

WORDS DON'T COMMUNICATE until they are strung together in an *orderly sequence*. Thus, critical reading begins with a search for organization. Authors of articles and books usually follow a pattern as they write. You, as a reader, can evaluate, using the filter model, *only* after you have first discovered the pattern or organization that the writer had in mind before you came into the picture. The very first step that active readers take is to search for organization. None of the more complex steps in the critical-reading process is particularly helpful until the organization is discovered.

Suppose you are reading the following selection:

> (1) A recent survey of 3,000 young males found that 20% had lived with a woman for 6 months or more without being married. (2) Most of these 20% had done so with only one partner. (3) At the time of the interviews only 3% of the unmarried men were living with a woman. (4) Apparently, most American males are very traditional about the desirability of marriage.

What is it *you* would do to or with this passage when you read it? Would you underline certain key words? If so, which ones? Would you skim the four sentences because they don't look important? Would you evaluate it? Recognizing organization is the initial step in answering these important questions.

☛ ACTIVE READING BEGINS BY RECOGNIZING ORGANIZATION.

A. FUNCTIONS OF SENTENCES AND PARAGRAPHS

Let's look more closely at the sentences that discuss the extent to which unmarried couples live together. Each sentence has a function which links it to surrounding sentences. Discovering these links is the first task in recognizing organization. Later in the book, we will help you evaluate how well each of these functions is performed. However, at this point you may need more practice in identifying the function played by various sentences. Let's reexamine the quoted passage on living together. Ask yourself what role each sentence is playing in relation to those that precede and follow it. Remember to relate them to the surrounding sentences. Here is some space for your practice.

1 _____

_____

2 _____

_____

3 _____

_____

4 _____

_____

To check your mastery of the task, compare your answers with the ones we would have given:

SENTENCE 1 states the results of a survey concerning the extent to which couples live together.

SENTENCES 2 and 3 provide an additional finding which clarifies the evidence in sentence (1).

SENTENCE 4 presents the author's conclusion based on the three previous sentences.

Critical thinking requires us to look closely at *how well* the four sentences perform these various functions. However, that step must be postponed until we have examined other elements of structure which will be discussed in the next two chapters.

Just as sentences have a function, so do paragraphs. As you read, it is a good idea to *jot down in the margin* your ideas about the function of particular paragraphs. Writing a brief note to yourself that indicates what each paragraph does in relation to surrounding ones, provides a sound basis for critical reading. These marginal notations give you a quick overview of the writer's organization.

What are some of the major functions that sentences and paragraphs fulfill? Subsequent chapters of the book will go into detail about some of these functions; at this point we want to mention just a few of the organizational functions to look for as you read. Among the more important roles played by sentences and paragraphs are:

1. introduction to the controversy,
2. examples of the problem,
3. evidence,
4. summary,
5. conclusion,
6. definitions.

Let's look at another example of a possible reading assignment.

> (1) Central to many arguments involving advertising's varied economic effects and influences is the question of whether advertising is related to product quality. (2) Are heavily advertised brands of higher quality than other brands in the same product class? (3) Is advertising a sign of higher product quality?
>
> (4) The issue discussed herein is not whether the higher price is worth the information advertising provides the consumer, but rather whether extensive advertising is positively associated with highly ranked products as defined by some objective standards. (5) In this study we adopted the product ratings of two recognized, independent consumer product testing agencies (*Consumer Reports* and *Consumer Research Magazine*) as our objective standards of quality.
>
> (6) Of the heavily advertised brands, 21.3% might have received recommended ratings but so did 18.2% of the less-

> heavily advertised brands. (7) Do heavily advertised products tend to be of higher quality? (8) On the basis of this study the answer would have to be a qualified "possibly." (9) Amount of advertising is not closely related to product quality. (10) Advertised products are apparently of better quality than non-advertised goods for some products, when rated by certain criteria, in some years.[1]

First, read through the entire passage. As you can see, the ten sentences all pertain to the relationship between product quality and the level of advertising. Next, examine the functions of the paragraphs by looking carefully at the sentences within the paragraphs. Paragraph 1 raises an issue; it states the question to be addressed. The three sentences as a group inform the reader that the question of interest is whether advertising is a sign of higher product quality. Frequently, first paragraphs "introduce the topic."

In the second paragraph, sentences (4) and (5) work together to indicate to the reader how product quality was measured. Thus, in this paragraph, the writer supplies an important definition.

Paragraph 3 presents the evidence used by the writer to answer the question raised in the first paragraph. Then the last paragraph restates the issue and provides the writer's conclusion, that is, the point he wanted to make. Sentences (8) through (10) as a group make up the conclusion.

Now, we have located the most important organizational elements of the passage. It is a good idea for you to highlight these in some way as you read.

The search for the author's organization is a preliminary step in critical reading. It must occur prior to any evaluation of what you read. Some organizational elements are much more important than others. It will be very important to you to be aware of the process used to locate the key organizational elements. The next two chapters will teach you how to identify them.

B. PRACTICE EXERCISES

When you have completed this chapter, you should be sensitive to the need to recognize the author's organization as a preliminary step in critical reading. Moreover, at this stage of the book, we would hope that you recognize the importance of

[1] H. J. Rotfeld and K. B. Rotzoll, "Advertising and Product Quality," *Journal of Consumer Affairs*, 10 (Summer 1976), 33–47.

DETERMINING THE FUNCTION OF EACH SENTENCE AND PARAGRAPH.

In the following practice passages try to "talk back" to the author by determining the function of each sentence; then compare your answers with ours. If you feel uncertain about the quality of your answers, don't worry. You will gain much more confidence in your thinking abilities as you read the rest of the book. Many others have learned to think carefully through this process, and so can you.

Now for some practice!

Passage 1

(1) Do assertiveness training programs for women actually work? (2) Assertiveness training teaches one to display socially acceptable expressions of ordinary personal rights and feelings.

(3) Nine classes, containing a total of 130 women participants, were involved in this study of the impact of 6 assertiveness training sessions. (4) The help for these normal, healthy women came from eight group leaders who were aware of traditional female socialization patterns. (5) They adapted skill building techniques and sought to teach the behavioral skills and attitudes of social assertiveness.

(6) Nine women in 10 indicated a positive or a very positive impact from the training program. (7) Inasmuch as 90% of the participants said that they had recently been assertive with people who had intimidated them prior to the training sessions, we are convinced that assertiveness training has benefits for normal, healthy women. (8) Since over 90% of the participants claimed that they were able to adapt to at least some new situations like those in the training class, we found that the program had validity.[2]

---

[2] Adapted from J. Perlman, "Assertive Training for Women: A Follow-Up," *Journal of the National Association for Women Deans, Administrators, and Counselors*, 40 (Winter 1977), 49–52.

Passage 2

(1) When a state-supported school adopts an unlimited-cut policy, who is the loser? (2) In essence, students who enroll in a class and have excessive absences are stealing public funds by wasting the taxpayer's money, depriving other students of enrollment in a class, and causing other students in the class to learn less on the days when they do attend.

(3) An analysis of my students' grade average and absences for a two-year period revealed that each day of absence cost the students almost two points on their final grade. (4) Fifty-two percent of the variability in students' grades can be explained in terms of the number of absences from class.

(5) While required attendance is one possible solution, I prefer to permit students maximum freedom by requiring them to compensate the taxpayers for any unexcused absences. (6) The amount of the payment would equal that part of the educational expense not covered by student fees.[3]

Passage 3

(1) On November 1, 1968, the motion picture industry set up a voluntary rating system to evaluate the suitability of the content of films for children. (2) Beginning in the summer of 1969, six annual surveys were taken to appraise the public awareness and usefulness of this program. . . .

(3) Having children at home was an important factor in how people rated the usefulness of the system. (4) In 1974, 66 percent of the parents believed it was "very or fairly useful,"

[3] Adapted from D. R. Street, "Noncompulsory Attendance: Can State Supported Universities Afford This Luxury?," *Journal of College Student Personnel*, 16 (March 1975), 124–27.

and "not very useful" parental opinions dropped to 25 percent in that year. (5) More teenagers than adults were inclined to find the ratings useful as shown by the 65–72 percent of the teenagers answering "very or fairly useful" in five of the six surveys. (6) These figures indicate that, especially among teenagers and parents with children under 18, the rating system has achieved a certain degree of acceptance.[4]

Sample Responses

PASSAGE 1

The first sentence defines the problem, and the second provides a conclusion responding to the problem. Sentences (3) through (5) together describe the study on which the conclusion in sentence (2) is based. Sentence (6) gives the results of the study. The last two sentences relate the results to the conclusion. In terms of the functions of the paragraphs, the first paragraph suggests the issue and conclusion; the second describes the study being discussed, and the third presents the study results and their interpretation.

PASSAGE 2

As with the previous passage, the first sentence defines a controversy or question which motivated the writing of the remaining sentences. The second sentence then gives the author's conclusion about the controversy. Thus, the first paragraph provides the issue and the conclusion. Sentences (3) and (4) in the second paragraph provide one reason for the conclusion. The last two sentences (paragraph 3) suggest one solution based on the assumption that the reader agrees with the conclusion in sentence (2).

[4] J. Valenti, "Rating the Movies," *Journal of Communication*, 26 (Summer 1976), 62–63.

Passage 3

The first paragraph introduces the topic explored in the remaining sentences. Sentences (3) through (5) provide the results of a survey pertaining to the topic. The final sentence suggests a conclusion based on these results.

Self-Examination

For the Self-Examination passages, we are not providing any sample responses. Passage 4 in each chapter gives you an opportunity to practice critical reading "on your own."

Passage 4

(1) For decades the automobile has brought us death and physical injury. (2) Over 50,000 people every year are killed in automobile accidents. (3) These accidents cost our economy over $10 billion every year in property damage, lost wages, and medical expenses. (4) Support your Congress in its effort to get more money for mass transit. (5) Help reduce the slaughter on the highways.

(6) The automobile manufacturers will not make safer cars unless compelled by law to do so. (7) A major part of their profits stems from the repair business. (8) If cars could withstand collisions with less damage, fewer repair parts would be sold. (9) Instead of recognizing their own role in the human tragedy caused by automobile accidents, executives for the automobile firms typically blame accidents on careless drivers in an effort to take the heat off the firm.

III

What Are the Issue and the Conclusion?

THOSE WHO WRITE editorials, book chapters, or magazine articles are trying to convince readers of something. What you read is often a response to some issue, question, or controversy which that individual has been thinking about—probably for a long time. To critically evaluate the writer's reasoning, you must know what that controversy is as well as the writer's position with respect to the controversy. In this book we will refer to a writer's point of view on a controversy as his or her conclusion.

When you have completed this chapter, you should be able to ask the first right question successfully.

☛ *CRITICAL QUESTION:* WHAT ARE THE ISSUE AND THE CONCLUSION?

A. KINDS OF ISSUES

It will be helpful at this point to identify two kinds of issues you will typically encounter. The following questions illustrate one kind of issue:

Do obese people have emotional problems?

Is problem solving more effective in a large or a small group?

Do males have different dreams than females?

Can a child's IQ be raised by a stimulating environment?

Is it true that increasing taxes tends to reduee inflationary pressures?

Does watching violenee on TV make us insensitive to crime on the streets?

All of these questions have one thing in eommon. They demand answers that *describe* the way the world *is*. For example, answers to the first two questions might be, "In general, obese people *have* emotional problems." and, "Problem solving *is most effective* in a small group."

We will refer to arguments generated by this kind of issue as *descriptive arguments*. You will find such arguments all around you. They are found in textbooks in many disciplines, such as psychology, sociology, politieal scienee, economics, education, geography, and in magazines and on television. Such arguments reflect our curiosity about patterns or order in the world.

Now let's look at examples of a seeond kind of question:

Should eapital punishment be abolished?

Is it desirable to fluoridate drinking water?

What ought to be done about inflation?

Should people be required to retire at a certain age?

All of these questions demand answers that suggest the way the world *ought to be*. For example, answers to the first questions might be, "Capital punishment *should be* abolished" and "We *ought to* fluoridate our drinking water."

These issues are ethieal, or moral, issues; they raise questions about what is right or wrong, desirable or undesirable, good or bad. They demand preseriptive answers. Thus, we will refer to arguments generated by such issues as *prescriptive arguments*. Preseriptive arguments are typieal of reasoning about social controversies, such as those surrounding abortion, marijuana, handguns, pornography, prostitution, and eonservation of energy.

We have oversimplified some. Sometimes it will be quite diffieult to deeide what kind of reasoning is oeurring. However, it will be useful to keep these distinetions in mind, because the kinds of critieal evaluations you eventually make will differ depending upon the kind of argument to whieh you are responding.

B. WHAT IS THE ISSUE?

How does one go about determining the basic question, or issue? Frequently, it is very simple. The writer or speaker will tell you. The issue will sometimes be identified in the body of the text, usually right at the beginning. It may also be found in the title of the communication. Usually, if the issue is explicitly stated in the body of the text, you will find phrases such as:

> *The question I am raising today* is whether taxes are too high in our country.
>
> Fluoridation of our water: *Is it the right thing to do?*
>
> *Should* sex education be taught in the school?
>
> *Why isn't* our present educational system working?
>
> *Does* how you sleep reveal your personality?

Unfortunately, the question is not always explicitly stated. It often has to be inferred from the conclusion. In such cases the conclusion must be found before you can identify the issue. In cases in which the question is not explicitly stated, the first step in critical evaluation is to find the conclusion—a frequently difficult step.

☞ **WE CANNOT CRITICALLY EVALUATE UNTIL WE FIND THE CONCLUSION!**

Let's see how we go about looking for that very important structural element.

C. SEARCHING FOR THE AUTHOR'S CONCLUSION

The process of identifying the conclusion is initiated by asking: What is the writer or speaker *trying to prove?* The answer to this question will be the conclusion.

In searching for a conclusion, you are looking for a statement or set of statements the author wants you to believe. The author wants you to believe his conclusion on the basis of other statements he presents. In short, the basic structure of persuasive writing is the following: "*This* because of *that.*" *This* refers to the conclusion; *that* refers to the support for the conclusion. This structure represents the process of *inference.* In a dispute, conclusions are *inferences;* they are derived by reasoning.

Inferences are *not facts*, nor are they something we know automatically; they are beliefs which require other facts or beliefs to prove or support them.

The last paragraph says a lot. It would be a good idea for you to read it again. Understanding the nature of a conclusion is an essential step toward critical reading. Let's look closely at a conclusion, and the inference process. Here is a brief paragraph; see if you can identify the conclusion, then the statements which support it.

> We oppose a mandatory retirement age. We believe that age is an inappropriate and unreasonable basis for determining whether an individual can or cannot do a job.

The statement, "We oppose a mandatory retirement age" is this writer's *answer* to the *question* of whether there should be a mandatory retirement age; it is his conclusion. He supports the conclusion (a belief) with another belief: "We believe that age is an inappropriate and unreasonable basis for determining whether an individual can or cannot do a job." Do you see why this latter belief is not a conclusion? It is not the conclusion because it is used to prove something else. *Remember:* To believe one statement (the conclusion) because you think it is well-supported by *other* beliefs is to make an inference. When people engage in this process they are reasoning; the conclusion is the outcome of this reasoning.

D. RESISTING THE TEMPTATION TO BELIEVE THE TASK IS SIMPLE

Finding the conclusion is not as simple or as obvious as it may seem at first glance. We have discovered that it is very common for readers to "miss the point." Writers frequently make the task difficult for you. For example, many times the writer does not explicitly state the conclusion; it is only implied by other statements or by the title. In other cases, many statements will have the appearance of a conclusion, but will actually serve other functions. It is important that you resist the temptation to believe that identifying the conclusion is a simple task. In the next section, we will describe ways to make certain that you have found the conclusion. *Remember:* Identifying the conclusion is *crucial;* it is *not simple.*

E. CLUES TO DISCOVERY: HOW TO FIND THE CONCLUSION

There are a number of clues to help you identify the conclusion.

CLUE NUMBER 1: ASK THE QUESTION, WHAT'S THE ISSUE? Recall that a conclusion always is a response to an issue. Thus, it will help you to find the conclusion if you know the issue. You will find that in some cases there are only a small number of possible answers to an issue. In these cases, knowing the issue simplifies your search dramatically. Identifying the issue, or the controversy, is a good way to start your search for the conclusion.

We mentioned earlier how one might identify the issue or the controversy. Let's briefly review the several clues. First, look at the titles. If the title doesn't tell you, a quick reading will often indicate what an article is "all about." In addition, sometimes the author or speaker will explicitly state the issue, usually at the beginning of the presentation.

CLUE NUMBER 2: INDICATOR WORDS. The conclusion will frequently be preceded by *indicator words,* which signify that a conclusion is coming. A list of such indicator words follows.

therefore	we may deduce that
because	points to the conclusion that
so	the point I'm trying to make is
in short	in my opinion
it follows that	the most obvious explanation
it is believed that	it is highly probable that
shows that	in fact
indicates that	the truth of the matter is
suggests that	alas
proves that	

When you see these indicator words, highlight them! They tell you the conclusion will follow.

Now, read the following two passages; identify and highlight the indicator words. After you have done this, you will have identified the statements containing the conclusion.

Passage A

But now, more than two years after voters overwhelmingly approved the lottery, it has been proven that the game is not a sure success; in fact, it can be considered a failure.

First of all during the campaign for passage of the lottery, the public was repeatedly told that the proceeds from the

lottery would go toward curing the financial ills of both higher education and local primary and secondary schools. It was on this premise that the lottery received overwhelming support from the public. Not until the lottery was approved, however, was it widely conceded that lottery profits go into the general fund instead of the state's education budget. This means that less than half of the lottery's net profits get to education.

PASSAGE B

Physicians and laymen alike generally believe persons are involuntarily confined in mental hospitals because they are mentally ill, but don't know they are sick and need medical treatment. This view, to put it charitably, is nonsense. In my opinion, mental illness is a myth. People we label "mentally ill" are not sick, and involuntary mental hospitalization is not a treatment. It is punishment. . . .[1]

You should have highlighted the following words: "it has been proven" and "in fact" in passage A, and "in my opinion" in passage B. The conclusions follow these words.

Unfortunately, many written and spoken communications do not contain indicator words for the conclusion.

CLUE NUMBER 3: LOCATION. Conclusions tend to occupy certain locations. The first two places to look are at the *beginning* and at the *end.* Many writers begin with a statement of purpose, which contains what they are trying to prove. Others summarize their conclusions at the end. *Hint:* If you are reading a long, complex passage and are having difficulty seeing where it is going, skip ahead to the ending; if you are lucky, you will find a clear summary there.

CLUE NUMBER 4: WHAT A CONCLUSION IS NOT. Conclusions will not be any of the following:

Examples
Facts
Definitions
Background information

When you have identified the conclusion, check to see that it is none of these.

[1] T. Szasz, "The Crime of Commitment," *Psychology Today,* 2 (March 1969), 55.

F. DANGERS OF MISSING THE CONCLUSION

If you miss the conclusion, you will simply be "spinning your wheels," as you try to critically evaluate. "Missing the point" not only leads to frustration, but frequently to unnecessary arguments, and sometimes, embarrassment. All subsequent critical-questioning techniques require correct identification of the conclusion. When you have identified it, highlight it in some way. You will need to refer back to the conclusion several times as you ask other right questions.

G. PRACTICE EXERCISES

☞ *CRITICAL QUESTION:* WHAT ARE THE ISSUE AND THE CONCLUSION?

PASSAGE 1

(1) The United States has the world's highest standard of living. (2) It is not utopia, but in the real world, our economy is the best there is. (3) How often have you heard these statements either as an expression of national superiority or as a defense of the status quo?

(4) Alas, they are simply untrue. (5) Our country has not generated the world's highest per capita GNP since the early 1950s when we were surpassed by Kuwait. (6) More important, perhaps, is the fact that we have been surpassed, or are about to be, by a number of countries in Europe. (7) Among industrial countries, Sweden and Switzerland can each claim to be more successful with a per capita GNP 20 percent above ours. (8) We have also been passed by Denmark and are about to be surpassed by Norway and West Germany. (9) Relative to achievements in the rest of the world, the United States economy no longer delivers the goods.

Passage 2

(1). . . Is torture, by which I mean the use of physical or mental pain to gain information, everywhere and always indefensible? (2) . . . Certainly torturing an individual is a less grievous violation of his rights than killing him. (3) Yet in most systems of morality, killing is sometimes justified. (4) Certainly killing is more moral in the prosecution of a just war, such as World War II. (5) (Audie Murphy was held up as an example to the youth of the post-war generation for the number of Germans he killed singlehandedly, just as Sergeant Alvin York, Tennessee sharp-shooter, became a folk hero following the "war to end wars.") (6) The policeman who kills in the line of duty is often seen as a hero; so is the man who takes the life of an assailant to protect his wife or children. (7) In both instances, indeed, there seems a positive moral obligation to kill a criminal rather than let an innocent human life be taken.

(8) The point I want to make is this: If there are occasions when it is morally justifiable to kill, then there are times when it is morally justifiable to inflict temporary mental or physical suffering, an infinitely less serious violation of human rights.[2]

Passage 3

(1) A long-term study of physical activity and heart disease among San Francisco area longshoremen reached much the same conclusion. (2) Published in the March 13, 1975, issue of the *New England Journal of Medicine*, the comprehensive report covered the experience of 6351 men over a 22-year period. (3) Once again, vigorous activity appeared to be a significant factor. (4) Compared to workers whose jobs in-

[2] P. J. Buchanan, "The Right Time for Torture," *Skeptic*, 17 (January/February 1977), 18.

volved light or moderately strenuous tasks, those who engaged in the heaviest labor had a lower incidence of heart disease and only one-third the rate of sudden deaths from heart attacks. (5) The researchers concluded that vigorous exercise was a "critical factor in cardiovascular wellbeing especially as it would prevent sudden death from coronary heart disease. . . .[3]

Sample Responses

Passage 1

Paragraph 2 responds to paragraph 1 and provides the author's point of view. One indicator word is present—"alas." This suggests that the first sentence contains the conclusion. Sentences (4) to (7) all make assertions to support sentences (3) and (8). Sentences (3) and (8) in combination do not support any other sentences, but are supported *by* sentences (4) to (7). Another clue: location. Sentences (3) and (8) appear at the beginning and at the end of the paragraph. Thus, we have found the conclusion.

CONCLUSION: *The U.S. economy is not the best there is.*

In this passage, the issue is not explicitly stated; thus we must infer it from the author's conclusion.

ISSUE: *Which economic system is best?*

Passage 2

Paragraph 1, sentence (1), explicitly states the issue. We know that paragraph 2 is the conclusion by the author's use of the indicator words, "The point I want to make is . . .". The conclusion follows these words. Again, note the location clue; the conclusion occurs in the last sentence; the question in the first sentence.

[3] "Exercise Devices," *Consumer Reports*, 42 (May 1977), 255–56.

CONCLUSION: *If there are occasions when it is morally justifiable to kill, then there are times when it is morally justifiable to inflict temporary mental or physical suffering.*

ISSUE: *Is torture everywhere and always indefensible?*

PASSAGE 3

Indicator word and location clues aid us in finding the conclusion in this passage. The indicator word "concluded" is found in the last sentence.

CONCLUSION: *Vigorous exercise is a critical factor in preventing death from coronary heart disease.*

ISSUE: *Does vigorous physical activity help prevent death from coronary heart disease?*

Self-Examination

PASSAGE 4

(1) The average American often cannot afford the American standard of living, at least not by himself or with a 40-hour work week. (2) Recently, for example, the average industrial worker was making $1,200 less than the Bureau of Labor Statistics' "modest but adequate" budget. (3) This budget is really lean too. (4) It permits one bottle of beer every four days per family.

(5) The American standard of living is possible primarily for those families with multiple workers or with family members who moonlight. (6) Almost 5 million men have more than one job and almost 50 percent of all wives now work.

IV

What Are the Reasons?

CHAPTER III GAVE YOU SOME GUIDELINES for locating two very important parts of the structure of an argument—the issue and the conclusion. This chapter focuses on techniques for identifying the third essential structural element of an argument—the reasons. When a writer has a conclusion he wants you to accept, he has an obligation to present reasons to persuade you he is right, and to show you *why* he is right.

It is the mark of a rational person to support his beliefs by adequate "proof," especially when the beliefs are of a controversial nature. For example, when someone asserts that "we should abolish the CIA," this assertion should be met with the challenge, "Why do you say that?" You should raise this question whether you agree or disagree. The reasons he provides may be either strong or weak. The point is you will not know about their quality until you have *asked the why question and identified the reasons.* If the answer to the why question is "Because I think so," you should be quite dissatisfied with the argument. The "reason" is a mere restatement of the conclusion. However, if the answer is evidence concerning wrongdoings of the CIA, you will want to consider such evidence when you evaluate the conclusion. *Remember:* you cannot determine the worth of a conclusion until you identify the reasons.

☛ *CRITICAL QUESTION:* WHAT ARE THE REASONS?

A. INITIATING THE QUESTIONING PROCESS

The first step in identifying reasons is to approach the argument with a questioning attitude; and the first question you should ask is a WHY question. You have identified the conclusion; now you wish to know why

the conclusion makes sense. If a statement does not answer the question, "Why does the writer believe that?", then it is not a reason. In order to function as a reason, a statement (or group of statements) must provide support for a conclusion.

Let us apply the questioning attitude to the following paragraph. First, we will find the conclusion; then we will ask the appropriate WHY question. Remember your guidelines for finding the conclusion. (The indicator words for the conclusion have been underlined.)

> (1) Is there really a notable increase in teen-age sex? (2) A recent survey prepared for the Commission on Population seems to offer reasonably reliable figures. (3) Kinsey's 1953 survey of some 5,600 white women disclosed that 3 percent were non-virgins at age 15, and 23 percent had had premarital intercourse by the time they were 21. (4) By contrast, Zelnik and Kantner report that of the 3,132 whites in their sample, 11 percent of the 15-year-olds were non-virgins; and 40 percent of all the girls had lost their virginity by the age of 20. (5) In short youth's sexual revolution is not just franker talk and greater openness; more teen-agers and especially younger ones are apparently having intercourse, at least occasionally.[1]

What follows "In short" answers the question raised in statement (1). Thus, the conclusion is statement (5), ". . . *more teen-agers and especially younger ones are apparently having intercourse, at least occasionally.*" HIGHLIGHT THE CONCLUSION!

We then ask the question, "Why does the author believe the conclusion?" Statements answering that question are his reasons. In this particular case, the author provides us with evidence as reasons. Statements (3) and (4) jointly provide the evidence; that is, together they provide support for the conclusion. Together they serve as the *reason* for the conclusion.

Now, try to find the reasons in the following paragraph. Again, first find the conclusion, highlight it, and then ask the WHY question.

> (1) Euthanasia is detrimental to the welfare of society because it destroys man's ideas of sacrifice, loyalty, and courage in

[1] "Teen-Age Sex: Letting the Pendulum Swing," in W. A. Rivenbark III and J. Rosenberg (eds.), *Issues in Human Behavior* (Lexington, Mass.: Xerox College Publishing, 1975), p.107.

> bearing pain. (2) Some dying persons accept their suffering as a way of paying for their sins. (3) These people should be permitted to die as they wish—without help from any other person in speeding up the dying process.

There is no obvious indicator word for the conclusion in the paragraph, but the author is clearly arguing against the morality of euthanasia. The conclusion here is: "*Euthanasia is detrimental to the welfare of society.*" Why does the author believe this? Her major reason is that ". . . it destroys man's ideas of sacrifice, loyalty, and courage in bearing pain." The next two sentences in the excerpt provide additional support for this reason.

B. WORDS WHICH IDENTIFY REASONS

As was the case with conclusions, there are certain words which will typically indicate that a reason will follow. *Remember:* The structure of an argument is "This, because of that." Thus, the word "because," as well as words synonymous with and similar in function to it, will frequently signal the presence of reasons. A list of indicator words for reasons follows.

because	in view of the fact that
first—second	for the reason that
since	is supported by
for	for example
for one thing	also

Find the reasons in the following passage by identifying the indicator words.

> (1) No one could be more willing to recommend hunting as a wholesome form of outdoor recreation than I. (2) For one thing, I believe hunting has many values for those who participate in it. (3) It is a form of recreation which brings many physical, mental, and even spiritual benefits to the individual. (4) Hunting also develops self-reliance and confidence.

You should have identified statements (2) and (3) jointly as one reason, and (4) as another. Did you notice the indicator words "for one thing" and "also"?

There are several different kinds of reasons, depending on the kind of issue. Many reasons will be statements presenting *evidence*. By evidence we mean facts, data, or statistics. When a speaker or writer is trying to support a descriptive conclusion, the answer to the WHY question will typically be evidence. The following example provides a descriptive argument. Find the author's reasons.

> (1) The fact is that despite radical changes in the educational and occupational opportunities available to women, they remain as underrepresented as do members of many minority groups in high status professional or executive positions. (2) Although women constitute 40 percent of the labor force and control, at least in name, 82 percent of the country's wealth, their participation in business and industry is perhaps summarized by the titles of two entries in a recent issue of *Business World*:
>
> The Men at the Top: Business World Speaks with Thirty Industry Leaders.
>
> The Women at the Top: Business World Speaks with Two Senior Vice Presidents at Macy's.[2]

You should have identified the first statement as the conclusion. It is a descriptive statement about the number of women in professional or executive positions. The rest of the paragraph presents the evidence—the reason for the conclusion. *Remember:* The conclusion itself will not be evidence; it will be a belief supported by evidence or by other beliefs.

In prescriptive arguments, reasons are typically either prescriptive or descriptive statements. The use of these two kinds of statements to support a conclusion in a prescriptive argument is illustrated in the following:

> (1) With regard to the big controversy over grade inflation, I would like to ask a few questions. (2) What difference does it make if the people who are really good are never distinguished from the average student? (3) Is there a caste system in our society according to grade point averages?

[2] C. Millsom, "Women and Education," *Educational Leadership* (November 1973), 99–101.

(4) Are those with high point averages superior to those with ow point averages? (5) In the majority of cases, grades are not a true indication of learning, anyway; they are a measure of how well a student can absorb and regurgitate information for a short time period on a test.

(6) Students will retain the information that interests them and is important anyway. (7) Why can't we eliminate grades and be motivated only by the inborn curiosity and zest for learning that is really in us all?

The controversy here is what to do about grade inflation. The author's solution to the problem is to abolish grades, as indicated in statement (7). Let's look for statements which answer the question, "Why does she believe this conclusion?" First, note that no evidence is presented. Statements (2) and (3) jointly form one reason: It is not important to distinguish the average student from the good student. Note this is a prescriptive statement; it indicates the writer's view about how the world should be. Statements (4) and (5) add a second reason: grades are not a true indicator of learning. This is a descriptive statement describing a disadvantage of grades. Statement (6) provides a third reason: Students will only retain the information that interests them and is important anyway (grades do not aid what learners remember). This is another descriptive statement.

Many arguments are long and not very well organized. Sometimes one conclusion will function as a reason for another conclusion. In especially complicated arguments, it is frequently difficult to keep the structure straight in your mind as you attempt to critically evaluate what you have read. To deal with this problem, try to develop your own organizing procedure for keeping the reasons and conclusion separate.

Some suggestions other readers have found useful are the following:

1. Underline the reasons and conclusion in different colors of ink.
2. Label the reasons and conclusion in the margin.
3. For lengthy passages, make a list of the reasons at the end of the essay.

If some other technique works better for you, by all means use it. The important point is to keep the reasons and conclusion straight as you prepare to evaluate.

☞ *CRITICAL QUESTION:* WHAT ARE THE REASONS?

First, survey the passage and highlight its conclusion. Then ask the question, "Why?" and locate the reasons. Use indicator words to help. Keep the conclusions and the reasons separate.

PASSAGE 1

A three-year-old picked up a .356 magnum the other day and killed a seven-year-old friend. According to one child who saw the murder, "He just stood there with a big hole in his stomach and blood all over the place. Then he fell over."

Just a few days later, a Chicago toy designer strolled into work carrying a handgun. He shot five people, killed three of them, and then he killed himself.

Between 1966 and 1972, 44,000 Americans were killed in Vietnam. In the same period, 52,000 Americans were killed by handguns in the United States.

A recent Harris poll found that 77 percent of the American people favor federal registration of all handguns. Registration, not the namby-pamby gun controls we now have, and which do so little good.

You'd think that when 77 percent of the people favor something, Congress would pass it. Of course, it hasn't, in spite of the overwhelming public support for years for such measures. It is cowed by an organized minority—the gun manufacturers and their ally, the American Rifle Association. It is a classic case of the small minority using organized political pressure for petty and selfish ends.

And it is killing us. One by one, day by day. Just read your newspaper.

Passage 2

Competition is inappropriate in modern education. It becomes increasingly more difficult to justify, yet it is defended as necessary preparation for "real life." It pervades all of education, for students if not for teachers. Students are manipulated to compete for rewards by teachers who protest violently, to the point of striking, if asked to accept a merit pay proposal involving competition. For students, the reward for success is a higher score. Little games are contrived to reward the winners (while punishing the losers). This to the background of pious murmurings and amens about the need for personal concern, compassion, and involvement.

The inappropriateness of stressing competition becomes glaringly apparent when we consider the gap between what is and what ought to be. Competition is seeking advantage at a cost to another, when human efforts ought to be for the benefit for all. Competition is a model for aggression, when education ought to bring about cooperation for the common good.[3]

[3] Adapted from J. Wax, "Competition: Educational Incongruity," *Phi Delta Kappa* (November 1975), 197–98.

Passage 3

Even though concern about the improvement of instruction occupies a great amount of the time and energy of many faculty and administrators, and articles about faculty development that focus on improving teaching and learning fill the current publications in American higher education, there is still reason to believe that very few people genuinely care. The real question, as always, is: does improved teaching really count?

In a survey entitled Assessing Faculty Performance (Teaching Research Division, Oregon State System of Higher Education, November 1976), conducted among all faculty in the Oregon system of higher education, college faculty listed as the most important factors for promotion: advanced degrees, department chairman evaluations, time in academic rank, and personality traits.

In a similar study at the University of Nebraska in 1975–76, Patricia Cross discovered that of the nine possible criteria for promotion, the number of publications was considered the most important, and only 28 percent of the faculty were willing to have colleagues visit their classes. . . .

When the judgments are made, teaching does not seem to be among the critical criteria used to reward faculty behavior.[4]

Sample Responses

Passage 1

ISSUE: *Do we need federal handgun control legislation?*

[4] L. R. Meeth, "Does Anybody Care?" *Change*, 9 (July 1977), 4–5.

CONCLUSION: *We need federal handgun control legislation.*

REASONS:

1. *Handguns are responsible for many deaths.*
2. *Handguns are the most likely weapons in a killing.*
3. *The majority of the American people favored federal legislation.*
4. *Pressure from a small minority has kept the law from being passed.*

Note: We have identified the reasons we think the author would have listed if we had asked him the question, "Why do you believe we need federal handgun legislation?" We may not think he *should* have included certain reasons; but at this stage of analysis, it is useful to list anything that the writer may have been using as a reason. Later we will judge their appropriateness.

Passage 2

ISSUE: *Is competition desirable in modern education?*

CONCLUSION: *No, competition is inappropriate in education.*

REASONS:

1. *Students are required to engage in competing for rewards, while teachers protest merit systems and express the need for personal concern, compassion, and involvement.*
2. *Competition represents a gap between what is and what ought to be.*

Passage 3

ISSUE: *Is improved teaching rewarded in universities and colleges?*

CONCLUSION: *No, improved teaching does not count.*

REASONS:

1. *A survey shows college and university faculty do not list teaching as an important factor for promotion.*

2. *A second survey shows that the number of faculty publications is considered the most important criterion for promotion and that few faculty are willing to permit colleagues to visit their classes.*

Self-Examination

PASSAGE 4

The case for transplanting organs such as the heart and liver is obvious. Yet I don't buy it. The cultural and religious significance of certain organs differs greatly among people. Because of this difference, great psychological harm might result from transplanting one person's heart into the body of another person who will always be wondering about the worth of the donor. In the case of an ovary transplant there is another factor weakening the case for transplants. Any woman willing to subject herself to such high medical risks must have an abnormal psychological drive to produce children with her own body. Should society contribute to these psychological problems by encouraging organ transplants?

V

What Words or Phrases Are Ambiguous?

THE FIRST FOUR CHAPTERS of this book have been devoted to helping you identify the basic structural elements in any essay. At this point, if you can locate a writer's conclusion and reasons, you are progressing rapidly toward the ultimate goal of forming your own rational decisions. Your next step is to put this structural picture into clearer focus.

While identifying the conclusion and reasons gives you the basic visible structure, you still need to examine the precise *meaning* of these parts before you can react fairly to the ideas being presented. You need now to pay much more attention to the details of the language. Specific words and phrases may have several different meanings or implications—that is, they are *ambiguous*. How they are interpreted will affect how acceptable the reasoning is to you. Consequently, before you can determine the extent to which you wish to accept one conclusion or another, you must first attempt to discover the *precise meaning* of the conclusion and the reasons. While the meaning of words typically *appears* obvious, the meaning rarely *is* obvious.

The discovery and clarification of meaning require conscious, step-by-step procedures. This chapter suggests one set of such procedures. It focuses on the following question:

☞ *CRITICAL QUESTION:* WHAT WORDS OR PHRASES ARE AMBIGUOUS?

A. THE CONFUSING FLEXIBILITY OF WORDS

Our language is highly complex. If each word had only one potential meaning about which we all agreed, effective communication would be more likely. However, most words have more than one meaning.

Consider the multiple meanings of such words as *freedom*, *obscenity*, and *happiness*. These multiple meanings create serious problems in determining the worth of an argument. For example, when someone argues that a magazine should not be published because it is obscene, you cannot evaluate the argument until you know what the writer means by "obscene." In this brief argument, it is easy to find the conclusion and the supporting reason, but the quality of the reasoning is difficult to judge because of the ambiguous use of "obscene." Thus, even when you can identify the structure of what others are saying, you still must struggle with the meaning of certain words in that structure. A warning: *We often misunderstand what we read because we presume that what words mean is "obvious."* Whenever you are reading, force yourself to search for ambiguity. Otherwise, you may simply miss the point.

As an illustration of potential problems caused by ambiguity, read the following student justification for ignoring a term-paper assignment; then write in the blank space that follows the "obvious" meaning of the word "read."

> I am not going to spend any time on this paper. This course isn't even in my major. What is the point of working for two weeks on a paper that my professor will not *read*. You see, he cannot possibly *read* the papers of 200 students in our class. Since he will give me a grade without *reading* my paper, why should I spend much of my time writing one?

_____

_____

_____

How did you do? Obvious, wasn't it? Actually, it is not clear at all whether the student is claiming that the professor will

1. not look at the papers at all,
2. merely glance at the introductory paragraphs,
3. or not examine the papers in great depth.

Does it really matter which of these possible interpretations of "read" you use? It certainly does. The student's refusal to complete the assignment is most sensible if the professor does not even glance at the con-

tents of the paper. If, however, either of the last two meanings of "read" were intended by the student, then the argument is greatly weakened.

Ambiguity, such as that surrounding the student's claim that his professor does not "read" term papers, forces the reader to make a choice from among potential meanings. This choice is required because words are so flexible, and those who are communicating with us frequently fail to make it clear what they truly mean by a word or group of words with multiple meanings. This decision on your part about the precise meaning of key words or phrases is an essential prerequisite before you can decide whether to agree with someone's opinion. If you fail to check for ambiguity, you are very likely to react to a distorted version of what was said rather than to what the author intended.

B. LOCATING AMBIGUITY

Can you locate the ambiguity in the following advertisement?

> Men's Jeans Half Off Friday Only!

If the ambiguity is not apparent to you, notice that the advertisement could mean that men's jeans will be down to their knees on Friday or that the price of jeans will be drastically reduced on Friday. Unfortunately, important instances of ambiguity are usually much more difficult to identify, and the most likely interpretation is not so obvious.

When searching for ambiguity, you should keep in mind why you are looking. Someone wants you to accept a conclusion. Therefore, you are looking only for ambiguity that will affect whether or not you accept the conclusion. So, look for ambiguity in the *reasons* and *conclusion!*

Another useful guide in looking for ambiguity is to keep in mind the following rule: The more *abstract* a word or phrase, the more likely it is to be ambiguous. To avoid being ambiguous in our use of the term "abstract," we define it here in the following way. A term becomes more and more abstract as it refers less and less to particular, specific instances. Thus, the words "equality," "responsibility," "pornography," and "aggression" are much more abstract than are the phrases "having equal access to necessities of life," "directly causing an event," "pictures of male and female genitals," and "doing deliberate physical harm to another person." This group of phrases provides a much more concrete picture, and therefore is less ambiguous.

When you first start trying to find ambiguity, begin by asking yourself what each word in the conclusion and reasons means, with special

emphasis on the most abstract words. Could any of the words have a different meaning?

You can be certain that you have identified an important ambiguity by performing the following test. If you can express two or more alternative meanings for a term which "make sense" in the context of the argument, *and* if these alternative meanings would lead to different conclusions depending on which meaning is assumed, then you have located a significant ambiguity.

For instance, look at the following advertisement:

> Lucky Smokes put it all together and got taste with only 3 mg. tar.

The word taste is ambiguous. How do we know? Let's perform the test together. Taste could mean many things. It could mean a barely noticeable mild tobacco flavor. It could mean a rather harsh, bitter flavor. Or it could have many other meanings. Isn't it true that you would be more eager to follow the advice of the advertisement if the taste provided matched your taste preference? Thus, the ambiguity is significant since it affects the degree to which you might be persuaded by the ad.

Advertising is often full of ambiguity. Advertisers intentionally engage in ambiguity in order to persuade you that their products are superior to those of their competitors. Here are some sample advertising claims that are ambiguous. See if you can identify alternative, believable meanings for the italicized words or phrases.

1. No-Pain is the *extra-strength* pain reliever.
2. Parvu: Sensual . . . but not *too far from innocence.*
3. Ray Rhinestone's new album: an album of *experiences.*
4. Vital Hair Vitamins show you *what* vitamins can do for your hair.
5. Here is a book at last that shows you how to find and keep a *good man.*

In each case, the advertiser hoped that you would assign the most attractive meaning to the ambiguous words. Critical reading can sometimes protect you from making purchasing decisions that you would later regret.

Let's now look at a more complicated example of ambiguity. Remember that the first step is to highlight the conclusion and reasons.

> The patriarchal culture denies that women have the right to be sexual aggressors. It is the male who patronizes whorehouses and keeps his mistresses in sumptuously furnished lovenests around town, isn't it? It is the male who *needs* it, and it is the female who traditionally works off her inner needs with less animalistic pursuits.
>
> Understand this—it is the female whose right it is through her innate, inborn instinctual knowledge of sexual matters, to lead and instruct sexually, and to make sex an art as surely as painting and music are arts. The perfumes and cosmetics and clothes that you use are the materials of that art, and you yourself are the medium. Your femaleness gives you the right and the talent to set the stage and present the play. As a woman, you are physically more capable of being the aggressor in this field than is your partner. You have what he wants, and you have the instinctive magnetism for getting from him what you want.[1]

In brief, Ms. Gallion's argument is that women should become sexual aggressors because they are more knowledgeable about sex, the object of sexual desire, and are more experienced in sexual stimulation. Let's examine the two paragraphs for any words that would affect our willingness to accept her reasoning. Initially, notice that her conclusion itself is ambiguous. Exactly what does it mean to be the sexual aggressor? Does it mean active flirtation, explicitly asking to have sex with the male, providing leadership in bed, or all of the above? Before we decide *whether* to agree with Ms. Gallion, we would first have to decide *what* it is she wants us to believe.

Next, let's look closely at her reasoning. She relies heavily in her argument on the supposedly superior "instinctual knowledge of sexual matters" possessed by women. If Ms. Gallion is referring to the superior capacity of women to have multiple orgasms or to their unique role during pregnancy, it is difficult to see how that type of "instinctual knowledge of sexual matters" entitles a woman to be the sexual aggressor. However, if women do possess superior knowledge about how to provide sexual ecstasy, then Ms. Gallion's argument is more sensible. If as a reader you would accept Ms. Gallion's argument without requiring her to clarify the ambiguity in the phrase "instinctual knowledge of sexual matters," you would not have understood what it is you agreed to believe.

[1] J. Gallion, *The Woman as Nigger* (Canoga Park, California: Weiss, Day, and Lord, Inc., 1971), pp. 52–53.

Writers and speakers only rarely "define their terms." Thus, typically your only guide to the meaning of an ambiguous statement is the *context* in which the words are used. By context, we mean words and statements preceding or following the ambiguity which provide clues about the meaning of the word. For example, one important contextual clue is the background of the writer. Is the writer a professional botanist, therapist, musician, etc.? Is he or she representing a particular ideology, political party, product, or organization?

If you were to see the phrase "human rights" in an essay, you should immediately ask yourself, "What rights are those?" If you examine the context and find that the writer is a leading member of the Soviet government, it is a good bet that the human rights he has in mind are the rights to be employed, have free health care, and attain adequate housing. An American senator might mean something very different by human rights. He could have in mind freedoms of speech, religion, travel, and peaceful assembly. Notice that the two versions of human rights are not necessarily consistent. A country can guarantee one form of human rights, and at the same time violate the other. Thus, if you are preparing to react to statements about human rights, you must try first to clarify the ambiguity surrounding the topic by examining the context in which the opinion is given.

It should be obvious from the preceding discussion that to locate and clarify ambiguity you must be aware of the possible meanings of words. Meanings usually come in one of three forms: synonyms, examples, and what we choose to call "definition by specific criteria." For example, one could offer at least three different definitions of anxiety.

1. Anxiety is feeling nervous. (*synonym*)
2. Anxiety is what President Nixon experienced when federal investigators asked for the Watergate tapes. (*example*)
3. Anxiety is a subjective feeling of discomfort accompanied by increased sensitivity of the autonomic nervous system. (*specific criteria*)

For critical evaluation of most controversial issues, synonyms and examples are inadequate. They fail to tell you the specific properties that are crucial for an unambiguous understanding of the term. The most useful definitions are those that specify criteria for usage—and the more specific the better.

Where do you go for your definitions? One obvious and very important source is your dictionary. However, dictionary definitions are frequently synonyms, examples, or incomplete specifications of criteria for usage. These definitions often do not adequately define the use of a term in a particular essay. In such cases, you must discover possible meanings from the context of the passage, or from what else you know about the topic. We suggest you keep a dictionary handy, but keep in mind that the appropriate definition may not be there.

Let's take a closer look at some of the inadequacies of a dictionary definition. Examine the following brief sentence.

> Education is not declining in *quality* at this university. In my interviews, I found that an overwhelming majority of the students and instructors responded that they saw no decline in the *quality* of education here.

It is clearly important to know what is meant by *quality of education* in the above paragraph. If you look up the word *quality* in the dictionary, you will find many meanings; the most appropriate, given the context, being: *excellence; superiority.* Excellence and superiority are *synonyms* for quality—and they are equally abstract. You still need to know what *precisely* is meant by excellence or superiority. How do you know whether education is high in quality or excellence? Ideally, you would want the writer to tell you precisely what *behaviors* he is referring to when he uses the phrase "quality of education." Can you think of some different ways that *quality of education* might be defined? The following list presents some possible definitions.

> *Quality of education:* average grade point average of students.
>
> *Quality of education:* ability of students to think critically.
>
> *Quality of education:* number of professors who have Ph.D.s.
>
> *Quality of education:* amount of work typically required to pass an exam.

Each of these definitions suggests a different way to measure quality; they specify a different criterion. Each provides a precise way that the term could be used. Note also that each of these definitions will affect

the degree to which the reason supports the conclusion. For example, if you believe that "quality" in the conclusion refers to the ability of students to think critically and most of the students in the interviews are defining it as how much work is required to pass an exam, the reason would not necessarily support the conclusion. Exams may not require the ability to think critically.

Thus, in many arguments, you will not be able to find adequate dictionary definitions; and the context may not make the meaning clear. One way to discover possible alternative meanings is to ask yourself, "If I had to do a research study to determine whether or not the statement were true, would I have to be more specific about some terms?" If so, then you probably have identified an important ambiguity. Let's apply such a test to the following example.

> Welfare programs have not succeeded. They have simply destroyed the recipient's desire to succeed.

The "recipient's desire to succeed" is the standard being used to assess the worth of welfare programs. Is there a single clear meaning of a person's desire to succeed or are there alternative ways to think about that idea? Wouldn't you expect a defender of welfare to ask the question, "Which of the many ways by which desire to succeed could be measured was used as a basis for this argument"? For instance, was the judgment about "desire to succeed" based on personal interviews with welfare recipients, measurements of hours per week the recipients were employed, or on income earned? Since you would not be able to tell whether you agree or disagree with the statement until "desire to succeed" is clarified, you have found an important ambiguity.

E. LIMITS OF YOUR RESPONSIBILITY TO CLARIFY AMBIGUITY

After you have attempted to identify and clarify ambiguity, what can you do if you are still uncertain about the meaning of certain key ideas? What is a reasonable next step? We suggest you ignore any reason that contains ambiguity that makes it impossible to judge the acceptability of the reason. It is your responsibility as an active learner to ask questions that clarify ambiguity. However, your responsibility stops at that point. It is the writer who is trying to convince you of something. Her role as a persuader requires her to respond to your concerns about possible ambiguity.

You need not feel that you should require yourself to react to ideas or opinions that are unclear. If a friend tells you that you should enroll

in a class because it "really is different," but cannot tell you how it is different, then you have no basis for agreeing or disagreeing with his advice. No one has the right to be believed if he cannot provide you with a clear picture of his reasoning.

F. AMBIGUITY AND EQUIVOCATION

Equivocation is a special form of ambiguity that critical thinkers watch for. Equivocation occurs when the same words or phrases are used more than once in an argument, their meaning is changed, but you are not told that this shift has occurred. An example is presented in the following argument.

> Joe: Most of the people in this country have security. Very few Americans are having serious difficulties obtaining food, clothing, and shelter.
>
> Max: It is not true that most Americans are secure. Our industrialized, technological society creates so much dependence upon others that it is impossible to have the feeling that we have personal control over our welfare.

While there a number of ambiguous words used in this interchange (namely, *serious difficulties*, *security*, *welfare*), one word is being used equivocally—security. Joe has one meaning in mind—availability of material goods. Max has another—a sense of personal control over our well-being. The meaning of the word has shifted. Joe and Max are essentially dealing with different issues. If you accept Joe's definition of security, Max's argument becomes irrelevant to the issue. Max's conclusion does not follow, given Joe's definition of security.

How does one spot an equivocation error? Look for repeated reference to the same term and see if the term is being used consistently. When you spot an equivocation error, you have found a reason which will not be relevant to the conclusion.

G. PRACTICE EXERCISES

☞ *CRITICAL QUESTION:* WHAT WORDS OR PHRASES ARE AMBIGUOUS?

In the following practice passages, identify instances of ambiguity. As a check on yourself, attempt to show (a) how the words that you have

claimed are ambiguous have multiple meanings, and (b) how different interpretations of the words lead to different conclusions.

PASSAGE 1

Between 1960 and 1970, there was an eightfold increase in Living-Together Arrangements (LTA). The dangers of this growth are everywhere. LTA smacks of indecisiveness, instability, and failure to accept responsibility. Is your employer going to continue to employ you if he finds out about your relationship? LTA can actually spoil a good relationship. Because they are entered into out of weakness rather than strength, doubt rather than conviction, drift rather than decision, they offer unnecessary obstacles. You shouldn't casually toss aside those inherited institutions that have had a history of success.[2]

PASSAGE 2

I approve of sexual experimentation for the following reasons:

a. It is infinitely less dangerous than such sports as horseback riding, skiing, surfboarding, and automobiling. And in many respects cheaper.

b. Sexual experimentation helps to strengthen one's character, in that such activity gives the experimenter wonder-

[2] Adapted from L. Montague, "Straight Talk about the Living-Together Arrangement," *Reader's Digest*, 110 (April 1977), 91–94.

ful practice in not giving a damn about what certain nosey puritans think about you.

c. It provides learning and practice through which an unmarried person may become sexually experienced and competent.

d. Sexual experimentation is one of the best available pathways left today for adventure, experimenting, and interpersonal experiencing.[3]

Passage 3

We should treat drug taking in the same way we treat speech and religion, as a fundamental right. No one has to ingest any drug he does not want, just as no one has to read a particular book. Insofar as the state assumes control over such matters, it can only be in order to subjugate its citizens—by protecting them from temptations as befits children, and by preventing them from exercising self-determination over their lives as befits slaves.[4]

[3] Adapted from A. Ellis, in *Sexual Latitude: For and Against*, ed. H. Hart (New York: Hart Publishing Co., Inc., 1971), pp. 67–70.

[4] T. Szasz, "A Different Dose for Different Folks," *Skeptic* (January/February 1977), 47.

Sample Responses

PASSAGE 1

CONCLUSION: *Living-together arrangements are increasing and dangerous.*

REASONS:

1. *LTA are a sign of personal irresponsibility.*
2. *LTA endanger the future employment prospects of participants.*
3. *LTA weaken personal relationships.*
4. *Marriage should be preserved because it has been historically successful.*

The argument is significantly unclear because the author does not carefully define what LTA are. For instance, do LTA refer to short-term relationships for the primary purpose of having a steady sexual partner, or do they indicate long-run commitments between two people to share their lives? Notice that both of these definitions are reasonable ones, and that the strength of the reasoning is dependent upon which definition is intended. The second meaning of LTA makes some of the reasons provided by the author untrue. For example, reason one is not necessarily true if the second definition of LTA is used. Note also that the terms "personal irresponsibility" and "personal relationships" are quite abstract and have different meanings to different people.

PASSAGE 2

CONCLUSION: *Sexual experimentation is desirable.*

REASONS:

1. *It is cheaper and safer than many other widely accepted physical activities.*
2. *It is character building.*

3. *It enables one to learn how to have better sexual experiences.*
4. *It is adventuresome and exciting.*

The concept of sexual experimentation is not clearly specified. This ambiguity is significant because the worth of the argument is dependent on a particular meaning of sexual experimentation. To many people, sexual experimentation may not refer to sexual intercourse. The author's arguments appear to be based on a definition of sexual experimentation as sexual intercourse. For a reader who is trying to determine the worth of the conclusion, it would have been helpful if Ellis had specified more clearly which version of sexual experimentation he has in mind. For example, the psychological danger of premarital sex may be quite different depending on what type of sexual experimentation is being discussed.

Passage 3

CONCLUSION: *Drugs should be available for those who desire them.*

REASON: *Using drugs is a voluntary choice, and to regulate drug consumption is to treat citizens as children by not permitting them to make the choice.*

Is it clear what is meant by drugs? If drugs refer to vitamins and mild sedatives, wouldn't you be more likely to accept the reasoning than if the author included heroin within his definition of drugs? Can you tell from the argument whether the author is referring to all drugs or only to a subset of currently regulated drugs? To be able to agree or disagree with the author requires in this instance a more careful definition of what is meant by drugs.

Self-Examination

Passage 4

Ralph Thomas has already been committed to the Hawaii State Hospital as a criminal psychopath. He has recently signed an informed consent form indicating his willingness to have experimental brain surgery to attempt to solve his uncontrollable aggression. Thomas' parents as well as a scientific review committee have also approved the surgery. A

local newspaper is attempting to halt this scientific experimentation. Please write the newspaper voicing your support for Thomas' right to seek a cure.

VI

What Are the Value Conflicts and Assumptions?

When writers are trying to convince you of their point of view, they are shrewd. They present reasons which are consistent with their position. That is why, *at first glance*, most arguments "make sense." The visible structure looks good. But, stated reasons, *by themselves*, are not sufficient for proving or supporting a conclusion. Something else must be added. Let's see what it is, by examining the following brief argument.

> The government should prohibit the manufacture and sale of cigarettes. More and more evidence has demonstrated that smoking has harmful effects on the health of both the smoker and those exposed to smoking.

The reason—at first glance—supports the conclusion. If the government wants to prohibit a product, it makes sense that it should provide evidence that the product is bad. But it is also possible that the reason given can be true and yet *not necessarily* support the conclusion. What if you believe that it is the individual's responsibility to take care of his own welfare, not the collective responsibility of government. If so, the reason no longer supports the conclusion. For this reasoning to be convincing, the writer must take certain beliefs for granted. In this case, the belief taken for granted is that collective responsibility is more desirable than individual responsibility when an individual's welfare is threatened.

In all arguments, there will be certain beliefs taken for granted by the writer. Typically, these beliefs will not be stated. You will have to find them by "reading between the lines." These beliefs are important "invisible links" in the reasoning structure—the glue that holds the entire argument together. Until you supply these links, you cannot truly understand the argument.

Your task is similar in many ways to having to reproduce a magic trick without having seen how the magician did the trick. You see the handkerchief go in the hat and the rabbit come out—but you are not aware of the hidden maneuvers of the magician. To understand the trick, you must discover these maneuvers. Likewise, in arguments, you must discover the hidden maneuvers—which in actuality are unstated beliefs. We shall refer to these unstated beliefs as assumptions. To fully understand an argument, you must identify the assumptions.

Assumptions have the following characteristics:

1. hidden or unstated (in most cases);
2. taken for granted;
3. influential in determining the conclusion;
4. necessary, if the reasoning is to make sense;
5. and potentially deceptive.

This chapter and the next one show you how to discover assumptions. We will focus on one kind of assumption in this chapter—value assumptions.

☞ *CRITICAL QUESTION:* WHAT ARE THE VALUE CONFLICTS AND ASSUMPTIONS?

A. GENERAL GUIDE FOR IDENTIFYING ASSUMPTIONS

When you seek assumptions, where and how should you look? In any book or article there are numerous assumptions. Fortunately, you need to be concerned about relatively few. As you remember, the visible structure of an argument is contained in reasons and conclusions. Thus, you are interested only in assumptions that affect the quality of this structure. You can restrict your search for assumptions, therefore, to the structure you have already learned how to identify. LOOK FOR ASSUMPTIONS IN THE REASONS AND CONCLUSIONS!

Notice that the search for assumptions is focused on the same place that you are looking for ambiguity. Can you see now the importance of identifying structure initially? If you waited to find reasons and

conclusions until later in your thought sequence, you would be wasting a lot of your time. You wouldn't have any guidelines for knowing which sentences or paragraphs are more important than others.

You now know where to *look*. *Finding* assumptions is more difficult. We can give you a few hints.

KEEP THINKING ABOUT THE CONCLUSION! Why are you looking for assumptions in the first place? You are looking because you want to make up your own mind about the worth of the conclusion. You are looking for what the speaker or writer would have necessarily had to believe or think before the reasons and conclusion could have been linked together. As you look for assumptions, keep asking yourself, "*Why* does that reason support the conclusion?"

IDENTIFY WITH THE WRITER. Locating someone's assumptions is often made easier by imagining that you were asked to defend the conclusion. If you can, crawl into the skin of a person who would reach such a conclusion. Discover the background of the person who is writing or speaking. If the person whose conclusion you are evaluating is a corporate executive, communist, labor leader, boxing promoter, or judge, try to play the role of such a person and plan in your mind what they would be thinking as they moved toward the conclusion. When an executive for a coal company argues that strip mining does not harm the beauty of our natural environment, he has probably begun his argument with a belief that strip mining is very beneficial to our nation. He may, thus, assume a definition of beauty that would make his conclusion true, while other definitions of beauty would lead to a condemnation of strip mining.

IDENTIFY WITH THE OPPOSITION. If you are unable to locate assumptions by taking the role of the speaker or writer, try to *reverse roles*. Ask yourself why anyone might disagree with the conclusion. What type of reasoning would prompt someone to disagree with the conclusion you are evaluating? If you can play the role of a person who would not accept the conclusion, you can better see assumptions in the original structure.

RECOGNIZE THE POTENTIAL EXISTENCE OF OTHER MEANS OF ATTAINING THE ADVANTAGES REFERRED TO IN THE REASONS. Frequently, a conclusion is supported by reasons which indicate the various advantages of acting on the author's conclusion. When there are many ways to reach these same advantages, one important assumption linking the reasons to the conclusion is that the *best* way to attain the advantages is through the author's conclusion.

Let's try this technique with one brief example. Many counselors would argue that a college freshman should be allowed to choose his or her own courses without any restrictions from parents or college personnel because it facilitates the growth of personal responsibility. But aren't there many ways to encourage the growth of personal responsibility? Might not some of these alternatives have less serious disadvantages than those that could result when a freshman makes erroneous judgments about which courses would be in his or her best long-run interest? For example, the development of personal responsibility is heightened noticeably by requiring a potential student to somehow make a substantial financial contribution to the cost of his own education. Thus, those who argue that it is desirable to permit college freshmen to make their own course choices because such an opportunity encourages personal responsibility are assuming that there are not less risky alternatives for accomplishing identical advantages.

LOOK FOR (1) VALUE, (2) DEFINITIONAL, AND (3) DESCRIPTIVE ASSUMPTIONS. While there are many kinds of assumptions, there are three types that are present in most arguments: *value, definitional,* and *descriptive.* It makes sense to look for them specifically since they are so typical.

Let's examine some brief examples of the three types to help clarify their meaning.

ARGUMENT: *We should legalize laetrile for cancer patients because a person should be allowed to attempt to save his life whatever way he chooses.*

VALUE ASSUMPTION: *Personal freedom of choice is more important than community safety.*

The reason given in the argument for legalizing laetrile makes sense only if we supply an assumption about what is "good" or "bad," "right" or "wrong." Such assumptions are value assumptions and will always be present in prescriptive arguments.

Let's now examine a brief example which contains a definitional assumption.

ARGUMENT: *Encounter groups facilitate the* growth of human potential *according to a recent study which shows that 73 percent of those who participate in encounter sessions* report feeling less anxious following the experience.

DEFINITIONAL ASSUMPTION: *"Growth of human potential" can be defined by changes in anxiety levels.* Any other definition of "growth of human potential" would invalidate the reasoning of the author. For example, if

one were to define it as ehanges in human behavior whieh lead to greater toleration of diverse lifestyles, the reason given in the argument would be irrelevant.

The previous ehapter on clarifying ambiguity should give you a good start in finding definitional assumptions because it is the presenee of multiple meanings that demands definitional assumptions.

Finally, let's look at an argument that ineludes deseriptive assumptions—beliefs about the way things are or will be.

ARGUMENT: *When we start censoring movies or books, good art will be restricted by the censors right along with the junk. The urge to censor has historically been difficult to control once it has been unleashed. Consequently, censorship is exceedingly counterproductive.*

DESCRIPTIVE ASSUMPTION: *We do not learn from past censorship mistakes.* Therefore, current eensors would use no more diseretion than their predecessors. Notice that if the author had assumed that we have eolleetively learned from the sloppy attempts of censors in the past and, thus, will not repeat their mistakes, he would not neeessarily have eoneluded as he did.

FINALLY, DO NOT CONFUSE ASSUMPTIONS WITH REASONS. If you notiee that you have identified a hidden assumption that says virtually the same thing as one of the reasons, it is not an "assumption"—it is a restatement of the writer's explieit assertion. For example, look at the following argument.

> Group psychotherapy is preferable to individual psychotherapy because it permits more opportunity to get feedback about how one relates to people.

Is the statement, "People in group therapy will get a lot of feedbaek about their behavior from other group members" an assumption? No, it's a reason. The statment that feedback in a group is as nonthreatening as feedbaek in a one-to-one setting *is* an assumption. Do you see why?

B. VALUE CONFLICTS AND ASSUMPTIONS

Why is it that some very reasonable people eharge that abortion is murder, while other equally reasonable observers see abortion as humane? Have you ever wondered why every President regardless of his politieal beliefs eventually gets involved in a dispute with the press over publiea-

tion of government information that he would prefer not to share? How can some highly intelligent observers attack the publication of sexually explicit magazines and others defend their publication as the ultimate test of our Bill of Rights?

The primary answer to all these questions is the existence of value conflicts or different frames of reference. For ethical or prescriptive arguments, an individual's values influence the reasons he provides and, consequently, his conclusion. Value assumptions—beliefs about which values are most important—are, therefore, very important assumptions for such arguments. You should make it a habit to check to see whether the values on which reasons are based are consistent with your own values before accepting or rejecting a conclusion.

Some of the most fundamental assumptions are those relating to value priorities. The rest of this chapter is devoted to increasing your awareness of the role played by value conflicts in determining a person's opinions or conclusions. This awareness will help you to locate and evaluate this important type of assumption.

C. *DISCOVERING VALUES*

Before you can discover the importance of values in shaping conclusions, you must have some understanding of what a value is. Values may be objects, experiences, actions, or ideas that you think are worthwhile. You will find, however, that it is the importance you assign to abstract *ideas* that plays the major influence on your choices and behavior. Usually objects, experiences, and actions are desired because of some idea we value. For example, we may choose to do things which provide us with contacts with important people. We probably value "important people" because we value "status." Consequently, when we use the word value in this chapter, we will be referring to an *idea* representing what someone thinks is important and will strive to achieve. To better familiarize yourself with values, use the blank space below to write down some of your own values. Try to avoid writing down the names of people, tangible objects, or actions. Marlon Brando, pizza, and playing tennis may be important to you, but it is the importance you assign to *ideas* that plays the major influence on your choices and behavior concerning controversial public issues. Your willingness to argue for or against capital punishment, for instance, is strongly related to the importance you assign to the sanctity of human life—an abstract idea. The sanctity of human life is a value that affects our opinions about war, abortion, drug usage, and mercy killing. As you create your list of values, focus on those that are so significant that they affect your opinions and behavior in many ways.

Did you have problems making your list? We can suggest two further aids that may help. First, another definition! Values are *standards of conduct* that we endorse and expect people to meet. When we expect our political representatives to "tell the truth," we are indicating to them and to ourselves that honesty is one of our most cherished values. Ask yourself what you expect your friends to be like. What standards of conduct would you want your children to develop? Answers to these questions should help you enlarge your understanding of values.

Now let us give you another helpful hint for identifying values—a table that lists some commonly held values. Every value on our list is an attractive candidate for your list. Thus, after you look at our list, pause for a moment and choose those values that are *most important to you.* They will be those values that most often play a role in shaping your opinions and behavior.

Table 1

COMMON VALUES

equality	*obedience to authority*	*flexibility*
responsibility	*cleanliness*	*patriotism*
cheerfulness	*honesty*	*justice*
kindness	*comfort*	*tolerance*
ambition	*peace*	*self-control*
courage	*security*	*cooperation*
generosity	*freedom*	*productivity*
independence	*harmony*	*politeness*
rationality	*creativity*	*order*

D. FROM VALUES TO VALUE ASSUMPTIONS

To identify value assumptions, we must go beyond a simple *listing* of values. Many of your values are shared by others. Wouldn't almost anyone claim that flexibility, cooperation, and honesty are desirable? Since many values are shared, values by themselves are not a powerful guide to understanding. What *does* lead you to answer a prescriptive question differently from someone else is the relative *intensity* with which both of you hold specific values.

Differences in intensity of allegiance to particular values can easily be seen by thinking about responses to controversies when pairs of values collide or conflict. While it is not very enlightening to discover that most people value competition *and* cooperation, we do have a more complete understanding of prescriptive choices as we discover who *prefers* competition to cooperation when the two values conflict.

For example, parents disagree about the desirability of placing especially talented students in separate classes where the learning of these students can be accelerated. One basis for this disagreement is the different importance which parents may give to competition and cooperation. If a parent prefers to see competition (defined in terms of an identifiable struggle among students with different intellectual capacities) accelerated more than he or she wishes to see cooperation encouraged among these same students, then this parent is likely to approve of the establishment of separate classes for talented students. One factor that would divide parents on this issue is their differing preferences concerning the importance of competition and cooperation.

A writer's preferences for particular values in representative value conflicts are seldom stated, but they have a major impact on a writer's conclusion and on how the writer chooses to defend it. These unstated assertions about value priorities function as *value assumptions.* Recognition of relative support for conflicting values, or sets of values, provides you with both an improved understanding of what you are reading, as well as a basis for eventual evaluation of prescriptive arguments.

When a writer takes a stand on controversial prescriptive issues, he is usually violating one commonly shared value, while at the same time he is upholding another. So when you look for value assumptions, look for an indication of value preferences. Ask yourself what values are being upheld by this position, and what values are being violated. For example, when someone advocates the required licensing of prospective parents, collective responsibility is being treated as more important than individual responsibility.

E. TYPICAL VALUE CONFLICTS

If you are aware of typical value conflicts, you can more quickly recognize the assumptions being made by a writer when she reaches a par-

ticular conclusion. We have listed some of the more common value conflicts that occur in ethical issues and have provided you with examples of controversies in which these value conflicts are likely to be evident. We anticipate that you can use this list as a starting point when you are initially trying to identify important value assumptions.

Table II

TYPICAL VALUE CONFLICTS AND SAMPLE CONTROVERSIES

1. *loyalty—honesty*	1. *Should you tell your parents about your sister's drug habit?*
2. *competition—cooperation*	2. *Do you support the grading system?*
3. *freedom of press—national security*	3. *Is it wise to hold weekly Presidential press conferences?*
4. *equality—individualism*	4. *Are racial quotas for employment fair?*
5. *order—freedom of speech*	5. *Should we imprison those with radical ideas?*
6. *security—excitement*	6. *Should you choose a dangerous profession?*
7. *generosity—material success*	7. *Is it desirable to give financial help to a beggar?*
8. *rationality—spontaneity*	8. *Should you check the odds before placing a bet?*
9. *tradition—novelty*	9. *Should divorces be easily available?*

As you identify value conflicts, you will often find that there are several value conflicts that seem important in shaping conclusions with respect to particular controversies. It is very arbitrary to choose one particular value conflict as *the* real one at issue. Just as a check on yourself to make sure you have not missed any important value assumptions, try to find several value conflicts for each controversy. Some controversies will have one primary value conflict; others may have several.

Take another look at number 7 in the list of sample value conflicts and controversies. It is quite possible that value conflicts besides that between generosity and material success are affecting decisions about whether to give financial help to a beggar. For instance,

1. individualism—collective responsibility,
2. competition—cooperation,
3. efficiency—social stability

are all value conflicts that may affect a person's willingness to help a beggar. By identifying as many of the relevant value assumptions as possible, you have a better chance of not missing any of the important dimensions of the argument. However, you will probably have no way of knowing which value assumptions are actually responsible for the author's conclusion.

F. WRITER'S BACKGROUND AS A CLUE TO VALUE ASSUMPTIONS

It has already been suggested that a good starting point in finding value assumptions would be to check the background of the author. Find out as much as you can about the value preferences usually held by a person like the writer. Is he a big businessman, a union leader, a Republican Party official, a doctor, or an apartment tenant? What interests does such a person naturally wish to protect? There's certainly nothing wrong with pursuing one's self-interest, but such pursuits often limit the value assumptions a particular writer will tolerate. For example, it's highly unlikely that the president of a major automobile firm would place a high value on efficiency when a preference for efficiency rather than stability would lead to his losing his job. Consequently, you as a critical reader can often quickly discover value preferences by thinking about the probable assumptions made by a person like the writer.

One caution is important. It isn't necessarily true that because a writer is a member of a group, he or she shares the particular value assumptions of the group. It would be unfair to presume that every individual who belongs to a group thinks identically. We all know that businessmen, farmers, and firemen sometimes disagree among themselves when discussing particular controversies. Investigating the writer's background as a clue to his value assumptions is only a clue, and like other clues it can be misleading unless it is used with care.

G. CONSEQUENCES AS A CLUE TO VALUE ASSUMPTIONS

In prescriptive arguments, each position with respect to an issue leads to different consequences or outcomes when the position is acted upon. Each of the potential consequences will have a certain likelihood of occurring, and each will also have some level of desirability or undesirability. How desirable a consequence is will depend on a writer's or reader's personal value preferences. The desirability of the conclusions in such cases will be dictated by the probability of the potential consequences and the importance attached to them. Thus, an important means of determining an individual's value assumptions is to examine the reasons given in support of a conclusion and then to determine what

value preferences would lead to these reasons being judged as more desirable than reasons that might have been offered on the other side of the issue. Let's take a look at a concrete example.

ARGUMENT: *Nuclear power plants should not be built because they will pollute our environment.*

The major reason provided here is a rather specific potential negative consequence of building nuclear plants. This writer clearly sees environmental pollution as very undesirable. Why does this consequence carry so much weight in this person's thinking? What more general value does preventing pollution help achieve? Probably, "conservation," or perhaps "naturalness." Someone else might stress a different consequence in this argument, such as the effect on the supply of electricity to consumers. Why? Probably because he values "efficiency" very highly. Thus, in the sample argument presented, the reason presented supports the conclusion *if* a value assumption is made that "conservation" is more important than "efficiency."

Note that the *magnitude* of a consequence may have a major impact on value preferences. One may value "conservation" over "efficiency" only when efficiency threatens "significant" damage to the environment. And one may value free enterprise over economic security only as long as unemployment stays below a given level.

One important means of determining value assumptions, then, is to ask the question, "Why do the particular consequences or outcomes presented as reasons seem so desirable to the writer or speaker?"

H. FINDING VALUE ASSUMPTIONS ON YOUR OWN

Let's work on an example together to help you become more comfortable with finding value assumptions.

> A near-by college campus is trying to decide whether the campus police should be permitted to use powerful hollow-point bullets in their guns or whether their ammunition should be restricted to round-nosed bullets. Passions run high on both sides of the debate. A ballistics expert testifies that the hollow-point bullet should be used because it has the necessary stopping power. A professor responds that police should not be carrying weapons in the first place because it disrupts rational discussion. She sees the round-nosed bullets as a minimal compromise.

The structure of the two positions is outlined here for you:

CONCLUSION I: *Campus police should be permitted to use hollow-pointed bullets.*

REASON: *Hollow-pointed bullets will better enable the police to apprehend and disable those who violate laws on campus.*

CONCLUSION II: *Campus police should be required to use round-nosed bullets.*

REASON: *The more potent the weapoury used by campus police, the more damaging is the impact on rational discussion as a means of solving campus problems.*

Try looking for the value conflicts that lie at the root of the disagreement. Imagine that you became involved in that debate. Which of the values you listed as your own would play an important role in determining how you feel?

Let us suggest one value conflict that strikes us as important in shaping different conclusions about the merit of campus police being permitted to have hollow-point bullets. Note that the ballistics expert stresses the potential negative consequence of not apprehending lawbreakers. Why? Police see it as their responsibility to preserve the order created by our legal system. This legal order is the special way in which order is defined in this value conflict. Consequently, they argue for bullets with greater stopping power. Those who resent the hollow-point bullets see a college campus as one environment in which rationality should serve as the mechanism for resolving disputes. A gun with powerful bullets in the hands of a campus policeman is an insult to their faith in the rule of reason. You cannot reason with hollow-point bullets. Thus, a major value conflict here is *order vs. rationality;* and when the writer argues for hollow bullets, he is making a value assumption that order is more important than rationality in this particular argument. *Notice:* The supporters of hollow-point bullets are not in favor of irrationality, nor are their opponents in favor of disorder. However, when you are making a decision, as we have already noted, you oftentimes must choose between two values each of which is important to you. The supporters of hollow-point bullets simply rank order higher in this instance than they do the encouragement of rationality as a means of conflict resolution.

Let's complete one more example together.

> Many well-intentioned persons favor sex education in the schools because they have been led to believe, by clever rhetoric, that such courses will somehow reverse or at least

> arrest the sorry trends in sexual behavior which we witness today. However, the problem is not lack of information. A teen-age girl does not engage in promiscuity because she is ignorant of sexual facts. Such a problem is rooted in moral weakness, and not at all in ignorance? Do girls require 13 years of intercourse to behave responsibly in sexual matters?[1]

Let's first outline the structure of the argument:

CONCLUSION: *Sex education in the schools is not needed.*

REASON: *Promiscuity is caused by moral weakness, not by lack of information.*

What value assumption do you think would result in someone's rejection of sex education in the schools? Look back at Table II. Would any of the sample value conflicts affect one's reaction to sex education and to the use of the above reasoning? Try to explain how a preference for (1) tradition over novelty or (2) privacy over public health might lead someone to agree that sex education in the schools in undesirable.

Identifying value assumptions is not only a speedy way to understand why someone makes a particular claim, but it is also one method for relating the various conclusions arrived at by the same individual. As we try to understand one another, it is sometimes helpful to recognize patterns in our behavior. One key to patterns of human behavior is an appreciation of value conflicts. Although you cannot be sure, it is a good first guess to predict that those who prefer to see campus police use hollow-point bullets will also favor a hardline approach to negotiations with the Soviet Union, spanking as a form of discipline, and tougher jail sentences for juvenile delinquents.

I. PRACTICE EXERCISES

☞ ***CRITICAL QUESTION:*** **WHAT ARE THE VALUE CONFLICTS AND ASSUMPTIONS?**

Identify the value conflicts that could lead to agreement or disagreement with the following points of view. Then identify the value priorities assumed by the writer.

[1] W. A. Marra, "The Case Against Sex Education in the Schools," in *The Agitator,* ed. D. L. Rice (Chicago: American Library Association, 1972), pp. 380–81.

Passage 1

Torture is defensible. If there are occasions when it is morally justifiable to kill (and almost all of us claim there are), then there are times when it is morally justifiable to inflict physical suffering on an enemy. It makes no sense to permit the firebombing of defenseless cities and then rule out the use of physical force on a single criminal.

Passage 2

We rarely tell young people the truth about marriage. The truth is that marriage is a terrible habit. It ruins voluntary love. Exciting romances are changed into dull marriages. What was a love affair becomes a grinding, limiting contract.

Passage 3

For most people, college is a waste of time and money. One does not need schools to learn. If you go to college to make it possible to earn more money, you have been had. More than half of those who earn more than $15,000 never re-

ceived a college diploma. What you do learn in college is rarely useful on the job. Most of you would be better off saving part of the money you earn while your naïve friends are in college.

Sample Responses

PASSAGE 1

CONCLUSION: *Torture is sometimes desirable.*

REASON: *Killing is worse than torture and we all justify killing at certain times.*

One value conflict that would cause readers or listeners to disagree is that between national security and the sanctity of individual life. The argument depends on the acceptability of killing under certain circumstances. We regularly defend killing during war as a requirement of national security. Some claim that preserving a nation's identity is not as important as the preservation of individual life. Hence, those who value the sanctity of individual life more than national security may well disagree with the contention that torture is sometimes desirable.

PASSAGE 2

CONCLUSION: *Marriage should be discouraged.*

REASONS:

1. *Love is no longer voluntary when one marries.*
2. *Marriage is relatively dull and repetitive.*

One value conflict is between security and variety. The author apparently prefers variety to security. He criticizes marriage as dull and

habitual. Those who value security more than variety may well disagree with the author.

PASSAGE 3

CONCLUSION: *Most young people should not attend college.*

REASONS:

1. *Many of those who make a lot of money never attended college.*
2. *College does not generally teach job-related skills.*

A value assumption is that materialistic achievement is more important than wisdom. Notice that the consequence stressed by the author is the impact of college on future income. She addresses none of the other purposes one might have for attending college. If one valued wisdom more than monetary accumulation, she might well reject the reasoning suggested in this passage.

Self-Examination

PASSAGE 4

The United States must maintain large numbers of troops to protect its interests in different parts of the world. The forces must necessarily be composed of young people because only they are physically and mentally able to risk their lives and kill if necessary. A draft, unlike a voluntary system, underlines a sense of national identity and commitment. We need a lottery to choose those who will be drafted so that luck, rather than lack of skill or income, determines the identity of our soldiers. A voluntary military creates the very real danger that dangerous personality types will be given power over our armaments and future.

VII

What Are the Definitional and Descriptive Assumptions?

YOU SHOULD NOW BE ABLE TO IDENTIFY value assumptions—very important hidden links in prescriptive arguments. When you find value assumptions, you know pretty well what a writer believes—what ideas he thinks are most important to strive for. But you do not know what he *believes is true* about what the world was, is, or will be like, except for the little bit you know from his visible reasoning. Yet his visible reasoning depends on these beliefs, as well as upon his values. Such unstated beliefs are descriptive assumptions—and they are essential hidden links in an argument.

Besides having underlying value preferences and beliefs, many arguments are based on unstated definitions of key terms. The reasoning makes sense only given the writer's particular choice of definitions; other definitional choices would invalidate the reasoning.

This chapter focuses on the identification of descriptive and definitional assumptions.

☞ *CRITICAL QUESTION:* WHAT ARE THE DEFINITIONAL AND DESCRIPTIVE ASSUMPTIONS?

A. CLARIFYING DEFINITIONAL AND DESCRIPTIVE ASSUMPTIONS

Let us give you a self-test to illustrate more clearly what we mean by descriptive and definitional assumptions, and also to give you a better idea of your own current understanding of such assumptions. Try to locate an assumption in the following quote:

Sexual habits are not becoming more permissive. In 1948 Kinsey's results showed that by the age of 21 approximately three-fourths of the male population and one-third to one-half of the female population had experienced sexual intercourse. A more recent study of 21 colleges in the U.S. found that 58 percent of males and 43 percent of females had had the experience of sexual intercourse.[1]

Assumptions

Could you do it? Compare your answers with ours. We will first provide the structure of the argument.

CONCLUSION: *Sexual habits are not becoming more permissive*

REASON: *A recent study at 21 colleges in the U.S. found that fewer males and females had experienced sexual intercourse than was indicated in the 1948 Kinsey data.*

1. One descriptive assumption made by the authors of the selection is that *people who answer questionnaires about sexual behavior answer them truthfully.* If the authors had little confidence in the willingness of those who completed the questionnaires to provide "truthful" responses, then they would have been unable to use the questionnaires as evidence indicating trends in sexual behavior. It is quite possible that many respondents to the questionnaires exaggerated their amount of reported intercourse, while others were reluctant to tell the truth about such intimate

[1] Adapted from R. Nutt and W. Sedlacek, "Freshman Sexual Attitudes and Behavior," *Journal of College Student Personnel*, 15 (September 1974), 346–51.

behavior. The accuracy of questionnaire data for this type of study is highly suspect. Yet the authors did not warn the reader of that danger. You may have been misled had you looked only at the visible structure.

2. Another descriptive assumption is that *nothing happened over the period in question to alter the way in which respondents completed the questionnaire.* The conclusion would not be supported by the data if changing attitudes toward the appropriateness of premarital intercourse had affected in some systematic way the willingness of people to admit premarital intercourse.
3. A definitional assumption made by the authors is that *sexual habits are defined by sexual intercourse.* His conclusion does not follow if sexual habits are defined in terms of some other form of sexual expression.

B. CLUES TO DEFINITONAL AND DESCRIPTIVE ASSUMPTIONS

When you are searching for definitional and descriptive assumptions, start with the same clues you applied in hunting for value assumptions. Keep thinking about the conclusion, identify with the writer or speaker, identify with the opposition, and avoid confusing assumptions with reasons.

In addition, there are a few more questions you can ask yourself. First, ask yourself, "Are there *key terms* in the controversy, conclusion, or in the reasons that have multiple potential meanings, but the writer's reasoning will make sense only if a particular meaning is supplied?" Look especially for key nouns and adjectives. We have italicized key words in the following controversies. See if you can determine what definitional assumptions might have to be made to respond to these controversies.

Is *psychotherapy effective?*

Should the *poor* receive *increased* welfare payments?

Are *churches dying* in America?

Was President Truman a *conservative* president?

Does *jogging* improve one's *mental health?*

The next question you should ask is, "What else does the writer have to believe about what is true of the past, the present, or the future in

order for his reasoning to make sense?" The answer to this question will be a descriptive assumption. For example, when someone argues that capital punishment is needed because it will be an effective crime deterrent, he must also believe that people think about the consequences prior to engaging in criminal acts. This belief is a descriptive assumption.

C. ASSUMPTIONS IN REASONS DISTINGUISHED FROM ASSUMPTIONS LINKING REASONS AND CONCLUSION

In finding assumptions it is useful to recognize that some assumptions are necessary for a reason or a set of reasons to be true, and other assumptions are required to make the logical jump between the reasons and the conclusions. Examine each reason independently to see if certain assumptions had to be made prior to stating it. You might ask yourself first what conditions must be met for the reason to be true. Then, ask yourself what assumptions were made to enable the writer to take those reasons and reach her conclusion.

Perhaps an example will help you keep these two levels of assumptions in mind.

> Some have argued that an increase in the number of male teachers would be beneficial because this would provide more diverse models for children to identify with.

First, let's look for an assumption that would be necessary for the reason to be true. *Doesn't the reason assume that the characteristics of men and women who go into teaching will be quite different?* Perhaps men who select teaching will have similar classroom behaviors and attitudes to those of women.

Next, is there an assumption necessary to take the reason and arrive at the conclusion reached? Yes. If we accept the reason as true, are we then safe in believing the conclusion? Not necessarily! The argument makes an important descriptive assumption: *Quantity of contact with a model is more important than quality.* Children do have contacts with males in other settings, such as in the home.

In prescriptive arguments, assumptions linking reasons to the conclusion include value assumptions. In descriptive arguments, the reasons will often include evidence, and significant assumptions will connect the evidence with the conclusion. These assumptions will answer the question, "What must be true in order for the evidence to support the conclusion?"

When you locate assumptions, don't forget to look both for assumptions in the reasons as well as assumptions linking the reasons and the conclusion. By making a complete search, you will be improving your understanding of the reasons and what they do or do not imply.

D. AN ILLUSTRATION OF DEFINITIONAL AND DESCRIPTIVE ASSUMPTIONS

Let's look at an argument against cloning and see whether we can identify both definitional and descriptive assumptions.

> Cloning is a process whereby children can be produced with only one parent. The consequences of human cloning are almost impossible to imagine. If there were widespread human cloning, our society would be changed beyond recognition. How could the family exist any longer when there would no longer be a link between reproduction and the sexual sharing of the marriage partners? No longer would we have the diversity of humans that makes all our lives so rich. Someone might create communities where people all looked and behaved the same.
>
> Think of the power possessed by those who would decide who gets cloned. Would they prefer opera singers to jazz pianists, baseball players to gardeners, or dancers to jockeys? Does the history of the species suggest that we can trust other citizens to have such power? To succeed as a species we need to be able to adapt to changes. It's quite possible that our ability to adapt is dependent on diversity in our gene pool. Cloning might destroy that diversity in our efforts to improve the quality of our species.

The structure of the argument appears to be the following:

CONCLUSION: *Cloning should be discouraged.*

REASONS:

1. *Families would be destroyed if there is no longer a necessary link between sexual intimacy and reproduction.*
2. *There would be too much power in the hands of the cloners.*

3. *Cloning would reduce the human diversity needed for adaption to unknown futures.*

Now let's see if any definitional or descriptive assumptions can be found in the argument. Remember to keep the conclusion in focus as you look. Ask yourself: "What must be true for the reasons to be true?—Why do these reasons support the conclusion? Are there any key words in the reasons that need careful definition before they are analyzed?" Look at the first reason. How does the author define families? Would all forms of family life be destroyed simply because marriage partners no longer need their spouses for purposes of reproduction? Apparently, the author's concept of family is based on the necessary role of human reproduction. Families are those institutions required for such reproduction. That's a definitional assumption that the author would like you to accept. This assumption is necessary for one of the reasons to make sense.

There is another assumption that is required for the second reason to lead to the conclusion. If someone is afraid of giving a group of scientists extensive power, what beliefs would they have about what the world was, is, or will be like? They would surely not have confidence that humans have demonstrated their ability to control potentially dangerous processes like cloning. For the second reason to prove that cloning should be *discouraged*, the descriptive assumption that humans are unlikely to control potentially dangerous scientific knowledge responsibly must be made. With that assumption the conclusion makes more sense. The second reason is thereby linked to the conclusion that cloning should be discouraged.

Note also that since this is a prescriptive argument, important value assumptions will underlie the reasoning. For example, can you see how a preference for tradition and naturalness over technological and scientific development would lead to this type of reasoning?

E. QUALITY OF ASSUMPTIONS AS A LEGITIMATE FILTER

After locating assumptions, you must then make an attempt to determine whether those assumptions make sense. In no way is it an error to make assumptions. You have not criticized a conclusion effectively simply because you located assumptions in the reasoning. All of us assume many things when we communicate. Making assumptions is normal when we speak or write.

It is the quality of the assumptions that affects whether we should agree with a line of reasoning. If you have some basis for doubting the appropriateness of an assumption, then it is fair to reject the reason or

conclusion that was propped up by that assumption. Don't be shy about disagreeing once you have identified shaky assumptions. It is the writer's responsiblity to justify any assumptions about which you have some doubt. If she doesn't do that satisfactorily, then it is perfectly appropriate for you to refuse to accept her advice.

F. PRACTICE EXERCISES

☞ *CRITICAL QUESTION:* WHAT ARE THE DEFINITIONAL AND DESCRIPTIVE ASSUMPTIONS?

For each of the three passages, locate important assumptions made by the author. Be sure to continue your search until you have found assumptions that make the reasons true as well as assumptions that are required for the reasons to lead to the conclusion. Remember first to determine the conclusion and reasons.

PASSAGE 1

During the 1965–66 academic year, seven students who were entering the 10th or 11th grade and three students who had recently finished high school were paid money in an attempt to improve their study habits, attitudes toward school, and their grades. Each grade of A or B for a course was rewarded with $5. At the end of one academic year, every one of the high school students had altered his or her grades from below a C average to above a C average. All attended class regularly, completed assignments and homework, and frequently participated in class discussions. The college students showed similar changes. The conclusion is obvious. In fact, eight years after the initiation of the experiment, a surprising percentage of the siblings of the original ten students have attended college—over 90 percent.[2]

[2] B. V. Allen, "Paying Students to Learn," *Personnel and Guidance Journal*, 52 (June 1975), 774–78.

PASSAGE 2

Juvenile delinquents rarely have parents who establish clear rules and enforce them. Increasingly, books on child-rearing have stressed the need for a permissive, liberal home environment. At the same time, juvenile delinquency rates have been rising sharply. Encouraging stricter discipline at home, rather than more aggressive law enforcement, offers the key to reducing the growth of juvenile delinquency.

PASSAGE 3

My answer to genocide, quite simply, is eight black kids—and another baby on the way.

I guess it is just that "slave/master" complex white folks have. For years they told us where to sit, where to eat, and where to live. First the white man tells me to sit on the back of

the bus. Now it looks like he wants me to sleep under the bed. Back in the days of slavery, black folks couldn't grow kids fast enough for whites to harvest. Now that we've got a little taste of power, white folks want us to call a moratorium on having babies.

Of course, I could never participate in birth control, because I'm against doing anything that goes against Nature. That's why I've changed my eating habits so drastically over the years and have become a vegetarian. And birth control is definitely against Nature. Can you believe that human beings are the only creatures who would ever consider developing birth control pills? You mention contraception to a gorilla, and he will tear your head off.[3]

Sample Responses

In presenting assumptions for the following arguments, we will list only *some* of the assumptions being made—those which we believe to be among the most significant.

Passage 1

CONCLUSION: *Paying students for getting high grades improves their classroom performance.*

[3] Adapted from Dick Gregory, "My Answer to Genocide," *Ebony,* (October, 1971), 66.

REASON: *Seven high-school and three college students improved their grades, classroom attendance, and classroom work when they were paid $5 for each grade of A or B.*

Here the reason is an evidential statement; thus, we will be looking for assumptions necessary for the evidence to support the conclusion. Some of these assumptions are as follows:

1. *Other high-school and college students will be similar to the students studied in the way they respond to money.*
2. *The courses these students were taking are typical in important respects to the kinds of courses the majority of students take.*
3. *The changes in performance that occurred were not due to the attention given the students, but rather to the money.*
4. *The changes in classroom performance were not due to the particular teaching methodologies used.*
5. *The changes in performance were not due to changes in the students' approach to learning which occurred as a result of external factors, such as more parental pressure, more knowledge about the benefits of learning, changes in grading practices, etc.*

PASSAGE 2

CONCLUSION: *The key to reducing juvenile delinquency is encouraging stricter discipline at home.*

REASONS:

1. *Juvenile delinquents rarely have parents who establish clear rules and enforce them.*
2. *Increased emphasis in popular books on permissive, liberal home environments has occurred at the same time as juvenile delinquency rates have risen.*

For reason 1 to support the conclusion, it must be assumed that because there is an association between parental discipline and delinquency, one *causes* the other. Perhaps lax parenting is caused by parents who have a basic "I do not care" attitude. The linkage between reason 2 and the conclusion requires the assumption that because two things

have occured at the same time, one causes the other. After all, television violence may also have increased during the same period.

Note that there is a value preference underlying the entire reasoning —the belief that tradition and family are more important values to uphold than rule by law. If one valued rule by law more strongly, then one would be more likely to argue for increasing penalties for juvenile delinquency rather than for changing the home environment.

Passage 3

CONCLUSION: *Birth control is wrong.*

REASONS:

1. *Birth control is just another attempt by the white folks to exercise their "slave/master" complex and keep the blacks from growing in power.*
2. *Birth control goes against Nature.*

What does the writer take for granted in order for reason 1 to be true?

a. *Blacks will utilize birth-control methods to a greater extent than will whites. (If he believed that whites would utilize birth-control procedures to a greater extent than blacks, then the end result of birth-control measures would be a greater increase in the black population relative to the white population.)*
b. *The number of blacks is an important determinant of the power of blacks.*

What does the writer take for granted in order for reason 1 to support the conclusion?

a. *Racial power considerations* are more important *than the environmental resource considerations that are affected by population growth.*

What does the writer take for granted in relating reason 2 to the conclusion?

a. *Man* should *not attempt to control his fate through artificial or technological means; rather he should accept the natural order.*

Note that these last two assumptions are value assumptions.

Self-Examination

PASSAGE 4

The abolition of the death penalty is a major step in society's long road to civilization. More than seventy nations have already abolished the death penalty. When innocents are killed by the state, effective rehabilitation has been prevented. Executions cheapen life. In addition, they present embarrassing evidence that our lust for vengeance often overpowers our humanity. Finally, the death penalty does not permit mistakes to be corrected. As long as we make mistakes in criminal trials, we will be executing victims, not criminals.

VIII

How Good Is the Evidence: Are the Samples Representative and the Measurements Valid?

THUS FAR, YOU HAVE BEEN WORKING at taking the raw materials a writer gives you and assembling them into a meaningful overall structure. You have learned ways to filter out the irrelevant parts and ways to discover the "invisible glue" that holds the relevant parts together, that is, the assumptions. You have learned to do this by asking critical questions.

Let's briefly review these questions:

1. What are the issue and the conclusion?
2. What are the reasons?
3. What words or phrases are ambiguous?
4. What are the value conflicts and assumptions?
5. What are the definitional and descriptive assumptions?

Most of the remaining chapters of the book focus on how well the structure holds up after being assembled. Your major question now is, "How acceptable is the conclusion?" You are now ready to EVALUATE. *Remember:* The objective of critical reading is to judge the acceptability or worth of the different conclusions that can be reached concerning an issue. Making these judgments will prepare you for forming a rational personal opinion—the ultimate benefit of asking the right questions.

You begin the evaluative process by raising issues of *fact*, or *truth*. Virtually all arguments include factual *claims*, that is, statements about what the world is like, was like, or will be like. The following are examples of factual claims:

1. Capital punishment acts as a deterrent to crime.
2. Marijuana causes brain damage.
3. Speed reading increases comprehension.

In order to evaluate, you need to decide whether or not to believe these claims. You should be asking, "How true are such claims?"

There are several paths to truth. One of the most powerful is the use of empirical evidence, that is, evidence collected through human observation and experiment. The next three chapters focus on questions you should ask about empirical evidence so you can decide to what degree the writer has provided appropriate evidence for his factual claims.

☞ *CRITICAL QUESTION:* ARE THE SAMPLES REPRESENTATIVE AND THE MEASUREMENTS VALID?

A. EVIDENCE AS A GUIDE TO INFORMED OPINION

All of us are constantly stating opinions, frequently in the form of generalizations. Generalizations are statements made about a large group of instances when only a smaller group of those instances have been studied. For example, when a conclusion is made about the quality of swimmers in California and only a *few* California swimmers have been observed, the conclusion is a generalization. Thus, the statement, "California swimmers are stronger than Oregon swimmers" is a generalization. You encounter such generalizations daily, statements such as:

"Jogging is good for your health"
"College is a waste of time and money"
"Saccharine causes cancer"
"Politicians are crooked"
"Brushing your teeth reduces cavities"
"Decreasing taxes will stimulate the economy"

You encounter these generalizations when you talk to friends, visit your local mechanic, read *Reader's Digest* and *Time*, watch television commercials, read textbooks, and listen to lectures. How does one know when such opinions are "true"?

Although the word "truth" has many definitions, we define it in a particular way because our definition *works well in evaluating controversies.* A statement is true when it is in accordance with the facts. A

fact is an event, state of existence, or relationship for which reliable evidence can be found. Thus, the key to determining whether or not a statement is true is finding the evidence for the statement. What kind of evidence should you require? Let's take a look at the following factual claim:

> An individual's handwriting is a useful guide to his or her personality.

How do you know whether or not to believe this generalization? Through your own experience? Not likely, since you probably have little or no relevant experience. Through the reports of a graphologist—that is, someone who interprets handwriting? Isn't he likely to be biased, since he makes his living reading handwriting? By asking an expert psychologist? How do you know if she has subjected the question to careful analysis? What evidence does *she* have? The best course is to examine the results of a research study in which many careful observations have been recorded by trained observers, in this case by comparing the personality descriptions made by graphologists with other indicators of an individual's personality. This option gets us closest to objective evidence, or the *facts*. A statement based on such evidence will be closer to the truth than one based on personal experience, an uncritical appeal to authorities, or an appeal to biased observers.

Once a factual claim has been backed up by carefully collected evidence, it no longer is simply an opinion; it is an *informed opinion*. The claim has a greater probability of being true. Can you now clearly see that some opinions are *better* than others? When someone argues that one opinion is always as good as any other, he is wrong! This is only the case if all opinions are equally worthless, with no evidence provided to support any of them. An individual has a *right* to his own opinion in the same way that an individual has a right to be ignorant. This view is aptly reflected in the following quote by Bernard Baruch: "Every man has a right to his opinion, but no man has a right to be wrong in the facts."

B. DANGERS OF "PERSONAL EXPERIENCE" AS A GUIDE TO THE FACTS

There is a major difference between "personal experience" and "experience-under-controlled observation," and this difference is crucial. There are a number of agreed-upon standards for judging whether something has been established as a fact. The average person who cites "personal experience" has not applied these standards, and therefore, he is subject

to many practical errors. You can see some of these practical errors by reflecting on how you might answer the following question: "Does watching too much violence on television increase the tendency to commit a violent act?" Let's take a look at some common errors.

1. *Paying attention only to experience that favors a belief (ignoring instances which contradict the belief).* You can always find a number of violent people who watch a lot of television. But are you keeping track of the nonviolent people? Perhaps they also watch television often.
2. *Generalizing from only a few experiences.* Maybe you are familiar with a couple of cases in which people committed crimes similar to those committted in a television show. Perhaps they would have committed these crimes anyway.
3. *Failing to "keep track" of events, to count, to control.* How good is your memory? Not as good as careful records!
4. *Oversimplifying.* Failing to consider any characteristics in addition to the characteristics of interest which might be affecting the behaviors under observation. You recall an incident in which a juvenile vandalized a school, just after watching a "juvenile gang" film on television. Maybe that child is imitating his violent parents.

Remember: Beware of the individual who says, "My experience proves _____," or "I can disprove all that because of an experience I had with a former student." The critical reader is always skeptical of experiences, subjects them to critical analysis, and determines whether they have been adequately confirmed by appropriate observational methods.

Look closely at the following two arguments. You should now be able to see that Argument B is better because it provides objective evidence. It does not rely merely on personal experience.

ARGUMENT A

Certain Bay Area physicians, nurses, social workers, psychologists and psychiatrists find that graphoanalysis provides a time-saving approach to understanding their clients and patients. In all these instances, graphoanalysts and those who have been exposed to graphoanalytic assessment have found

that this "soft science" is an accurate personality projection technique. . . . Practicing graphoanalysts know it works because they see the proof everyday in their jobs.

Argument B

In a university experiment, graphologists completed a graphoanalysis (personality description based on handwriting) on 48 students. After the results were collected each student was provided with two graphoanalysis reports. One was his own report, and one was randomly selected from the reports of the other 47 students. Each student was then asked to select the report that best described his own personality. More than half the students selected the wrong report. The researchers concluded that graphoanalysis has questionable validity.

C. *PROBABILISTIC GENERALIZATIONS*

Because many people recognize the need for objective evidence for generalizations, such evidence will frequently be encountered. Let's examine a brief example of a particular kind of argument.

> Despite their discontents, city dwellers have fewer mental health problems than their rural counterparts. . . . The survey reported on 6,700 interviews with adults who lived in one of six community sizes, ranging from city areas of over 3,000,000 population to rural areas of less than 2,500. The findings were based on symptoms the respondents themselves reported, such as difficulty in sleeping, having had a nervous breakdown or the feeling that one was imminent. People living in cities over 50,000 showed symptom scores that were almost 20 percent lower than those of people in communities of less than 50,000.

Let's isolate the structure of this argument.

CONCLUSION: *City dwellers have fewer mental health problems than their rural counterparts.*

REASON: *A survey shows that people living in cities over 50,000 showed symptom scores that were almost 20 percent lower than those of people in communities of less than 50,000.*

First, note that the conclusion is a generalization. The conclusion is about city and rural dwellers *in general.* It would have been impossible to study *all* city and rural dwellers. Consequently, a *sample* of 6,700 was studied. Then a generalization was formed on the basis of the sample.

Second, note that the evidence supporting the generalization is in the form of *statistics*, that is, facts of a numerical kind, which have been assembled, classified, and tabulated so as to present significant information. Thus, the generalization is a *statistical generalization.* Third, note that the generalization that "city dwellers have fewer mental health problems than their rural counterparts" is a *probabilistic generalization.* Why? Because the generalization is *not uniform;* it does apply in *all* cases. In the example, we can say only that *on the average* a city dweller is *more likely* to have lower symptom scores. We cannot say that *all* city dwellers will have lower symptom scores than *all* rural dwellers. Few generalizations dealing with the behavior of people will be in the form, "All A are B"; most will be probabilistic generalizations, such as, "Some A's are B," or "More A's than B's are C."

Since probabilistic generalizations are not uniform, what good are they? If they are not true in all cases, doesn't that mean that such generalizations are not true? No, not at all! Even though the generalization is probabilistic, it still may be true. Certainly, it may be true that *on the average* urban dwellers have fewer symptoms than rural dwellers. What is not true is that *every* city dweller will be better off; and it is useful to know that on the average they differ, since that recognition may lead to very different conclusions about the impact of city living. Thus, note that with probabilistic generalizations, *exceptions do not disprove the generalizations*; in fact, exceptions are expected. When someone states a probabilistic generalization, she does not have to assume that her assertion is true for everybody in order for the generalization to be correct.

D. ELEMENTS OF STATISTICAL GENERALIZATIONS

Every statistical argument will have:

1. A *target population*—the group of individuals or events one wants to generalize *about*; in the above case, the target population is city and rural dwellers.
2. A *sample*—a subgroup of the target population. We cannot observe everyone we want to generalize about; so we observe *some* members of the group, a sample. In this case, the sample consisted of 6,700 adults living in one of six communities.

3. *The characteristic of interest*—that aspect of the target population that we want to generalize about; in this case, the characteristic of interest was "mental health problems."

E. REPRESENTATIVENESS OF THE SAMPLE

It should now be clear that the nature of the sample is crucial. When is a sample appropriate for leaping to a conclusion? When it is *representative* of the target population! For example, if you wanted to generalize about college students in the United States, you would not want to sample only students from a midwestern college. That sample would not be representative of the target population, would it? When is a sample representative? When it has had sufficient *size*, *breadth*, and *randomness*.

The size of a sample is crucial. The more cases in a sample, the better. There is no absolute guide to the number needed; but the smaller the number, the less faith we can put on the generalization. Clearly, a sample of one, or just a few, is not enough. Such a sample will be *biased*. You would not be satisfied if the Gallop poll only sampled five people, would you? Obviously not, since these five people may differ markedly from most of the voters, that is, they may be nonrepresentative. However, with a sample of 5,000 people, the opinions will become more representative. Or how about the type of commercial that says, "Four out of five doctors recommend Painstop aspirin." You would be quite skeptical if only five doctors had been questioned, wouldn't you? EXAMINE THE SIZE OF THE SAMPLE!

In addition to the need for size, a "broad-spectrum" sample is preferred to a "narrow band." When is a sample sufficiently broad? Only when one samples across all important characteristics of the target population. For example, when one samples only male college undergraduates at a midwestern university to obtain their attitudes toward alcohol consumption, one can generalize only to male undergraduates in midwestern universities having similar characteristics. However, if one samples both male and female undergraduates from universities and colleges in all sections of the United States, and from all class levels (for example, freshman, sophomore, junior, senior, etc.), one can then generalize to the target population. It is important to sample *proportionately*. If 60 percent of college undergraduates are female, it is optimal for 60 percent of the sample to be female. EXAMINE THE BREADTH OF THE SAMPLE! Ask how well the sample characteristics mirror those of the population.

You have probably heard the phrase "random sampling" many times.

Both the Gallop poll and the Nielsen ratings randomly sample. What makes a sample *random?* A sample is random when the individuals or events making it up are selected by a chance process. This process prevents bias. From the group to be sampled, each member should have the same opportunity to be selected. For example, if one is interested in how freshmen undergraduates view their first quarter in school, one does not simply select the first fifteen freshmen he encounters at the Student Union. Why? Students who go to the Union may be quite different in attitudes from those who are at the library, or from those who are studying at a fraternity or sorority. Such a sample is biased. It does not mirror the population of freshmen. One means of overcoming the bias would be to sample names at random from the student telephone directory—perhaps by calling every fifteenth person in the directory. EXAMINE THE RANDOMNESS OF THE SAMPLE! Were subjects or events selected on a random or chance bias, or were they selected in some systematically biased fashion?

Now that you are aware of the major questions you should ask about the sample, let's determine the appropriateness of the sample in a brief generalization argument.

> Is the kid who sleeps with a toy gun destined to become the local bully? Not at all, maintain University of Nebraska psychologists Joseph C. LaVoie and Gerald Adams. To find out how much kids really know about firearms, the investigators interviewed 73 middle-class children (37 boys and 36 girls) ranging in age from five to ten. They were then tested with respect to verbal and physical aggression. Gun play and aggression did not go together. Kids who played with guns and those who did not play with guns came up with the same number of both physical and verbal aggression points.[1]

The structure of this argument is as follows:

CONCLUSION: *Playing with guns does not lead to physical aggression.*

REASON: *When tested concerning verbal and physical aggression, kids who played with guns and those who didn't had the same number of physical and verbal aggression points.*

Let's examine the size, breadth, and randomness of the sample. Seventy-three children were tested; thus, we can have some confidence

[1] "Toy Guns and Aggression," *Human Behavior,* (April 1975), 73.

that the results are relatively stable. The sample size is large enough that the results probably would not be systematically biased. How about the breadth? The sample covers both boys and girls, and a fairly wide age range; thus, results can legitimately be generalized across both sexes and the age range from 5 to 10. But the sample includes only children from *middle-class* families. Results might have been different if the researchers had selected lower-class children. Can you think of other characteristics that should have been considered? How about intelligence levels of the children? Maybe low intelligence children differ from high intelligence children in how they are affected by playing with guns.

How about randomness? We cannot determine this from the above description. Optimally, these seventy-three children should have been randomly selected from a larger population of children. Were these the first seventy-three children to volunteer for the project? If so, what factors might have led to their volunteering? Perhaps they were the type of child who comes from families who have a great deal of confidence in their child's social competence. If so, the sample is biased. Be sure to think about *why* the sample might be biased before you go on to the next section.

Let's summarize the sampling question you should ask when you encounter a leap from evidence about a sample to a generalization about a larger population. First, ask the question, "How representative is the sample?" Then determine your answer by asking about the size, breadth, and randomness of the sample. *Remember:* You should generalize only to a population which is "mirrored" by the sample; and it is your job to determine the identity of the important characteristics to be mirrored.

F. HASTY GENERALIZATIONS

When a generalization is stated on the basis of a sample which is too small or biased to warrant the generalization, the "hasty generalization" fallacy is committed. One has jumped to the conclusion too quickly. A frequent kind of hasty generalization is to jump to a conclusion concerning "all" on the basis of just a few examples. For example, if someone sees a *few* poor women drivers, then asserts that all women are poor drivers, she is committing the fallacy of hasty generalization.

Note that while it is important that hasty generalizations be avoided, we should not avoid making sound generalizations, that is, assertions that are compatible with the evidence. If statistics from a dozen studies with appropriate size, breadth, and randomness tell us that 25 percent

of the people who take a certain drug to cure cancer go blind, a decision should be made to consider seriously the possibility of banning the drug—even though it is not true that *all* people taking the drug will go blind—or that we can be sure that 25 percent is the *exact* probability. We act because we have some degree of confidence that 25 percent approximates the true figure.

G. VALIDITY OF THE MEASUREMENTS

After you have asked about the representativeness of the sample, you must then ask, "How well has the characteristic of interest been measured?" Evidence supporting generalizations usually consists of measurements of individuals or events in the sample. You should ask certain questions about such measurements before accepting them. To illustrate, let's examine the characteristic of interest in the example in the last section as well as the quality of its measurement. First, let's restate the conclusion: "Playing with guns does not lead to *physical aggression.*"

We have underlined the characteristic of interest. How did the researchers measure "physical aggression"? "Tests" were used. The question you should ask is, "Do these tests validly measure physical aggression?" You cannot assume that something measures a characteristic just because it *claims* to. Because of many influences, many tests are not valid tests; they do not measure what they claim to measure. Thus, it is the obligation of the person using the measurement device to *provide evidence* for its validity. Perhaps physical aggression was measured in these studies by teachers' reports of the child's activity in a structured situation. It is possible that such reports do not reflect the child's aggressive behavior in less structured situations. You should always ask the question, "What is the evidence that the measurement is a valid measurement of the characteristic?" If there is no evidence, this greatly weakens the quality of the generalization.

When the characteristic of interest is measured, ask, "Are the measurements valid? What evidence is there that they measure what they are supposed to measure?"

H. BIASED SURVEYS

One of the most frequent measuring devices you will encounter is the survey. Think how often you hear the phrase "according to recent polls." Surveys are usually used to measure people's attitudes and beliefs. Conclusions based on surveys require the assumption that *verbal reports*

(for example, "I definitely believe that busing is a good thing") accurately reflect *true attitudes* (for example, "I am willing to let my kid be bused"). *This is always a questionable assumption.* Because of this problem, survey evidence must always be treated with caution. For example, many individuals try to give answers that they think they *ought* to give rather than their true beliefs.

In addition, surveys can contain *built-in biases* which make them even more suspect. Biased wording of questions is a common problem. Let's examine a conclusion based on a recent poll and then look at the survey question.

> A U.S. Congressman sent a questionnaire to his constituents and received the following results: 92 percent were against government supported child care centers.

Now let's look closely at the survey question: "Do you believe the federal government should provide child care centers to assist parents in rearing their children?" Look carefully at this question. Do you see the built-in bias? The "leading" words are "to assist parents in rearing their children." Wouldn't the responses have been quite different if the question had read, "Do you believe the federal government should provide child care centers to assist parents who are unable to find a means of taking care of their child while the parents are working?" Thus, the measurement obtained here is not a valid indicator of attitudes concerning child care centers.

Survey data must always be examined for possible bias. Look carefully at the wording of the questions! Here is another example. Note the built-in bias. We have underlined the biasing word.

QUESTION: Do you think that people with a homosexual <u>disorder</u> should be permitted to teach your innocent children?

CONCLUSION: 75 percent of the people do not want homosexuals to teach their children.

I. SUMMARY

In this chapter, we have focused on generalizations. We have stressed the need for objective evidence if one is to accept the truth of a generalization. Thus, the first question to ask about a generalization is, "Where is the evidence?" Second, we have provided you with some ways

of determining whether statistical evidence for a generalization is *good evidence*. Let's review some of the steps you can take to catch a writer generalizing inappropriately.

1. First, determine whether there is *any* objective evidence.
2. If there is objective evidence, find out how representative the sample is. Check on its size, breadth, and randomness. If it fails on any of these dimensions, the sample will be biased; and you will have identified a hasty generalization.
3. Determine whether the writer or speaker is measuring what he claims to be measuring. Carefully compare the kind of measurement that has occurred with the characteristic that is being generalized about.

J. PRACTICE EXERCISES

In the three practice passages, evaluate the generalizations.

☛ *CRITICAL QUESTION:* **HOW GOOD IS THE EVIDENCE: ARE THE SAMPLES REPRESENTATIVE AND THE MEASUREMENTS VALID?**

PASSAGE 1

A survey carried out by the National Science Foundation (NSF) shows there are marked differences in marital status between men and women psychologists which document the incompatability of marriage and a career for a good proportion of women psychologists. While eight percent of men psychologists never marry, 22 percent of the women never marry. Five percent of the men are separated or divorced, while 13 percent of the women are. Seventy-five percent of the men in the general U.S. population are married, compared with 68 percent of the women.

_____

_____

_____

Passage 2

What one leorns in school seldom is of use on the job. For example, the Cornegie Commission queried oll the employees with degrees in engineering or science in two lorge firms. Only one in five said the work they were doing bore o "very close relotionship" to their college studies while olmost o third soid "very little relotionship ot oll." An overwhelming mojority could think of mony people who were doing their some work, but hod mojors in different fields.

Passage 3

Investigation hos shown thot the potient receives os little os 16 cents of the medical malproctice premium dollor becouse more thon 50 percent of thot dollor goes for legol fees and the rest for insurance compony overheod. Consequently, the

principal beneficiaries of medical malpractice are not the victims of medical malpractice, but the small percentage of lawyers who file and defend nonmeritorious cases.

In three Michigan counties from 1970–1974, the 1910 cases filed and defended by a group of law firms produced legal fees from $64 million to $74 million. Further, 90 percent of those cases were settled out of court at an average of $74,000 for each case, and more than $42,000 of this award went for legal fees.

Sample Responses

PASSAGE 1

First, let's assemble the structure of this argument.

CONCLUSION: *Marriage and a career are especially incompatible for a good proportion of women psychologists.*

REASONS:

1. *There are marked differences in marital status between men and women psychologists.*
   a. *A survey shows that while eight percent of men psychologists never marry, 22 percent of the women never marry. Five percent of the men are separated or divorced, while 13 percent of the women are.*

Seventy-five percent of the men in the general U.S. populaton are married, compared with 68 percent of the women.

Reason 1 is a generalization supporting the conclusion. The evidence in 1a is provided to support reason 1. How strong is this evidence? First, we ask, "*Is the sample representative of the population we are generalizing about?*" In the conclusion, the relevant populations are men and women psychologists. From the data provided, we cannot tell the size, breadth, and randomness of the samples. The samples *could be biased.* For example, maybe only a few women psychologists were willing to complete the survey data, whereas the majority of men completed it. However, the survey was completed by the National Science Foundation (NSF), an organization which is relatively sophisticated about data collection. Thus, our best guess is that the sample is representative.

Next, we ask, "*How valid are the measures?*" In this case, the survey asks the respondents to indicate whether or not they are married. This is a very direct measure of the characteristic of interest in the generalization—the tendency to be in and to remain in a marriage relationship. The major assumption made is that males and females will be equally honest in reporting whether or not they are married.

Passage 2

CONCLUSION: *What one learns in school seldom is of use on the job.*

REASON: *When the Carnegie Commission queried all the employees with degrees in engineering or science in two large firms, only one in five said the work they were doing bore a "very close relationship" to their college studies. Also, an overwhelming majority could think of many people who were doing their same work, but had majors in different fields.*

First, we note the population being generalized about is "people going to college." Serious questions about sample representativeness can be raised. Only two kinds of degrees and two kinds of firms were utilized in the questioning process. It would have been much better to sample many firms and many different majors in order to obtain a representative sample of "people who went to college." We can also question the validity of the "measurement." Do verbal reports that a job does not bear a close relationship to college studies measure the usefulness of college education? One would question the ability of an individual to make such a judgment. Second, does not directly using one's major on the job suggest college education is useless? Not necessarily! Skills learned in college may be useful in many different jobs.

Thus, while the generalization in this passage is accompanied by some evidence, one can seriously question whether the samples were representative and whether the measures were valid.

PASSAGE 3

CONCLUSION: *The principal beneficiaries of medical malpractice are the lawyers who file and defend nonmeritorious cases.*

REASON: *In three Michigan counties, 1910 cases produced legal fees of $64 to $74 million, and for 90 percent of the cases, an average of $42,000 out of $72,000 awarded went for legal fees.*

The population being generalized about here is medical malpractice cases. Serious questions can be raised about the representativeness of the sample. While size of cases (1,910) is large, breadth is questionable. Only three counties were sampled. Were these cases "typical" of cases in other Michigan counties? If not, the sample is biased.

We can also ask whether "average awards" is a valid measure of "principal beneficiary." Perhaps several very large cases are accounting for the large "average" legal fee. Perhaps "beneficiary" should not be measured simply in dollars.

Self-Examination

PASSAGE 4

The events of the last decade—Vietnam, Watergate, abuses of power by the CIA, FBI, and IRS—have caused rather dramatic changes in America's "trust," that is, their faith in government to "do what is right." The following question and its results were taken from a national poll conducted by Market-Opinion Research Company in 1964 and again in 1974:[2]

Q. How much of the time do you think you can trust the government in Washington to do what is right?

	1964	*1974*
Always	14%	2%
Most of the time	62%	30%
Some of the time	22%	64%
Don't know	2%	4%

[2] *Newsweek*, December 15, 1975, p. 44.

IX

How Good Is the Evidence: Are There Flaws in the Statistical Reasoning?

In the previous chapter, our primary focus was on helping you to determine when sampling procedures and measurements are sufficiently adequate to support generalizations. In this chapter, we continue to focus on evidence by highlighting some of the more common ways by which people *play tricks with statistics.* Statistics can easily deceive. We suggest that you do the following to avoid being deceived. Always ask yourself, "What evidence would be most helpful in reaching this conclusion?" Then look at the evidence presented. If there is not a match, you have probably located a statistical error. We recognize, however, that it is frequently difficult to know just what evidence *should be* provided. So, while you are getting better at determining what the best evidence would look like, and to help you to get a better idea of what types of evidence are flawed, this chapter illustrates a number of different ways to "lie with statistics."

☞ *CRITICAL QUESTION:* ARE THERE FLAWS IN THE STATISTICAL REASONING?

A. STRIKING EXAMPLES

Writers frequently support their points by presenting what seem to be compelling examples, rather than by citing carefully collected research evidence. Watch out when this happens! You are likely to be fooled.

Some examples can be found that will appear to support almost any generalization that a writer wishes to make. *Examples by themselves do not prove a point!* Let's see why. A few sample arguments in which examples are used to help prove a point follow.

> The effect of aging on people's mental processes has been overrated. Older people are able to accomplish a lot more than most people think they can. Look at what Winston Churchill accomplished after the age of 60. We should not make people retire until they are ready.

It is true that Winston Churchill accomplished a lot after the age of 60. But ask yourself, "Is it possible for the example to be true, yet the conclusion not be true?" The answer is, "Yes." Perhaps Winston Churchill is not *typical* of older people. Perhaps there are many examples of older people's mental processes deteriorating rapidly after 65. Perhaps there were special circumstances that facilitated the accomplishments of Churchill.

So you see why the example does not *prove* the point? It is merely *consistent with* the conclusion. Let's look at another.

> Socialized medicine will not work in the United States. It leads to all kinds of problems. Look at what socialized medicine has done to health care in England. We don't want that to happen here.

Again, ask yourself the question, "Is it possible that socialized medicine may indeed not be working very well in England, and yet the conclusion would be false?" Again, the answer is, "Yes." Perhaps the outcome in England is not typical; there may be numerous examples that indicate the success of socialized medicine. Also, perhaps there are special circumstances in England that do not exist in the United States which make it difficult for socialized medicine to work here. Finally, there are many different forms of socialized medicine; failure with one form does not prove that the whole concept of socialized medicine is foolhardy.

Be wary of examples as proof. Examples will be *consistent with* the conclusion. Do not let that fool you. Always ask yourself, "Is the example *typical*? Are there powerful counterexamples? Are there other explanations for the existence of the example."

B. PERSONAL TESTIMONY

Recently we observed a television program in which a well-known psychologist "proved" that his approach to child-rearing was effective by repeatedly using the following phrase: "My book contains countless examples of mothers telling me how much the approach has helped them with their children."

What is foolish about this method of proof? To answer the question, you should ask, "What should the psychologist have done to prove his point?" *Answer:* He should have evaluated a representative sample of the population of mothers who have been exposed to his approach, perhaps having an investigator not involved in the approach systematically interview the mothers. Since such systematic evidence was not obtained, his "evidence" is subject to many flaws. First, how typical is the testimony? How many parents were dissatisfied? How many parents experienced the need to believe they were doing better, even if they were not? How many parents simply experienced the need to tell people nice things?

Let's look at another typical example. An Olympic athlete appears on a television show and talks about how he has always eaten a certain cereal for breakfast; he implies that the cereal was in part responsible for his success. Again, no systematic evidence has been presented. Is an athlete an expert on nutrition? What other factors might have led to his success? Could he have done as well, or even better, if he had eaten another cereal, or perhaps spinach, for breakfast?

Be wary of testimony—especially that given by people who are not experts in the field they are discussing. Movie stars, athletes, relatives, fraternity brothers—all may be very good at what they do and very smart, but they seldom carry out systematic research projects or spend many hours in the library prior to giving an opinion. When you encounter testimonial evidence, always ask, "What is the appropriate evidence to answer this question?" The answer will *not* be personal testimony.

C. DAZZLING PERCENTAGES

> There has been a 50 percent increase in sales of golliwops, as compared to only a 25 percent increase for our competitors.
>
> Our steel product is 30 percent stronger than ever before.

These examples both use percentages, and the numbers are quite impressive. But there is important omitted information. Do you see

what it is? The *absolute numbers* on which the percentages are based are not given. Maybe golliwops increased from 40 units to 60 units (that's 50 percent), while competitors increased from 10,000 to 12,500 units (that's only 25 percent). Now, which increase seems more impressive? Look at the second example again. Don't we need to know how strong the product was before it was strengthened?

When you encounter percentages, always ask yourself, "Is there anything else I need to know before evaluating the conclusion?" What numbers are the percentages based upon? Be especially cautious when a writer *compares* percentages. You always need to know whether there is important omitted information.

D. IMPRESSIVE LARGE NUMBERS

(1) 1189 psychiatrists say Smith is psychologically unfit.

(2) More than 10,500 people have bought Panthers this year, our biggest year ever.

These numbers are meant to impress. But, what important information is missing? In (1), don't we need to know how many psychiatrists were sent questionnaires, how many responded, and how qualified they were? In (2), wouldn't a percentage increase have been more meaningful; maybe the increase was from 10,400 to 10,500 while other car sales were increasing at a much larger rate? Be wary of absolute numbers by themselves. Look for important omitted information.

E. AMBIGUOUS AVERAGES

Examine the following statements.

(1) Americans are better off than ever; the average *salary* of an American worker is presently $20,700.

(2) The average *pollution* of air by factories is now well below the dangerous level.

Both examples use the word "average." But there are three different ways to determine an average; and in most cases, each way will give you a different average. What are the three ways? One is to *add up* all the values and divide this total by the number of values used. The result is the *mean*. A second way is to list all the values from highest

to lowest; then find the one in the middle. This *middle value* is the *median*. Half of the values will be above the median; half will be below it. A third way is to list all the values and then to count each different value or range of values. The *most frequent* value is called the *mode*, the third kind of average.

It makes a big difference whether a writer is talking about the mean, median, or mode. Think about the salary distribution in the United States. There are some individuals paid extremely high salaries, such as $800,000 per year. Such high salaries will increase the mean dramatically. However, they will have little effect on either the median or the mode. Thus, if one wishes to make the average salary seem high, the mean is probably the best average to present. You should now be able to see how important it is to know which average is used when people talk about salaries or income.

Now, let's look carefully at example (2). If the average presented is either the mode or the median, we may be tricked into a false sense of security. For example, what if only a few factories pollute highly, but the amount they pollute is far above the dangerous level, so far above that the air, as a whole, is still being dangerously polluted. In such a case, the mode and the median pollution values could be quite low, but the mean would be very high.

When you see "average" values, always ask, "Does it matter whether it is the mean, the median, or the mode?" To answer this, consider how the significance of the information might be changed by using the various meanings of "average."

F. THE MISSING RANGE AND DISTRIBUTION

Not only is it important to determine whether an average is a mean, median, or a mode, but it is also frequently important to determine the gap between the smallest and largest values—the *range*—and how frequently each of the values occurs—the *distribution*. For example, assume that you have to make the decision about whether to eat some fish caught in a nearby ocean. Would you be satisfied with information about the *average* mercury content in those fish? We wouldn't. We would want to know the range of mercury content, that is, the highest and lowest levels possible, as well as the frequency of the different levels. The average may be in the "safe" level; but if 10 percent of the fish contained levels of mercury well above the "safe" level, we suspect that you would rather eat something else for supper.

Let's consider another example in which knowing the range and distribution would be important.

> America is not overcrowded. Nationally we have less than 60 people per square mile, a population density lower than that of most other countries.

First, we suspect that this population density figure represents the mean. While the mean density may be quite low, there obviously are areas in the United States, for example, the Southwest, with very low density figures. Thus, America may indeed be overcrowded in some areas, even though on the average, we are not.

Thus, when an average is presented, ask yourself, "Would it be important for me to know the range and distribution of values?"

G. CONCLUDING ONE THING; PROVING ANOTHER

The following example illustrates a common error in the use of statistics. Can you find it?

> A sorority dance was considered a huge success by its planners because only four people out of the 200 in attendance complained. "When only four people are discontent, and 196 are delighted," one of the planners was heard to say, "as far as I'm concerned, that's a successful dance."

Look first at what has actually been proven by the evidence: most of the people attending the dance did not complain. The writer has no evidence that people attending were delighted. The appropriate evidence for such a conclusion is missing. The conclusion that people liked the dance would best be supported by evidence from a random sample of the people attending. And, obviously, one cannot assume that not complaining has the same meaning as being delighted.

Let's look at another example.

> A survey conducted at a certain college revealed that only a minority of girls were in favor of remaining virgins until the day they marry. The college newspaper wrote up the results under the headline "Most Coeds Favor Promiscuity."

The author has proved one thing, concluded another. The questionnaire concerned attitudes toward premarital virginity, not promiscuity. If the survey had asked, "Do you favor promiscuity?," we suspect that

the survey would have led to a very different conclusion than the one stated.

How do you catch such erroneous proofs? Ask yourself, "What evidence is *needed* to prove the point?" Compare the answer with the evidence provided.

H. SUMMARY

In this chapter, we have highlighted a number of ways in which you can catch people lying with statistics. The following list contains all the ways we have discussed.

1. Do not be fooled by *striking examples* or *personal testimony*. Neither is good evidence.
2. When you encounter *dazzling percentages*, ask about the numbers on which the percentages are based.
3. When you encounter *impressively large numbers*, determine what percentages would be useful to know before you interpret the statistics.
4. When an *average* is presented, determine whether it would be important to know if it is the mean, mode, or median.
5. When an average is presented determine whether or not it would be important to know the *range* and *distribution* of the scores.
6. Form *your* conclusion from the evidence. If it doesn't match the writer's, something is probably wrong.

I. PRACTICE EXERCISES

☞ *CRITICAL QUESTION:* **ARE THERE FLAWS IN THE STATISTICAL REASONING?**

For each of the three practice passages, identify inadequacies in the evidence supporting the generalization.

PASSAGE 1

Americans in general are spoiled. Most of us tend to judge the times in relative terms—and we have had rich relatives.

Materially, no people on earth have ever been as well off. So, when most of us say "times are bad" we say it in a comfortable home, with a well stocked electric refrigerator, television, and electric laundry equipment.

One in every 5 households in America in 1980 was affluent (had an income over $25,000). Twenty years ago, only 1 in 33 households was this comfortable.

Our personal income, disposable income, and personal savings have all climbed continuously since 1950. True, we still have a vast army of poor in the country. One in every 8 Americans is living below the poverty level—1 in every 4 aged 65 or over is poor.

But twenty years ago, 1 in every 5 citizens was below the poverty line. In 7 years, more than 14 million of us have climbed out of the poverty hole.

Any country where, while population increased 56 percent, home ownership increased 100 percent, car ownership 130 percent and personal savings 696 percent, is a long way from hard times. That's what's happened here between 1946 and 1980.

Passage 2

To justify so radical a departure from traditional forms of health care, proponents might claim that health services in America are so poor that greater governmental intrusion is

imperative. Their argument makes little sense. Since 1970, infant mortality has dropped 30 percent, life expectancy has risen by a year, and nine of the ten leading causes of death have declined.

While the distribution of doctors is uneven (and in a free country it could not be otherwise), the United States has more doctors per capita than almost any other nation in the Western world. The government's own studies find that typically a family is no more than 20 minutes away from a doctor, a clinic, or a hospital. Public opinion polls indicate that Americans overwhelmingly are satisfied with the care they receive.

PASSAGE 3

One of the most bitterly attacked tax loopholes is that surrounding so-called business expenses. If an executive flies to the Super Bowl, he simply alleges that he had business in the city that played host to the Super Bowl. As a result of such a claim, the executive can deduct his Super Bowl expenses from his taxable income on the grounds that the trip was an expense incurred in his role as an agent of his employer.

An example of this outrage should make my point. A New York taxpayer claimed as a deduction $9,665 for business lunches in just one year. According to the man's records, he entertained a business client or associate on 338 different occasions. The taxpayer skipped his business lunch on Thanks-

giving Day but not on the Friday, Saturday or Sunday following. He entertained at top restaurants on an average of 6½ days a week all year at a cost of well over $20 for each lunch.

Sample Responses

Passage 1

CONCLUSION: *Materially, times are not bad.*

REASONS:

1. *More households are affluent today.*
   a. *One in every 5 households in 1980 was affluent, with over $25,000 income. Twenty years ago, only 1 in 33 was this comfortable.*
2. *Our personal income, disposable income, and personal savings have all climbed since 1950.*
   a. *Fewer Americans are below the poverty level, 1 in every 8 rather than 1 in every 5. In 7 years more than 14 million of us have climbed out of poverty.*
   b. *While population has increased 56 percent, home ownership has increased 100 percent, car ownership 130 percent and personal savings 696 percent between 1950 and 1980.*

First, let's look at reason 1. The writer compares ratios, 1 in 5 versus

1 in 33. Is this comparison legitimate? No. A very important piece of information has been omitted. What income was needed to be affluent twenty years ago? He has failed to take inflation into account. Using this same logic, probably only 1 in 1,000 would have been comfortable *50* years ago.

The first part of the evidence for reason 2 suffers from the same problem. This evidence cannot be judged until we know how poverty level is defined. If the definition has not taken inflation into account or has changed in its basic meaning over time, then these ratios cannot be legitimately compared. Also, in reason 2a, the writer has tossed out an impressive large number—14 million. What percentage does that reflect? Has he taken population growth into account?

Reason 2b presents impressive percentage differences; but what do those percentages mean? Percentages of what? For example, is the home ownership figure based on percentage of people who own homes, or on absolute number of homes owned? To judge these percentages we need to know how they were figured and the absolute numbers they were based upon.

While *population* has increased 46 percent, what has been the increase in numbers of families or potential homebuyers?

Without the omitted information described, the evidence presented does not adequately support the conclusion.

PASSAGE 2

Passage 2 can be outlined in the following manner.

CONCLUSION: *Health services in America are not so poor that government intrusion is imperative.*

REASONS:

1. *Since 1970, infant mortality has dropped 30 percent, life expectancy has risen by a year, and nine of the leading causes of death have declined.*
2. *The U.S. has more doctors per capita than almost any other nation in the Western world; typically a family is no more than 20 minutes away from a doctor.*
3. *Public opinion polls indicate that Americans overwhelmingly are satisfied with the care they receive.*

To evaluate this use of evidence, we should first ask ourselves, "What would be the most appropriate evidence to address the question, 'Are

health services in America *poor?*" You should immediately see that the definition of poor becomes crucial to deciding whether the statistics presented reflect "tricks" or not. If good health services is defined as adequate coverage available to everyone, at a cost that is not an excess burden on one's income, then statistics about the infant mortality rate and the number of doctors do not prove that we have good health services. The more relevant statistics become those dealing with equity in access to such service, such as the cost of the services and the ability of various income groups to handle the financial burdens of these services.

Passage 3

CONCLUSION: *The business expense tax deduction is an outrage.*

REASON: *The deduction is unfair, and this inequity can be shown by the example of one New York taxpayer who claimed that his business activities required him to entertain at top restaurants an average of 6½ days/week all year long.*

The evidence for this generalization is terrible. A single dramatic example is never adequate evidence to support a generalization. We have no way of knowing if the example is typical.

Self-Examination

Passage 4

How can those who attack busing claim that they are not motivated by racism? A recent study of ten private academies for white students showed that private academies in the South bused more students farther than public schools in the same region. The study found that public schools in the six states bused less than 50 percent of their students, while the academies bused an average of 60 percent. In addition, average distance traveled by bus in the public schools was eight miles per day and in the private academies the comparable figure was eighteen miles per day. Is it busing or integration that is being attacked?

_____

_____

_____

X

How Good Is the Evidence: Are the Causal Explanations Adequately Supported?

In the previous two chapters, your concern was with how well evidence supports generalizations. You learned questions that should be asked about all such generalizations. In this chapter, you will learn questions to ask about a particular kind of generalization—a *causal generalization*. When you encounter such generalizations, it is necessary to ask special critical questions. This chapter focuses on these.

☛ *CRITICAL QUESTION:* ARE THE CAUSAL EXPLANATIONS ADEQUATELY SUPPORTED?

A. DIFFERENT LEVELS OF GENERALIZATION

Examine each of the two following groups of statements.

1a. *Most* sorority members use makeup.

1b. Sorority members are *more likely* to use makeup than nonsorority members.

1c. Joining a sorority *causes* college coeds to use more makeup.

2a. *Few* people who regularly jog have heart attacks.

2b. The more one jogs, the *less likely* one is to have a heart attack.

2c. The physical exercise provided by jogging *tends to reduce* the rate of heart attack.

First note that all these statements are generalizations. They are not simply statements about a few specific cases, but about large groups of cases—namely sorority members and joggers. Second, note that the initial assertions in both groups of statements (1a and 2a) refer to characteristics of a *single group*; no comparisons are made. This is the simplest form of generalization. Such a generalization tells you that if you know someone who belongs to a group, you can determine the likelihood that she will have the characteristic. For example, 1a tells you that if a coed belongs to a sorority, she probably uses makeup.

The second assertions in each group of statements (1b and 2b) present *comparisons*; they refer to characteristics of *two* groups. In 1b, the use of makeup is *compared* for sorority and nonsorority members. In 2b, rate of heart attacks is *compared* for different rates of jogging activity. Comparisons permit us to determine *relationships*. If sorority members differ from nonsorority members in their use of makeup, a relationship exists between female group membership and makeup use. When knowing one thing (for example, "belongs to a sorority") helps us to predict another (for example, "uses makeup"), a predictive relationship exists. You will frequently encounter such relationship statements. Here are a few:

People who smoke cigarettes are *more likely* to get cancer than those who do not smoke cigarettes.

Intelligence scores are *related* to school performance.

The more wealthy one is, the *more likely* he is to vote Republican.

Frequently, writers and speakers jump from statements about relationships to statements claiming that one thing *causes* another. For example, 1c and 2c above are *causal* generalizations. Look carefully at how they differ from 1b and 2b. It is very easy to move from thinking about relationships to thinking about causes. It is too easy! *The presence of a relationship between two things does not prove that one causes another.* Only special kinds of evidence provide such proof. The major difficulty in proving causation is that two characteristics can be related for more than one reason. For example, it may be true that more sorority members wear makeup than nonsorority coeds, which indicates a relationship. This does not necessarily mean that belonging to a sorority

causes one to wear more makeup. The relationship may reflect the fact that young women who tend to select sororities also tend to be the type of women who wear makeup.

Jumping from predictive relationships to causal inferences is a very common error. As a critical reader, you should always keep in mind that there are many reasons why one kind of event may "go together" with another. Proving causal conclusions is much more difficult than proving the existence of a relationship. When writers or speakers make causal statements, always ask, "Is there an alternative reason for why those events go together?"

B. CAUSAL GENERALIZATIONS

Let's look more closely at what someone is concluding when she makes an inference about causation. What exactly is meant when someone says, "Joining a sorority *causes* college coeds to use more makeup," "TV violence *causes* aggressive behavior in children," or "There is a *causal link* between eating too much salt and high blood pressure."? The word "cause" typically means to "bring about," "make happen," or "have an effect upon." Note the difference between the phrases "brings about" (causal) and "goes together" (relationship). There are a number of indicator words that will indicate to you when an author is thinking causally. We have listed a few.

has the effect of . . .
increases the likelihood . . .
facilitates . . .
deters . . .
as a result of . . .

There is another important aspect of *most* causal generalizations. They are probabilistic. Knowing one event does not tell you *for sure* what the other event will be. For example, if watching TV has the effect of *increasing the probability* of a child's being aggressive, then watching TV is a causal factor in aggressive behavior—even though many children who watch TV do not behave aggressively. If the *average* score on an exam increases *as a direct result of* students' drinking coffee, drinking coffee is a causal factor, even though all students who drink coffee do not improve their exam scores.

In thinking about causation, you should also keep in mind that the probability of certain events occurring is determined by many different

causal factors. For instance, TV violence may be only one of a number of factors causally linked to childhood aggression. Parental discipline, nutrition, genetic makeup, and peer group pressures may all be additional causal factors in determining aggressive behavior.

When writers make causal claims, they usually are not suggesting that the causal variable is the *only* factor causing the event, that is, they are not claiming that one factor is *necessary* for another to occur, nor that an effect will *necessarily occur* if the causal agent is present. Smoking may be a causal factor in cancer; yet many people who smoke may not get cancer; and many people who get cancer will not have smoked. Thus, most causes are only *contributory causes;* they are important factors among a number of factors. They *increase the likelihood* that an event will occur. Do not make the mistake of thinking that because a factor is only one of several causes that it, therefore, is not an important one.

C. THE CONCEPT OF CONTROL—RULING OUT ALTERNATIVE REASONS

A frequent sequence of causal thinking is as follows: relationships are discovered; then someone offers a suggestion about what factor or factors might have caused the relationship; that is, someone makes a causal inference. If the findings could be due to other events besides the suggested cause, the causal generalization is greatly weakened. So, as a critical reader you will want to *search for alternative causes* that might explain the results being discussed.

The careful researcher anticipates such a search and will try to *isolate the causal factor* of interest from other factors which might bring about the same effect. She will do this by using *controls.* A control is a process that helps rule out alternative reasons for effects. The concept of control will be more meaningful to you as the remainder of this chapter evolves. If you can come up with alternative reasons for an effect, an important control has been omitted. Omitting important controls seriously weakens reasoning.

In this section, we will examine some typical ways evidence is provided to support causal claims and to indicate what controls are missing. In these illustrations we focus on the following research question, "Does eating food additives increase the likelihood that hyperactive children will have behavior problems?" Several types of studies provide relevant causal generalizations and each will be discussed in terms of the quality of its controls. Let's look at one type.

Fifty hyperactive children who have taken large amounts of food additives are observed in their homes by trained raters who assess the presence or absence of behavior problems. These raters find that 60 percent have behavior problems. The researcher concludes food additives cause behavior problems in hyperactive children.

Can you tell from the data provided whether a causal relationship exists between taking food additives and having behavior problems? No. You do not know the rate of behavior problems in hyperactive children who have *not eaten* food additives. What if that rate is 70 percent? The researcher has failed to show the rate of the problem when the alleged causal factor was *absent*. One cannot show the effect of a "treatment" or a causal agent by studying only the group exposed to the treatment. In other words, there is no control for the typical rate of behavior problems among hyperactive children not taking food additives. The researcher, in effect, has not even demonstrated a relationship.

Let's look at another example of this type of reasoning. Many football players who drink beer play very well. Can you conclude that drinking beer would help you play football? Of course not. Many players who don't drink beer play very well. If you didn't examine the nondrinking players, you would not know the rate of playing well in the absence of the event of interest (drinking beer).

Let's look at another approach to the problem.

A large number of hyperactive children are systematically observed *before* and *after* eating large amounts of food additives. The following are hypothetical data from such a study. Eating food additives is the "treatment."

	Percentage of Hyperactive Children with Problems
Before Treatment	30%
After Treatment	50%

On the basis of these data, the researcher concludes that food additives cause behavior problems.

The reasoning in this kind of study is as follows: because something occurs at a different rate following an event (in this case, eating food additives), that intervening event *caused* the change in rate. Such reasoning is fallacious! Why? Because such a study has failed to isolate the

factor of interest. Many other factors could have occurred during the time interval which could have caused the changes. Try to list such factors in the space provided. Ask yourself, "Are there any other possible explanations of these changes?"

Now compare your list with ours:

1. Many events which took place during the time period that food additives were used could have accounted for the changes. The children may have entered school and become exposed to and stimulated by other active children. The children got older; maybe there is a tendency for hyperactivity to increase with age. Classroom structure may have changed.
2. Another factor is *measurement*. Maybe hyperactive problem behaviors were measured differently after the intervening time.
3. Also, the very fact of being evaluated at one time may have had an effect on the children; for example, they may have tried less hard to "be good" as they were observed the second time.

The above approach clearly fails to provide adequate controls to rule out important alternative causes. The main problem again is that there is only a *single* group. There is no comparison group to show what changes would have occurred without the treatment.

Let's look at one more example to illustrate the problems with this type of reasoning. It has been found that the crime rate in a major American city has decreased since more people have become involved in Transcendental Meditation (TM). Could you conclude that TM has helped reduce the rate of crime? No, you couldn't. There are many alternative reasons for the change. For example, that same city may also have doubled the size of its police force during the same time. In other words, the person conducting the study failed to control for the size of the city's police force.

Does studying *two groups* solve all the problems? Let's see.

A researcher observes 50 hyperactive children who had eaten food additives and a group of 50 who had not eaten additives and compares the rate of problem behaviors.

Let's examine such hypothetical data.

	Percentage of Children with Behavior Problems
Group A: Eaters of Food Additives	*50%*
Group B: Noneaters of Food Additives	*30%*

Because there are two groups, this design permits one to conclude whether or not a predictive relationship exists. Group B acts as a control for the typical rate of problem behaviors. In this case, there is a relationship between the amount of food additives eaten and problem behaviors; the rate of problems is higher for those who had eaten food additives. But one cannot conclude eating food additives is the *cause*. Why? Because subjects were not *randomly assigned* to the groups. It is therefore quite possible that the groups are not identical in important aspects, and these differences might account for the relationship. For example, the groups might differ in age, mental health of the parents, economic status of the parents, or kinds of food they eat. Any one of these factors might account for the differences in the rate of problem behaviors found. For example, older hyperactive children in general may show fewer behavior problems. If group B were made up of older children, then the differences might be due to age factors, not additives. Because subjects are not randomly assigned, this design fails to rule out important alternative explanations. It has one important control procedure—the comparison group, but it fails to control for differences in the makeup of the groups.

Let's further illustrate. A researcher recently found that college students who had compatible roommates (group 1) had higher grade point averages than college students who didn't have compatible roommates (group 2). Can we conclude that having a compatible roommate facilitates school achievement? No. There are obvious alternative factors that have not been ruled out. Can you think of some?

Since roommates are not randomly assigned to groups, isn't it quite possible that "brighter" students may have selected more compatible roommates to begin with? If so, group 1 would differ from group 2 in intelligence, as well as in compatibility of roommates. If so, the differences found could be due to differences in intelligence, not to differences in compatibility of roommates.

Always be especially cautious when researchers compare different groups as they *naturally exist*, rather than *randomly assigning* subjects to groups. The groups will almost always differ in important ways; and thus it will be impossible to isolate the effect of a single causal factor. The following comparisons further illustrate this problem:

1. Comparing achievement of open classrooms with traditional classrooms (for example, maybe the children in the open classroom are brighter).
2. Comparing the performance of two different economic systems (for example, maybe the two systems differ in accessibility to natural resources).

Even with control groups and random assignment one has to examine a study carefully to see if all alternative causal factors have been ruled out. For example, *expectations* are frequently an important factor to control for. That is why when a Stopache aspirin treatment group is compared to a no-aspirin control group, it is important that the no-aspirin group *thinks* it is getting some curative agent even though it only gets sugar pills. Subject expectations that they will get better may actually cause them to get better. The importance of expectations is why *placebos* are given in many studies. Placebos are inactive agents given as though they were actually active. Placebos control for the effects of expectations. Remember to be on the lookout for the effects of expectations even when a study is well designed. Ask yourself, "Would this study have benefited from including a group who received placebos?"

It is impossible to discuss all controls needed for adequate research. However, it is important for you to be on guard. When people make causal claims, always ask, "Are there alternative factors which could have caused the results?" If there are, such causal claims should be seriously questioned. Be especially wary when (a) subjects are not randomly assigned and (b) no *comparison* group is studied.

D. CORRELATION AND CAUSATION

Many times, because of the practical difficulties in randomly assigning subjects to multiple groups, researchers do not compare groups. They do what is typically called a *correlational study*. They collect two measures on each person belonging to a single group of people and see if the two scores go together in a systematic way. For example, in studying the effects of food additives, a correlational research strategy

might involve observing 50 third-grade children and rating each of them in two ways: (a) amount of food additives taken daily and (b) severity of behavior problems—perhaps rated from 1 (no problem) to 7 (serious problem). If these ratings go together systematically, then the characteristics measured are said to be *correlated.* For example, if severity of problem behavior increases whenever amount of food additives increases, a positive correlation is said to exist.

Correlations are typically expressed as correlation coefficients—numbers ranging from + 1.00 to − 1.00. The closer the coefficient is to "0," the lower the correlation. Finding a significant correlation coefficient tells a researcher that a score on one factor can be predicted from knowledge of the score on the other. The ability to predict, however, is rarely perfect. In fact, usually when two characteristics are correlated, there is a great deal of error in predicting one from the other. The lower the correlation, the greater the error in prediction.

Two characteristics can be correlated for at least *four reasons.* The following example illustrates. It has been found that the warmer the personality of a psychotherapist, the more successful he is at psychotherapy; that is, there is a significant correlation between warmth (X) and success in psychotherapy (Y).

REASON 1: *X is a contributory cause to Y.* (Warmth is indeed a causal factor.)

REASON 2: *Y is a contributory cause to X.* (Therapists who are successful become more warm toward their patients.)

REASON 3: *X and Y interact.* (Warmth is *sometimes* the cause of success, and success is sometimes the cause of warmth.)

REASON 4: *Both X and Y are effects of a third factor.* (Perhaps people who are intelligent tend to be both warm and successful. If so, warmth and success will correlate because of how they both relate to intelligence.)

Reason 1 is the conclusion people typically *want* to make from findings of significant correlations. However, because there are a number of reasons that characteristics might "go together," it is always fallacious to assume that because two events go together, or because two characteristics are correlated, one is the cause and the other is the effect. We will refer to this fallacy of making causal inferences on the basis of the cooccurrence of events as the *false cause fallacy.* Watch for this fallacy. It is very common. Frequently you will see it in reports which do not include formal correlational results but simply argue that because

one event, B, *followed* another event, A, B *caused* A. "Harry Hurricane must be an excellent coach; since he moved to our university, the team's record has improved dramatically." (But maybe the university also decided to double its athletic budget when Harry came.) "This reduction of the speed limit has really cut down the accident rate; 20 percent fewer fatalities have occurred this year." (But maybe cars were also built more safely.)

Remember: The finding of a significant correlation, or the finding that one event follows another in time, does not by itself prove causation. When causal inferences are made from such data, the false cause fallacy has been committed.

E. PRACTICE EXERCISES

☞ *CRITICAL QUESTION:* ARE THE CAUSAL EXPLANATIONS ADEQUATELY SUPPORTED?

For each passage, evaluate the quality of the generalization by examining the quality of the evidence used to support it.

PASSAGE 1

A research analyst studied murder statistics for 32 states between 1960 and 1970, a decade when the murder rate was rising nationally and the number of executions was declining.

He wrote, "Capital punishment does not, on balance, deter homicides." If capital punishment deters murder, the murder rate should have increased the most in states where the risk of execution declined the most. Instead, the states that ended the death penalty had smaller increases in homicide rates.

He measured what happened to murder rates in states that abolished the death penalty before 1960, those that still had a death penalty law but carried out few executions, and those that used the law more frequently until court decisions forced an end to capital punishment.

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Passage 2

Since the late 1960s, highway fatalities were increasing at a rate of about 500 a year. They reached 55,000 plus in 1973. Once the 55-mph speed limit law was put into effect—the first year, 1974—the fatalities immediately dropped by 10,000. Since then, yearly fatalities have been about 9,000 lower than the 1973 level. Therefore, for four years the law has saved over 36,000 lives.

There's additional proof: The Christmas–New Year holiday period is historically the time when most accidents occur. But since the 55-mph speed limit was imposed, there have been a hundred fewer fatalities each holiday season. And there have been 60 percent fewer paralyzing spinal-column injuries because the accidents have been less severe. Now, all of these things suggest to me that this particular law has provided the traveling public with advantages that just weren't there before we had the law.[1]

Passage 3

Sixty students at the University of Wisdom recently agreed to participate in a program designed to improve their dating skills.

[1] Adapted from B. Davis, "End of the 55-mph Speed Limit?," *U.S. News & World Report*, March 20, 1978, 49–50.

The students who volunteered for the program averaged one date during the month prior to their participation in the dating-skills program. The sixty students were divided into three groups: one group had six "practice" dates with six different volunteers; a second group also had six "practice" dates and received feedback from their dates concerning their appearance and behavior; a third group served as a control.

Before and after the practice dates, each group filled out social anxiety questionnaires and rated themselves in terms of social skills. Both of the two groups who had practice dates experienced less social anxiety, a higher sense of self-confidence in social situations, and more dates than did the control group. Apparently, practice dating improves the quality of our social life.

Sample Responses

PASSAGE 1

CONCLUSION: *Capital punishment does not deter homicide.*

REASON: *The states that ended the death penalty had smaller increases in homicide rates.*

The evidence for the causal generalization focuses on a ten-year comparison of homicide rates in thirty-two states with varying attitudes toward the death penalty. One positive characteristic of the study is the existence of multiple groups: states that abolished the death penalty before 1960, those that still had a death penalty law but carried out few executions, and those that used the law frequently until court decisions forced an end to capital punishment (in 1967). A major weakness is that states were not randomly assigned to these groups. Thus, we should be es-

pecially alert to important differences among the groups of states. Do they differ in major ways other than in their use of capital punishment? For example, there is no evidence about the homicide rates in individual states *prior* to the period of the study. If these states with higher increases in homicide rates also traditionally have had higher than average rates of increase, then the comparison between groups is biased. Data we would be interested in are the *within*-state homicide rates before and after change in the status of capital punishment. Perhaps those states with lower than average increases in homicide rates in the absence of capital punishment also had lower rates of increase during the period when they imposed capital punishment. In other words, another factor besides capital punishment may be responsible for the differences in homicide rate among states. Consequently, we cannot conclude that the evidence necessarily supports the generalization.

PASSAGE 2

CONCLUSION: *Reduction of the speed limit has reduced the number of automobile accidents.*

REASONS:

1. *Fatalities dropped by 10,000 the first year after the speed limit was reduced.*
2. *For the next three years there was an average decline of 9,000 fatalities, as compared to the number of fatalities in 1973.*
3. *Every year since the speed limit was lowered, there have been fewer serious accidents during the Christmas–New Year holiday.*

The evidence consists of comparisons of fatalities and injuries before and after the imposition of the law. There is no control group and no random assignment of states to various speed limits. As with other studies of this type, we should ask whether there are any other factors besides the alleged cause that may have changed during the period of study and that might have caused the new behavior. In this particular example, the person conducting the study should have controlled for such additional factors as highway quality, automobile quality, and the extent of driver education. These variables might have changed since the late 1960s and thereby affected the extent of highway fatalities and serious injuries. We cannot have confidence in the generalization in the absence of these controls.

PASSAGE 3

CONCLUSION: *Dating behavior of students will be improved by an increase in dating experience.*

REASON: *Forty students at the University of Wisdom reported increased dates, improved social skills, and less social anxiety after six practice dates compared to those of twenty control group students.*

This study controlled for many important factors. However, the *expectations* of the participants in the study may have affected the results. Apparently, those who conducted the experiment made no attempt to convince the students in the control group that their dating behavior would be improved. Consequently, although this study is quite well designed, we should have reservations about whether practice dating was the significant causal factor in determining changes in the quality of dating behavior.

Did you notice in this particular passage the way in which "improved dating behavior" is measured? Recalling what you learned in Chapter VIII, can you see any problems with this form of measurement?

Self-Examination

PASSAGE 4

What about children and divorce? While the research on the impact of divorce on children is far from complete, the available evidence indicates that children are not as negatively influenced as public opinion argues. For example, the divorce rate has increased over the last ten years from a rate of one divorce for every five marriages to a rate of two of every five. However, during the same period scores of children of divorced parents have not differed significantly from scores of other children on the Idaho Mental Health Inventory, a test of personality adjustment. Apparently, divorce does not cause the horrible effects some allege.

XI

Are There Any Errors in Reasoning?

In the previous three chapters, you learned what questions to ask to decide how well evidence supports a generalization. You focused on arguments in which generalizations were the conclusion, and evidence was the reason, that is, generalization arguments. When you answer the question, "How good is the evidence?" in a generalization argument, you have finished most of your evaluation task. You can decide whether or not to believe the generalization. However, in more complex arguments, examining the evidence is just a beginning. Let's see why, by taking a look at the following brief argument:

> The government should subsidize sugar growers. If American sugar farmers are unable to meet production costs, they will be forced to quit growing sugar, and we will be entirely dependent upon foreign sources. Besides, sugar farmers are making lower profits today than they were ten years ago.

First, note that there is no statistical evidence. Two generalizations are used to support a prescription. Many arguments contain one, or a series, of factual claims either to support another factual claim or to support a prescriptive conclusion. This type of structure requires you to focus on two problems: (a) Are the supporting reasons true?, and (b) if the supporting reasons are true, does the conclusion logically follow from them? To answer question (a), you first apply the questions you learned to ask in Chapters VIII to X. How good is the evidence for the supporting rea-

sons? How much can we trust the source of the assertion? To answer the second question, closely examine the *logic of the reasoning* used to arrive at the conclusion. To do this, you must evaluate assumptions. Bad assumptions make for bad reasoning.

We refer to bad reasoning as an *error in reasoning*, which we define as any example of reasoning which involves erroneous or incorrect assumptions. The erroneous assumption may be one which links a reason to a conclusion, or it may be one which is necessary for a reason to be believable.

☞ *CRITICAL QUESTION:* ARE THERE ERRORS IN REASONING?

A. TRUTH AND VALIDITY

If particular reasons require erroneous assumptions to link them to the conclusion, then obviously the conclusion will not be supported by such reasons. When you find this situation, you have found an example of *invalid reasoning*. Thus, as we are using the term, *valid* reasoning is reasoning in which the assumption linking one statement to another appears to be highly probable. Thus, in arguments other than generalization arguments, you judge the *truth of the reasons* and the *validity of the reasoning*. Thus, a reason can be true at the same time that the reasoning is invalid. The following example illustrates:

> We should not allow capital punishment. Britain does not permit capital punishment, and its homicide rate is much lower than ours.

Now assume that the reason is true. The conclusion only follows if it is assumed that Britain and the United States are not different in many important dimensions related to the homicide rate. Such an assumption is unwarranted; thus, the reasoning is of questionable validity.

Note also that a conclusion is not wrong because the reasoning is invalid. The conclusion simply is not supported by that particular reason or pattern of reasoning.

B. EVALUATING ASSUMPTIONS

If you have been able to locate assumptions (see Chapters VI and VII), you already have the major skills for finding errors in reasoning. The more questionable the assumption, the more erroneous the reasoning.

Some reasoning will involve descriptive assumptions that you will want to agree or disagree with on the basis of other facts you may be aware of. Some reasoning will be so irrelevant to the conclusion that you would have to supply blatantly erroneous assumptions to provide a logical link. You should immediately reject such reasoning. Some reasoning will involve value assumptions, and you will have to use your own personal value preferences as a guide to evaluating them.

To demonstrate the process you should go through to evaluate assumptions, we will examine the quality of the reasoning in the following passage. We will begin by assembling the structure.

> The question involved in this legislation is a critical one. It is not really a question of whether cigarette smoking is or is not detrimental to health. Rather it is a question of whether Congress is willing for the Federal Communications Commission to make an arbitrary decision that prohibits cigarette advertising on radio and television. If we should permit the FCC to take this action in regard to cigarette smoking, what is there to prevent them from deciding next year that candy is detrimental to the public health in that it causes obesity, tooth decay, and other health problems? What about milk and eggs? Milk and eggs are high in saturated animal fat and no doubt increase the cholesterol in the bloodstream, believed by many heart specialists to be a contributing factor in heart disease. Do we want the FCC to be able to prohibit the advertising of milk, eggs, butter, and ice cream on TV?
>
> We all know that no action by the Federal Government, however drastic, can or will be effective in eliminating cigarette smoking completely. National prohibition of beverage alcohol was attempted, but the 18th Amendment after only 14 years of stormy existence was repealed by the 21st.

CONCLUSION: *The FCC should not prohibit cigarette advertising on radio and television.*

REASONS:

1. *If we permit this, what is to stop the FCC from prohibiting advertising of all kinds because many products present potential health hazards?*
2. *No action by the federal government can or will be effective in eliminating cigarette smoking completely. National prohibition of alcohol didn't work.*

First, the truth of reason 1 depends upon an underlying assumption that once we allow actions to be taken on the merits of one case, it will be more difficult to stop actions on similar cases. We do not agree with this assumption—mainly because we believe that there are plenty of steps in our legal system to prevent such actions if they appear unjustified. Thus, we judge this reason to be untrue.

The believability of reason 2 is questionable because of the weak evidence—an exciting example out of the past. However, even if this reason were true, an assumption is made linking the reason to the conclusion that we disagree with—the assumption that the major goal of prohibiting cigarette advertising on radio and television is to *eliminate cigarette smoking completely.* A more likely goal is to *reduce consumption.* Thus, we judge this *reason* to be weakly supported; and judge the *reasoning* connecting the reason to the conclusion as having questionable validity.

As you search for errors in reasoning, *always keep the conclusion in mind;* then ask yourself, "What would be some strong reasons for supporting this position?" If there is a large difference between the reasons presented and what you believe to be strong reasons, there is likely to be an error in reasoning. A further hint we can give you is that, typically, when individuals are claiming that one *action* is more desirable than another, strong reasons will refer to the advantages or disadvantages of adopting a particular position. When reasoning strays from advantages and disadvantages, be especially watchful for errors in reasoning.

C. COMMON REASONING ERRORS

There are numerous common reasoning errors. Many are so common they have been given fancy names. Fortunately, it is not necessary for you to be aware of all the common reasoning errors and their names to be able to locate them. If you ask yourself the right questions, you will be able to find reasoning errors—even if you can't name them. Thus, we have adopted the strategy of emphasizing self-questioning strategies, rather than of asking you to memorize an extensive list of possible kinds of errors.

We are now going to take you through some exercises in discovering common reasoning errors. Once you know how to look, you will be able to find most errors. In Exercise A, do the following: first, identify the conclusion and reason; second, determine whether the reason states an advantage or disadvantage; third, identify any necessary assumptions, that is, ask yourself, "If the reason were true, what would one have to believe for it to logically support the conclusion and what does one have to believe for the reason to be true?" Last, ask yourself, "Do these as-

sumptions make sense?" If an assumption is being made which is clearly wrong, you have found an error in reasoning—and that reasoning can be judged invalid.

EXERCISE A

Fluorine is the most dangerous toxic chemical on earth; it is so powerful in its corrosive effect that it is used to etch glass. The idea of putting that sort of chemical into our drinking water is just insane. Fluoridation is a menace to health.

Additionally, many medical associations are opposed to fluoridation. For instance, the Texas Medical Association declined to recommend it.

It's not hard to explain why some doctors favor fluoridation. For instance, one of its leading advocates has been Dr. Danger, Dean and Research Professor of Nutrition at the State University Medical School. Dr. Danger received in the past six years over $350,000 from the food processors, the refined sugar interests, the soft drink people, and the chemical and drug interests; half of this was marked for Dr. Danger's personal direction. Every true nutritionist knows that it is refined sweets, soft drinks, and refined flour that are the basic causes of defective teeth. Is it any wonder that the processors of these foods are so active in helping the chemical interests to cover up for them?

As a first step in analyzing for fallacies, let's outline the argument.

CONCLUSION: *Drinking water should not be fluoridated.*

REASONS:

1. *Fluoridation is very dangerous.*
   a. *Fluorine is the most dangerous toxic chemical on earth; it is so powerful in its corrosive effect that it is used to etch glass.*
2. *Many medical associations are opposed to fluoridation.*
   a. *The Texas Medical Association declined to recommend it.*

3. *Some doctors personally benefit by endorsing fluoridation.*
   a. *Dr. Danger received large sums of money from business groups during the time he endorsed fluoridation.*

In paragraph 1, the author tries to prove that *fluoridation* is very dangerous—a disadvantage. He does this by stating that *fluorine* is the most dangerous toxic chemical on earth; it is so powerful in its corrosive effect that it is used to etch glass. What erroneous assumptions are being made? First, note that the author used *fluorine* to prove something about *fluoridation*. A dictionary will quickly show you that fluorine is not the same as fluoride. The writer has *shifted* words on us. One cannot assume that fluor*ine* and fluor*ide* have the same effect; nor can one assume that any such chemicals when in diluted form will behave as they do in nondiluted form. Thus, there is no proof here that *fluoridation* is dangerous—only that *fluorine*, in nondiluted form, is dangerous. This erroneous reasoning is an example of equivocation, discussed in Chapter VI.

Now, carefully examine the author's second argument. What assumptions are being made? To prove that fluoridation is bad, he appeals to a personal testimonial; he thus moves away from pointing out factual advantages or disadvantages of fluoridation. Recall that personal testimonials are insufficient proof. A position is not bad just because authorities are against it. What is important in determining the validity of such reasoning is the evidence that the authorities are using in making their judgment.

In addition, in this second argument the writer shifts words on us again. He argues that many medical associations *are opposed* to fluoridation and supports this with the fact that the Texas Medical Association *declined to recommend* it. Does *declining to recommend* mean the same as *opposed to*? No, "opposed to" implies definite disapproval; "declined to recommend" simply implies an unwillingness to approve. Additionally, is the Texas Medical Association representative of medical associations in general?

What about the third paragraph? Has the writer pointed out advantages or disadvantages of fluoridation? No. He has basically tried to prove that Dr. Danger is biased in his viewpoint. He has attacked Dr. Danger, who favors fluoridation; he has not attacked the issue. He has not proven anything about the goodness or badness of fluoridation. Even if Dr. Danger is biased, his views on fluoridation may still be correct. The issue is whether or not fluoridation is desirable, not whether Dr. Danger is a good person. *One does not prove a point by attacking a person.* The as-

sumption that because a person may have undesirable qualities, his ideas are therefore undesirable is clearly a bad assumption. Such an argument diverts attention from the issue. A good argument attacks *ideas*, not the *person* with the ideas. Attacking a person, rather than ideas, is frequently called an *ad hominem* argument.

Now, we will look at an argument favoring fluoridation.

EXERCISE B

> Fluoridation is opposed by a crackpot, antiscientific minority. I do not believe that a minority ever has the right to keep the majority from getting what they want. In any city where a majority of us want fluoridation, we should have it; that is the democratic way.

First, let's again keep the structure of the argument in mind as we search for errors. Also, let's once again ask whether the author has strayed from discussing the advantages and disadvantages of fluoridation.

Clearly, the author has not focused on the advantages and disadvantages. First, what do you think about the phrase *crackpot, antiscientific minority?* Obviously, he is giving his opponents a *bad name*. This is a common problem referred to as *name-calling*. For this reason to support the conclusion it must be assumed that if a group can be labeled with negatively loaded adjectives, then their *ideas* are erroneous. Wrong! Even if opponents of fluoridation deserve their bad name, it is still very possible that fluoridation *is* a bad thing—according to the *facts*. Be wary of *name-calling!*

What about the argument that we ought to do what the majority wants? Certainly it sounds very democratic. But what assurance do we have that the majority are basing their judgments on the *appropriate evidence?* What if there were evidence available that fluoridation caused cancer, but the majority continued to ignore the evidence? We think you get the point. There is no substitute for the facts. Be wary of phrases like, "most Americans agree that . . . ," "everybody knows that . . . ," etc. These phrases represent appeals to group-approved attitudes and are frequently referred to as *ad populum* arguments. Again, note that such arguments divert attention from the advantages and disadvantages of the act.

Now let's examine some arguments related to another controversy: Should Congress approve a federally funded child development program which would provide day care centers for children?

Exercise C

I am against the government's child development program. First, I am interested in protecting the children of this country. They need to be protected from social planners and self-righteous ideologues who would disrupt the normal course of life and tear them from their families and mothers, to make them pawns in a universal scheme designed to produce infinite happiness in 20 years. Children should grow up with their mothers, not with a series of caretakers and nurses' aides.

What is at issue is whether parents shall continue to have the right to form the character of children, or whether the State with all its power and magnitude should be given the decisive tools and techniques for forming the young.

Let's again begin by outlining the argument.

CONCLUSION: *I am against the government's child development program.*

REASONS:

1. *Our children need to be protected from social planners and self-righteous ideologues, who would disrupt the normal course of life and tear them from their families.*
2. *The parents, not the State, should have the right to form the character of the children.*

As critical readers, we should be looking for *specific facts* about the program. Do you find any specifics in the first reason? No. The reason is saturated with *generalities,* undefined and abstract terms which have *high emotional appeal.* We have underlined a couple of these terms. Such terms will typically generate negative emotions, which the writer hopes the reader will associate with the position he is attacking. The writer is engaging in *name-calling.* The use of highly emotionally charged negative terms serves to distract the reader or listener from the facts.

The writer has tricked us in another way. He states, "[the program will] tear them from their families and mothers," and the children will be "pawns in a universal scheme." Of course, nobody wants these things to happen to our children, right? However, the important question is

whether, in *fact*, the Bill does these things. Not likely! The writer is playing two common tricks on us. First, he is *appealing to our emotions* with his choice of words. Second, he has set up a position to attack, *which in fact does not exist*, but which is clearly a bad position. This tactic makes it much easier for the writer to get the reader on his side. He has *extended* the opposition's position to an "easy-to-attack" position. The erroneous assumption in this case is that the position attacked is the same as the position actually presented in the legislation. The lesson for the critical thinker: When someone attacks aspects of a position, always check to see if he is *fairly representing* the position. If not, you have located the *extension* error. The best way to check how fairly a position is being represented is to *get the facts* about all positions.

Let's now look closely at the second reason. The writer states that either the parents shall have the right to form the character of the children, or else the State should be given the decisive tools. For statements like this to be true, one must assume there are only two choices. Are there? No! The writer has created a *false dilemma*. Isn't it possible for the child development program to exist and also for the family to have a significant influence on the child? Always be cautious when controversies are treated as if only two choices are possible; there are frequently more than two. When a writer oversimplifies an issue by stating only two choices, the error is referred to as an *either–or* error. One helpful device for finding *either–or* errors is to be on the alert for phrases like the following:

either . . . or
the only alternative is . . .
the two choices are . . .
since A has not worked, *only* B will . . .

Let's shift to a different controversy: Should there be businesses that sell term papers to students?

EXERCISE D

What's wrong with buying term papers? Most students only resort to buying them because they realize that the system is rotten; the term paper itself has become a farce in the eyes of the students, since they are required to go through the mechanical motions, month after month, of putting things down tediously on paper, writing correct sentences, organizing their paragraphs and ideas, thinking up arguments to use, and

> all those rituals—surely you aren't going to claim that that is education. Real education is ecstasy, the peak experience.[1]

Again, let's start by outlining the argument.

CONCLUSION: *Buying term papers is defensible.*

REASON: *Term paper rituals are not education; real education is ecstasy, the peak experience.*

The major reason given is "proven" by the "faet" that "real edueation is eestasy, the peak experienee." Sounds good—but what does it mean? The writer has tried to seduce the reader by using "glittering," "showy," "general" terms, whieh have an emotional appeal. He has provided us with *glittering generalities*, hoping that we will not require a more preeise or speeifie definition of the goals of edueation and appropriate behaviors for obtaining sueh goals. A position is not good or bad beeause we ean asseeiate it with a good or bad label or smug phrase. *Good reasons provide specifics!*

Be espeeially on the lookout for glib phrases or pet slogans. A few eommon ones follow:

> A woman's plaee is in the home. (Is it always?)
>
> Niee guys finish last. (Always?)
>
> Vote for our party; we are for peaee and prosperity. (Who isn't?)
>
> Human nature is unehangeable.
>
> Work is what made this eountry great.
>
> Moderation is everything.

D. FURTHER DIVERSIONS

Emotional language is one way that writers and speakers divert our attention from the issue. There is another very eommon diversionary device. Let's take a look.

> I do not see why people think it is so important to the cause of women's rights that we adopt the Equal Rights Amendment.

[1] M. Beardsley, *Thinking Straight* (Englewood Cliffs, N.J.: Prentice-Hall, 1975), pp. 237–38.

> Why, just look at all the problems we are having in universities hiring enough women. We hear stories all the time of women not wanting the jobs that are offered.

What is the real issue? Passing or not passing the ERA. But if you are not careful you will get involved in the question of whether there are enough qualified women for academic jobs rather than the advantages and disadvantages of the ERA. The writer has diverted the reader's attention to another issue. When a writer or speaker does this, we can say that he has drawn a *red herring* across the trail of the argument. Red herring arguments are very common. Many people are especially adept at these, as the following example illustrates:

> *Mother*: Why did you come home an hour late for dinner, when I told you to be on time?
>
> *Daughter*: You are always picking on me.

If the daughter is successful, the issue will become whether the mother is picking on her daughter, not why the girl was out late.

You should normally have no difficulty spotting *red herrings* as long as you keep the real issue in mind as well as the kind of evidence needed to resolve it.

E. FAULTY ANALOGY

Look closely at the structure of the following brief argument, paying special attention to the reason supporting the conclusion.

> Education cannot prepare men and women for marriage. To try to educate them for marriage is like trying to teach them to swim without letting them go into the water. It cannot be done.

The reason is a statement about *resemblance*. In essence, the structure of this reasoning is as follows: Since two things (that is, A—teaching men and women to swim, and B—educating men and women for marriage) are like each other in some important way (that is, A and B both involve teaching a new skill), then if A has a further characteristic (for example, learning can only take place in the medium in which the skill will be used), B will also have that characteristic.

On the surface, analogies frequently seem to provide compelling support for a conclusion. But an analogy by itself *proves nothing.* Let's see why. First, let's take a close look at the structure of an argument from analogy.

X has characteristics a, b, c . . .
Y has characteristics a, b, c . . .
X also has a further characteristic w
Therefore, Y has the characteristic w (conclusion)

The conclusion does not necessarily follow. Let's see why. Learning to swim, the basis of the analogy above, has characteristics in common with learning to be a marriage partner. For example, they both require learning some new skills, but they also have important *different* characteristics. For example, swimming requires primarily motor-coordination skills; marriage requires primarily social-emotional skills. In fact, two different things will always have different characteristics—no matter how many characteristics they may have in common. All analogical arguments are weakened because of this—the logic of analogical arguments demands that *all* characteristics be similar.

So what good is reasoning by analogy? Well, such reasoning can illuminate important hidden generalizations which we might not see otherwise, and which when found can *then* be applied to the argument. For example, the above analogical argument suggests the principle that everything that has the characteristic "learning a new skill" also has the characteristic "requires learning it in the medium in which it will ultimately be used." The issue then becomes whether the illuminated generalization is true. In this case, evidence suggests that it is not entirely true. If it were, all education in the classroom would be irrelevant to the learning of skills used outside the classroom.

Thus, when you encounter an argument by analogy, first determine whether the two things being compared really do have something or a number of things in common. If so, try to ascertain the hidden generalization and determine its truth. If not, reject the analogy as even illuminating and go on to more legitimate reasons.

Let's analyze the following argument from analogy in such a manner.

> I do not see what is wrong with the steel strike. After all, if someone came to your store and offered to pay you $1 for your sugar selling at $1.25, you wouldn't sell, would you? Well, that is all that the union is doing, refusing to sell their labor.

First, what is the relevant similarity? The amount of money desired by someone is less than the amount being offered. The hidden generalization is that whenever there is too little offered by a buyer to a seller *for anything*, it is appropriate to refuse to sell. But this generalization can be questioned on many grounds. Aren't there times when selling prices are too high? What are the consequences to society of high selling prices? Is management in the same situation as an individual consumer when it refuses to pay the seller's price?

This analogy is faulty because the underlying principle is flawed. When you encounter analogies, always evaluate the underlying principle. The analogy is not good proof. The principle may be.

F. BEGGING THE QUESTION

Sometimes a conclusion is supported by *itself;* only the words have been changed to fool the innocent! For example, to argue that pornography is undesirable because it is bad, is not to argue at all. The conclusion is proven by the conclusion (in different words). Such an argument *begs the question.* It does not *answer* the question. Let's look at one that is a little more seductive.

> Programmed learning texts are clearly superior to traditional texts in learning effectiveness, since it is highly advantageous to learning to have materials presented in a step-by-step fashion.

Again, the reason supporting the conclusion restates the conclusion in different words. By definition, programmed learning is a step-by-step procedure. The writer is arguing that a step-by-step procedure is good because a step-by-step procedure is good.

Let's examine one more example.

> A comprehensive national health insurance plan is stupid. Thus, passing such a bill would cause a great deal of harm. Since the bill would be so harmful, it is obviously a very stupid bill.

How does the writer prove that passing the bill will be harmful? By claiming the bill is stupid. How does he prove it is stupid? By asserting the conclusion. Thus, the conclusion is used to support the reason which

supports the conclusion. This is a special example of begging the question, commonly referred to as *circular reasoning*. The conclusion itself is used as proof for the assertion that is used to prove the conclusion. Thus, the conclusion has not been *proven;* is has been *assumed* in the proof.

Whenever something is *assumed* when it should be proven, begging the question has occurred. When you outline the structure of an argument, check the reasons to be sure that they do not simply *repeat* the conclusion in different words, and check to see that the conclusion is not used to prove the reasons. In case you are confused, let's illustrate with two examples, one argument that begs the question and one that does not.

> (1) To allow the press to keep their sources confidential is very advantageous to the country since it increases the likelihood that individuals will report evidence against powerful people.
>
> (2) To allow the press to keep their sources confidential is very advantageous to the country, since it is highly conducive to the interests of the larger community that private individuals should have the privilege of providing information to the press without being identified.

Paragraph (2) begs the question by basically repeating the conclusion. It fails to point out what the specific advantages are, and simply repeats that confidentiality of sources is socially useful.

G. SUMMARY OF REASONING ERRORS

We have taken you through exercises that illustrate a number of ways in which reasoning may be *erroneous*. We have not listed *all* the ways. But we have given you a good start. You will find errors in reasoning as long as you keep in mind what kinds of reasons are good reasons, that is, the facts and the moral principles relevant to the issue. Reasoning should be rejected whenever erroneous assumptions are found. Reasoning should be rejected when it:

appeals to the emotions,
appeals to group-approved attitudes,
appeals to testimonials or authority,
attacks a person or a person's background,

equivocates,
oversimplifies,
diverts attention from the issue,
presents a faulty analogy,
or begs the question.

H. PRACTICE EXERCISES

CRITICAL QUESTION: ARE THERE ERRORS IN REASONING?

Try to identify the reasoning errors in each of the three practice passages.

PASSAGE 1

The following passage is a "letter to the editor" responding to a previous letter supporting the right of the Amish not to attend high school.

> I would like to answer those misguided persons who have so eloquently defended the Amish people regarding their recent trouble with the law. I agree that pictures of people who have broken the law being marched off to jail are not pretty. But I would also like to remind your readers that freedom of religion gives no one the right to flout or break existing law.
>
> If it can be proved that our present laws are bad with regard to the higher education of American citizens, let them be changed. But until that is done, let no "law abiding," "God fearing" Amish or anyone else disobey them. Laws are made for the good of all whether or not these people, through ignorance or stupidity, know it.
>
> Let's remember, too, that these same laws were recently defended by other loyal Americans at great cost, with but little support from the Amish and others of their "ilk."
>
> No Amish son died upon the battlefield. No Amish child must ask his mother why his soldier father never returned from the war.

People like these who refused to fight for their rights—have little to complain about when we must force them to obey our laws, bought and delivered at the cost of loyal American lives.

I am quite sure they would be the first to impose their laws upon us should the shoe be on the other foot. If you question this, ask anyone who has lived in a community where their influence is strong. They are "law abiding" people until they choose to act otherwise as witness their disgraceful actions in recent weeks. By these they have again proved *what basically poor excuses for Americans* they are.

PASSAGE 2

The following passage is a response made to attacks on whether the "three-martini business lunch" should be tax deductible.

You would indeed dry up jobs . . . in the restaurant and entertainment business if you take away incentives for business lunch entertainment. More fundamental than that is the business of creating business by using entertainment. Senator Long put it cogently; he said that business entertainment is to the corporate world what fertilizer is to agriculture; it makes for higher yields.[2]

[2] R. E. Kipling, "Conversation: The Three Martini Lunch," *Politics Today* (May/June, 1978), 5.

PASSAGE 3

Behind the Iron Curtain, the athletic system is basically the same as in America; the coach runs the entire life of the athlete. Every major decision is made by the coach. This process of decision making has developed the communist athletes into highly disciplined people, loyal to the state. Poets, scientists, and ballet dancers defect in hordes from the Eastern European countries, but almost unanimously, the communist athlete has chosen to remain in his or her home country.

The American athlete, however, has been indoctrinated into the take-order complex of the carbon-copy totalitarian system. The inflexibility of the athletic system in America has turned us into a nation of hypocrisy, preaching free will and choice. On the other hand, we produce millions of miniature fascists, primed to unleash the same system of law and order they were taught, upon another generation of eager-to-please children.

From the first year of Little League to the last year of high school, the supreme status of the coach is impressed upon the athlete. Creativity is suppressed because of its subversive nature, and obedience is demanded. The budding athlete spends six years under the total control of the high school coach, preparing to spend another four years under the control of the college coach. If the athlete is highly successful, he will spend ten additional years bending his knee to a professional coach.

If America is to remain a democracy, its major institutions must become democratic. It is impossible to expect athletes, who someday will lead this country, to be placed in an environment of oppression and disregard that oppression. The oppression will surface at a later date, just as it surfaced in Eisenhower, Kennedy, Johnson, Nixon, and Ford. The greatest threat posed to democracy by sports is the graduation of sports figures into politics. Athletes carry their infection of fascism into the political world, and turn government into a game, which it is most emphatically not. Nixon could ignore millions of protesters because they were players and he the coach.

Sample Responses

Passage 1

We can structure this argument as follows:

CONCLUSION: *The Amish should have been jailed for refusing to send their children to school.*

REASONS:

1. *The law requires school attendance, and freedom of religion gives no one the right to break existing law.*
2. *These laws have been supported by loyal Americans but not by the Amish; people who have refused to*

fight for their rights have little to complain about when we must force them to obey our laws.

3. *They would be the first to impose their laws upon us should they be in the majority in our country. Their recent acts have proven what basically poor excuses for Americans they are.*

This is clearly a prescriptive argument, and no evidence is presented. The major issue is whether people should be jailed for following their religious beliefs when the beliefs conflict with the law. The writer's first reason is thus a value judgment which is directly relevant to the conclusion. If the value preference is accepted, the conclusion follows. Note that the other reasons given are basically direct attacks on the *character* of the Amish people, accompanied by *appeals to the emotions.* The arguments are basically *ad hominem.* The issue is not whether the Amish are "good people" or whether they have fought in our wars, but whether or not there are times in our society when the law becomes secondary to religious beliefs. For example, if the Amish had "fought for our country" would this writer argue that they had the right to refuse to go to school? No. Thus, arguments 2 and 3 are invalid.

PASSAGE 2

CONCLUSION: *We should maintain deductions for the three-martini lunch.*

REASONS:

1. *Taking away the deduction would dry up jobs in the restaurant and entertainment business.*
2. *Business entertainment is to the corporate world what fertilizer is to agriculture; it makes for a higher yield.*

First, again we should note that we have a prescriptive argument. Both reasons are generalizations, and reason 2 contains an analogy. Both reasons 1 and 2 provide an advantage of the deductions, that is, they help business. Thus, if the reasons are true, and we accept the assumption that facilitating business profits is an important goal of our system of taxation, then the *reasoning* is valid. However, what about the truth of the reasons? Look at the analogy in reason 2. First, we need to discover the relevant common characteristics. Both business entertainment and fertilizer may stimulate growth. But there are relevant differences that weaken the prospects for finding an illuminating principle in this

analogy. We will mention a couple. Fertilizing the field and watching the corn grow does not provide the same personal pleasure as having a $20.00 lunch at a gourmet restaurant. Also, there is a direct scientifically established causal link between applying fertilizer and seeing growth which does not exist between having a good meal and buying products. Thus, we should not accept the conclusion as true without better support than reason 2 provides.

Passage 3

CONCLUSION: *The American athletic system poses a threat to democracy.*

REASONS:

1. *Our athletes are being indoctrinated into a fascist ideology. American coaches exert more oppressive control over the athlete than even communist coaches, suppressing creativity and demanding obedience.*
2. *This ideology (the infection) is carried into the political world, turning government into a game. It is impossible to expect athletes to be placed in an environment of oppression and then not to reflect that same totalitarian characteristic when they become national leaders.*

You should note several striking deficiencies in this rather complex argument. First, the reasons consist of a number of generalizations; but none of the generalizations are supported by any *specific evidence.* Thus, it is impossible to judge the *truth* of the reasons.

Second, the writer uses vague, emotionally loaded terms throughout the article. The words cancer, infection, fascism, oppression, and carbon-copy totalitarian system all tend to draw negative emotions from the reader. Until less emotional words are supplied and specific referents are given, it is impossible to judge either the truth of the reasons or the validity of the reasoning. For example, what *specifically* is meant by *"an environment of oppression"* or by "carrying their infection of fascism into the political world"?

Third, the author of the passage is committing a form of the either-or fallacy. Only two choices are said to be available to us:

a. Democracy and a sports program that treats the coach as just one more member of the team, *or*

b. Fascism and our current sports program.

Isn't it quite likely that adjustments could be made in the existing relationship between coaches and their players (here we are assuming with the author that her reasons are true) that would enable our democratic political institutions to survive? For example, every coach could be encouraged to remind his or her team repeatedly that the playing field is in many ways an inadequate model on which to base most important life decisions. The author of the passage does not consider any available options beyond (a) and (b). We cannot accept the author's reasoning because of this sloppiness on her part.

Self-Examination

PASSAGE 4

One of the most healthy characteristics of modern young people is their rejection of contemporary religion. The simple-minded claims of religion are typically rejected by those with extensive education. The mass media have repeatedly documented this increasing hostility of young people toward the religious beliefs of their parents. That these attitudes are healthy is proved by the fact that throughout history the best students have resisted the appeals of religious fanatics.

XII

What Significant Information Is Omitted?

You now know a number of good ways to identify weaknesses in arguments. The ability to spot ambiguities, misuse of evidence, and errors in reasoning is a helpful skill in achieving this goal. We want to devote this chapter to an additional question you need to ask if you are going to make reasonable personal decisions: "What significant information is omitted?" Sensitivity to missing information has been discussed briefly in several earlier chapters, but it is so important to critical reading that it deserves special emphasis.

Advertisers, teachers, politicians, book writers, and parents all want to shape your decisions. You already know that. It is a natural and highly predictable desire on their part. Typically, therefore, you will encounter only one side of a controversy when there may be dozens of possible conclusions and sets of arguments that would address the controversy. Those trying to persuade you will almost always present their position in the strongest possible light. So when you find what you believe to be strong reasons, it's wise to hesitate and to think about what the author may not have told you. These reasons may not be quite so impressive if you realize that their apparent strength is caused by the author's omission of significant information or of reasons that support different positions.

Interspersed throughout the chapter will be examples of reasoning that is not very convincing, not because of what is said, but rather because of what is omitted. Look carefully at the examples and notice how in each case the failure to look for significant omitted information would have resulted in your making a premature decision. Instead, you should have paused and taken a closer look at what *could* have been said.

☛ *CRITICAL QUESTION:* WHAT SIGNIFICANT INFORMATION IS OMITTED?

A. THE CERTAINTY OF INCOMPLETE REASONING

Incomplete reasoning is inevitable. A first explanation for this inevitability is the limitation imposed by time and space. Arguments are incomplete because writers do not have forever to organize them, nor do they have a completely open format in which to present their reasons. Second, the attention span of most of us is very limited. We get bored when messages are too long. Thus, writers often feel a need to get their messages across quickly. Advertising reflects both types of explanations. The allotted time for presenting the message is short, and the advertisers sense the need to attract and retain your attention. In their attempts to sell, advertisers consequently engage in many annoying omissions.

For example, a well-known deodorant commercial compares the effectiveness of the advertised brand's roll-on with that for spray versions of several other deodorants. Not surprisingly, the roll-on "lasts longer." Should we then conclude that the advertised brand of roll-on deodorant is superior to others? Wait just a minute! What the advertisement neglects to include is any information about the relative effectiveness of roll-ons and sprays in general. A relevant piece of omitted information would be such comparative data. If roll-ons are always more effective than spray deodorants, then the advertisement is persuading us to act in a manner not necessarily consistent with our best interests. Perhaps the purchase of any roll-on (not necessarily the advertised brand) would provide "greater" staying power than that provided by spray deodorants. The advertiser omitted significant data you would need if you were to react critically to the advertisement.

Another type of missing information is at least as important. Even had there not been missing data in the advertisement, you would still want to consider other possible advantages or disadvantages of different deodorants. From the advertisement you can infer that the advertiser is assuming that you value the security of smelling clean more than you value economy. The advertiser does not mention price. Why? We can only guess, but he must think you share the value assumption contained in the ad. If your value assumption is different, you may not be highly impressed by the longer lasting quality of the advertised deodorant, even if the ad is true. Maybe you prefer variety to the security gained from smelling clean and would thus prefer *not* to have a long-lasting deodorant.

A third reason for the inevitability of missing information is that the

knowledge possessed by the person making the argument will always be incomplete. No one can know *everything* about the assassination of John F. Kennedy. Consequently, anyone suggesting who killed Kennedy must be omitting information that would be helpful to you if you were carefully trying to make up your mind about the identity of the assassin. Similarly, when over half the doctors sampled in a survey of attitudes toward national health insurance fail to complete the questionnaire, it is impossible to know whether or not they differ in significant ways from the doctors who do complete the survey. Yet this is a very important piece of omitted information.

The existence of many outright attempts to deceive constitutes a fourth reason why omitted information is inevitable. Advertisers *know* they are omitting key bits of information. If they were to describe all the chemical preservatives, dyes, or cheap component parts they include in their products, you would be less likely to buy them. Experts in every field consciously omit information in some instances when open disclosure of the information would weaken the persuasive effect of their advice. Such omissions are particularly tempting if those trying to advise you see you as a sponge.

There is a final important reason why omitted information is so prevalent. The values, beliefs, and attitudes of those trying to advise or persuade you are frequently different from yours. You can expect, therefore, that their reasoning will be guided by different assumptions than you would have brought to the same question. A particular perspective is like a pair of blinders on a horse. The blinders improve the tendency of the horse to focus on what is directly in front of him. Yet, an individual's perspective, like blinders on a horse, prevents him from noting certain information that would be important to those who reason from a different frame of reference or set of blinders. Unless your perspective is identical with that of the person trying to persuade you, important omitted information is to be expected.

Let's review. Omitted information is inevitable. There are at least five reasons for the prevalence of omitted information:

1. Time and space limitations.
2. Limited attention span.
3. Inadequacies in human knowledge.
4. Deception.
5. Different perspectives.

Now do you see the danger of the sponge model even more clearly? You must actively question expertise and advice if you are to avoid forming opinions based on an unnecessarily limited base of information.

B. QUESTIONS THAT IDENTIFY OMITTED INFORMATION

If you are now convinced that reasoning will necessarily be incomplete, what are you supposed to do? Well, initially you have to remind yourself again and again that regardless of how attractive the structure supporting a particular decision or opinion may be at first glance, it's necessary to take another look in search of omitted information. How do you search and what can you expect to find? You ask questions to help decide what additional information you need and then ask questions designed to reveal that information.

Isn't it silly to ask questions of a writer who cannot answer? Not at all! Although you will not have your questions answered, asking them has positive results. First, you may be able to supply the missing information because of what you already know. Second, searching for omitted information in written persuasion gives you good practice for when you *are* able to search for omitted information face-to-face with a teacher or anyone else who is trying to persuade you orally. Even more importantly, searching for omitted information prevents you from making up your mind too soon. By asking such questions of written material, you are reminding yourself that the information provided is incomplete. Whatever conclusion you reach on the basis of incomplete information must necessarily be tentative. You cannot be *sure* about the accuracy of your opinion as long as important information is still missing.

The actual questions you can use to find omitted information are related to those you have already encountered in earlier chapters. Asking critical questions about ambiguity, the use of evidence, and the quality of assumptions usually highlights omitted information.

Important types of missing information include the following:

1. Key definitions.
2. Alternative techniques for gathering or organizing the evidence.
3. Omitted effects of what is advocated and of what is opposed.
4. Missing graphs or data.

Take a look at some arguments that have omitted some or all of the types of information listed. Watch how each of the omissions might cause you to form a faulty conclusion. Only by asking that omitted information be supplied in each case could you avoid this danger.

Initially, let's look at an advertising claim. Several cereals are advertised as providing "part of a balanced breakfast." What is meant by

the word "part" here? Wouldn't you like to know how large this "part" is relative to that in other cereals? Sure you would, unless you do not mind wasting money. The advertiser has omitted a key definition. Remember that the goal of the seller is different from yours. The cereal firm wants a sale; you want taste, economy, and nutrition. Consequently, you should expect the advertisement to omit certain information that is crucial to your particular purpose if that omission enlarges sales. One important additional bit of information is the effect on your health of consuming the large amounts of sugar contained in many cereals. This omission masks a significant effect of eating sugar-coated cereal—an effect that advertisers would prefer not to mention.

Let's now take a look at a more complicated example of omitted information. Read the following excerpt and ask yourself what important information has been omitted from the author's reasoning.

> Previously one had a pretty sure prospect of getting a good job and high salary by going to college. Now that certainty is no longer there.
>
> On one hand we've had a big increase in the number of young people graduating from colleges and universities in the 70's . . . At the same time the demand for college graduates has simply not increased at that pace. One of the traditional sectors where college graduates have been employed has been in teaching. Well . . . the demand for teachers is falling . . . and the Federal Bureaucracy has been a major employer of college graduates, and, . . . it has not been expanding in the last several years.
>
> The earnings gap between high school and college graduates . . . has narrowed significantly. Bureau of the Census Data indicate that, for the average college graduate 25 and over, the advantage has declined from maybe 53 percent in 1969 to 35 or 36 percent today.[1]

What important omitted information did you find? Did you ask questions that would identify any of the four types of omitted information that we described for you? Let us help you. How did the economist measure what it meant for a college degree to be "worth the price"? Did his particular definition of what a college degree is worth reflect a value assumption with which you agree? Did the author of the excerpt

[1] Adapted from R. Freeman, "Does It Pay to Go to College?," *U.S. News & World Report*, January 24, 1977, 59–60.

examine the most important effects of a college education to you? What useful data are missing? For example, wouldn't it be helpful to know how satisfied college graduates are with their jobs? If you answer these questions correctly, you should see that the economist gave you only a partial picture of the value of a college degree. Unless he or you complete the picture, your decision about whether to go to or continue in college would be very uninformed if it were based on his reasoning alone.

C. OMITTED INFORMATION THAT REMAINS MISSING

Just because you are able to request important missing information does not guarantee a satisfactory response. It is quite possible that your probing questions cannot be answered. Do not despair! You did your part. You requested information which you needed to make up your mind. If the information is not provided, you must decide whether it is possible to arrive at a conclusion without the missing information.

As you recall from an earlier part of this chapter, we warned you that reasoning is always incomplete. It is not, therefore, appropriate to claim automatically that you cannot make a decision as long as important information is still missing. Such a claim would logically prevent you from ever forming any opinions. The information you need to be perfectly certain that you are right will never be available.

D. PRACTICE EXERCISES

☞ *CRITICAL QUESTION:* WHAT SIGNIFICANT INFORMATION IS OMITTED?

In each example, there is important missing information. For each, make a list of questions you would ask the person who wrote the quotation. Explain in each case why the information you are seeking is important to you as you try to decide the worth of the reasoning.

PASSAGE 1

> Laetrile offers its users an opportunity to live. Its detractors in the medical establishment can offer no similar guarantee to those who suffer with the knowledge that they have cancer. Those who use laetrile repeatedly report reduced pain.

PASSAGE 2

What all the evidence seems to suggest is that some violence portrayed on television could have some effect on some people. How many people are killed by tranquilizers? Should we eliminate them?

A generation was raised on all the stuff we turn out, the heavy diet of westerns that we had and the detective shows. If critics are right about the brutalizing effects of television on youth, why did young people not rush off to Vietnam to vent their aggressions? The young generation did a lot to protest that war and bring it to a stop.

PASSAGE 3

The volunteer service is a failure . . . the volunteer force could not possibly work in a war. . . . What we have now is a peacetime volunteer force, with the inevitability that if we had a war—even a limited war—we'd have to go back to the draft.

. . . The Army is already about 180,000 people short in its individual Ready Reserve Forces, and projections indicate

that it will be about 250,000 people short in the early 1980's. The Army itself is experiencing recruiting difficulties. The Army is about 6 percent under their quota so far in fiscal year '77.[2]

Sample Responses

PASSAGE 1

CONCLUSION: *Laetrile should be made available for those with cancer.*

REASONS:

1. *Laetrile promises longer life for those who suffer from cancer, but doctors make no comparable predictions when cancer patients use accepted forms of treatment.*
2. *Laetrile users say their pain is reduced.*

To what extent are *promises* concerning laetrile kept? What are the comparative rates of success for those who use laetrile and those who use radiation therapy and/or chemotherapy? What are the negative side effects of ingesting laetrile?

In the second reason, laetrile users are said to experience less pain. How would these same users have responded to a placebo that was alleged to be a pain-killer? In addition, the reduction of pain, while important, is not the primary objective of cancer therapy. Does laetrile lengthen life? At what physical or mental costs does it lengthen life (if it actually does)?

[2] Adapted from S. Nunn, "Bring Back the Draft," *U.S. News & World Report*, February 14, 1977, 55–56.

PASSAGE 2

CONCLUSION: *We should not place additional restrictions on television violence.*

REASONS:

1. *It does not make sense to eliminate something like television violence just because it harms a few people.*
2. *The same young people who watched so much violence on television actively resisted the war in Vietnam. Their actions demonstrate that watching television violence does not make one more violent.*

This passage omits important data as well as significant disadvantages of failing to regulate the amount of television violence. For instance, there were many young people who supported the war in Vietnam. How can we know the effects of television violence on one's attitude toward war unless we have comparative data on the attitudes of frequent and infrequent television viewers? The author of the passage also omits any reference to the positive correlation shown in many studies between observing violence on television and engaging in violent crimes. Another possible disadvantage not mentioned in the passage is the effect on nonviolent television programs. If those with money to spend on the products sold through television commercials prefer violent television programs, other television watchers may increasingly be denied the type of programming they prefer.

PASSAGE 3

CONCLUSION: *The volunteer army is a failure.*

REASONS:

1. *Too few people have been attracted to the volunteer service. We could never fight a war with such a service because we cannot attract enough people even during peacetime.*
2. *The current Ready Reserves are hundreds of thousands short.*

As with many arguments, this one does not make an attempt to indicate any evidence that would weaken its reasoning. Is there any evidence

that would enable us to conclude that the volunteer army is a success? For example, does the composition of the current army provide a more representative cross-section of our population than that prevalent under the draft?

For the first reason to be convincing we would need to know what the effect of patriotism would be on enlistments during a war. Is it fair to project a shortage of manpower during peace into a prospective period of war?

Before responding to the second reason, we would need to know how "short" is determined. Who makes the quotas and on what basis? What are the financial costs of meeting these quotas? What are the advantages of maintaining a small Ready Reserve?

Self-Examination

PASSAGE 4

The great danger of television is that is requires such little mental effort to watch. Television gives us thousands of images of war, leisure, marriage, police, adolescence, and death. As a result, we don't have to strive to develop our own understandings of these events or groups. Television offers its viewers a pre-packaged reality, one which we are asked to absorb rather than evaluate. Our brain can relax while the television implants images in our consciousness.

Think of the damage television does to our educational system. Teachers increasingly tell us that students cannot concentrate for an extended period. Many of our most valuable ideas are complex and complicated. Will future citizens quickly discount these insights as "boring" simply because they require extended concentration to appreciate? A simple comparison of college textbooks from twenty years ago with those published now shows increasing use of pictures, simplistic vocabulary, and a dramatic decline in the number of words. Distinctions and nuances are ignored in a desperate effort to attract the attention of readers reared on television images.

Contrast the mental process that accompanies reading with that which occurs during television viewing. In reading, you the reader control the pace of image formation and development. You can reflect on a sentence and even return to earlier sentences in search of a new meaning that escaped you the first time through. As you read, you may choose to reflect on

the extent to which the passage reminds you of your own experiences or enriches your hopes. Television gives little time for such creative use of imagination. The pace continues without pauses—except for the next commercial.

XIII

What Alternative Conclusions Are Consistent with the Strong Reasons?

By this stage in your study of *Asking the Right Questions,* you should have acquired the filters required to distinguish stronger reasons from weaker ones. For generalization arguments, the better the evidence, the stronger the reasoning. In more complex arguments, such as prescriptive ones, stronger reasons are those which are well supported by both evidence and believable assumptions. After you have identified the stronger reasons, there is one additional step that will be useful to you in preparing for a personal decision concerning the controversy in question. This final step in the evaluation process consists of identifying the various inferences that can be based on the strong reasons.

Very rarely will you have a situation in which *only one* conclusion can be reasonably inferred from the strong reasons. Consequently, you want to make sure that the conclusion you eventually adopt is the most reasonable and the most consistent with your value preferences. If you are undecided about which inference is best after you have identified those that can be drawn from the strong reasons, your conclusion must be especially tentative. You can make a decision in such circumstances, but the recognition that the strong reasons could provide support for different conclusions as well as for your conclusions should heighten your interest in any tests or studies that would help identify the best conclusion.

☞ *CRITICAL QUESTION:* WHAT ALTERNATIVE CONCLUSIONS ARE CONSISTENT WITH THE STRONG REASONS?

A. ASSUMPTIONS AND ALTERNATIVE CONCLUSIONS

Neither a set of facts attempting to support a generalization nor a group of strong reasons supporting a prescriptive conclusion can be interpreted in only one way. Facts and reasons do not simply speak for themselves in an obvious way. As we have seen many times throughout *Asking the Right Questions,* conclusions are reached only after someone makes certain interpretations or assumptions concerning the meaning of the reasons and evidence.

If you make a different assumption concerning the meaning of the reasons and evidence, you will reach different conclusions. Since we all possess different levels of perceptual precision, frames of reference, and quantities of prior knowledge, we repeatedly disagree about which conclusions are preferable. We form different conclusions from strong reasons because our diverse background and goals cause us to be attracted to different assumptions when we decide to link reasons to conclusions.

Sometimes a writer will mention alternative conclusions that you can reach on the basis of the reasons he has presented. However, it will often be necessary for *you* to generate possible alternative inferences. To do this creative task, try to ask yourself what different assumptions could be made that would enable someone to jump from the particular strong reasons you have identified to another inference. Remember, there are *many* possible inferences that can be made on the basis of most sets of strong reasons. The next section is designed to help you recognize the multiplicity of possible conclusions.

B. TWO SIDES OR MANY?

There are very few important questions that have answers that are either a simple "yes" or an absolute "no." As we will see in this chapter, once an issue is addressed and you have carefully analyzed the reasoning, there are probably still several conclusions that might be reasonable. Many of the previous questions you have been urged to ask are the same questions that will help you to search for alternative inferences or conclusions. Before we look at several illustrative arguments in which alternative inferences are possible, let's make sure that you appreciate the large number of conclusions that are possible with respect to most important controversies. Here are three contemporary questions.

1. Do I.Q. tests measure intelligence?
2. Is the president's energy package desirable?
3. Should judges be elected or appointed?

At first glanee, these questions and many like them seem to eall for "yes" or "no" answers. However, a qualified "maybe" is often the best answer. Thc advantage of "maybe" as an answcr is that it forces you to admit that you do not know enough yet to make a definitive answer. Yet at the same time that you are avoiding a definite answer, you have formed a tentative deeision or opinion that calls for eommitment and eventual action. Once you reeognize you ean never be certain how to answer complex questions, you can better aceept the necessity of making decisions even when you know you are missing eritieal information or understanding. It's wise to seek additional information that would improve the support for your opinions, but at some point one must stop searching and make a decision even when the most forceful answer you are willing to defend is a "yes, but . . ."

Glanee back at the three questions that preeeded the last paragraph. Ask yourself what eonelusions would be possible in response to eaeh quc̈stion. Naturally, a "yes" or a "no" answer would be two possible conelusions. Are there others? Yes, bunehes of them! Let's look at just a few of the eonelusions that may be plausible with respeet to the first of these questions.

DO I.Q. TESTS MEASURE INTELLIGENCE?

1. Yes, to the extent that intelligence means sequential reasoning.
2. Yes, when they are given to ehildren of the same sociocultural baekground.
3. Yes, if they arc used only for elementary school children.
4. Yes, when the I.Q. seores are highly correlated with measures of motivation.
5. Yes, but only in terms of the type of intelligence that is useful in sehools.
6. No, if you define intelligenee as that factor which leads to later success in one's chosen field.
7. No, if they fail to inelude data gathered orally.

Notiee that in each easc we added a eondition that is neeessary before the alternative inferenee ean be justified. In the absence of any data or definitions, any of these seven conclusions may be the most reasonable. Hopefully, we would be better able to ehoose from among these inferences after analyzing the strong arguments. Thcse seven are just a few of the possible conclusions with rcspect to question one. Will you now

buy the idea that there are many possible answers to a question, not just two?

Just for practice, try to suggest five possible conclusions that could conceivably be defended with respect to Question 3.

SHOULD JUDGES BE ELECTED OR APPOINTED?

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____

Did you think of this one? Elected, if it can be demonstrated that most of those who would vote understand the tasks of a judge well enough to make a choice consistent with efficient justice. Or maybe you thought of this one? Appointed, in those states where the voter turnout in state legislative races has averaged more than 50 percent in the last ten years? Probably not! Why are we so sure? Because there are an enormous number of possible conclusions for this question. It would be an unlikely coincidence if you had chosen either of these two from the huge list of possible conclusions. This great number of possible conclusions is what we want you to grasp. Knowledge of the possibility of multiple conclusions will prevent you from leaping prematurely from the strong reasons to a particular conclusion.

C. SEARCHING FOR ALTERNATIVE CONCLUSIONS

This section contains two arguments which point out alternative inferences that could be created from the reasons in each argument. The point of the section is to give you some models to use when you search for alternative inferences. In each case, we will give you the structure of the argument before we suggest alternative conclusions. One clue to help you in your search is the following: Study the strong reasons without looking at the conclusion and try to identify as many inferences as possible that would follow from the reasons.

CONCLUSION 1: *Those who refused to serve in Vietnam should* not *be pardoned.*

REASONS:

1. *They are not sorry for what they did.*
2. *A pardon would increase the likelihood that many would refuse to fight in future wars.*
3. *Our already embattled military would feel even more under attack by this rejection of their past contributions.*

Looking at the first reason, we might arrive at entirely different conclusions depending on the definition of "pardon." The ambiguity in the word "pardon" permits us to create many alternative conclusions. Every different definition would enable us to create one more possible conclusion of the form:

> If the writer means by a pardon that . . . in return for which the draft register must . . . , then my position would be . . .

For example, if the writer defines pardon as removing all potential legal penalties in return for which the draft resister must pay no social penalties, then my position would be . . .

Another way to generate alternative inferences would be by a careful examination of the three reasons as a group. It is possible to accept the truth of all three reasons and still to arrive at several different conclusions, for example, since our country does not value international harmony to the extent it should, a pardon is desirable as a stimulus for debate that might reorient our nation's foreign policy.

CONCLUSION 2: *Congress should not decriminalize pot.*

REASONS:

1. *A group of British scientists have shown that smoking pot may cause serious brain damage.*
2. *Pot smokers risk decreasing their fertility when they smoke.*
3. *Pot smokers often become heroin users.*

Think about the controversy. What alternative conclusions are possible with respect to this controversy? One would be to decriminalize pot in one locale and observe the impact before making a national rule. Alternatively, Congress could sponsor research designed to develop a substance that would produce a high similar to that produced by pot without the possible side effects. One optional inference based on a strong devotion to the value of individual responsibility would be to permit pot to be sold in stores along with other possibly hazardous materials. The necessary assumption would be that those who may misuse the drug have a right to that choice. Observe that all three of these conclusions are possible even if we accept the truth of the three reasons. The same reasons frequently can be used to support several different conclusions.

D. PRODUCTIVITY OF "IF" CLAUSES

If you went back over all the alternative inferences discussed in this chapter, you would notice that each optional conclusion is possible because we are missing certain key bits of information, definitions, assumptions, or the frame of reference of the person analyzing the reasons. Consequently, we can create alternative inferences by the judicious use of "if" clauses. In an "if" clause we are stating a condition which we are assuming in order to enable us to reach a particular inference. Notice that the use of "if" clauses permits us to arrive at a conclusion without pretending that we know more than we actually do about a particular controversy.

When you use "if" clauses to precede conclusions, you are explicitly pointing out that your inference is based on particular claims or assumptions about which you are uncertain. Look at some sample conditional statements that might precede inferences to see what we mean.

1. If she is referring to freedom of religion when she documents the loss of our basic freedom, then . . .

2. If the birth rate continues to rise over the next five years, then . . .
3. If we look at his sales record from the FDA's perspective, then . . .

These "if" clauses present you with alternative inferences that you may wish to assess before making up your mind about the controversy. The "if" clauses broaden the list of possible conclusions from which you can choose your opinion.

E. PRACTICE EXERCISES

☞ *CRITICAL QUESTION:* WHAT ALTERNATIVE CONCLUSIONS ARE CONSISTENT WITH THE STRONG REASONS?

For each of the following arguments, identify three different alternative conclusions that could be drawn from the reasons.

PASSAGE 1

A recent survey found that more than half of the $50 billion spent annually on automobile repairs was wasted. The survey covered 62 garages in seven cities. Half the garages visited were judged fair in terms of the prices they charged.

What can be done to reduce this waste? For such evidence of fraud, a few well-publicized prosecutions might do wonders. Those who knowingly take advantage of consumer ignorance are the worst variety of thief. Consumers should make a special effort to see that such garages go broke by not taking sick automobiles to these rip-off artists.

Passage 2

The use of racial quotas for either college admissions or employment is wrong. Quotas provide an immoral technique for achieving important objectives. However, it makes little sense to say we should create a fair world by unfair means. Equality is desirable but not at any cost.

Quotas are actually dangerous for those the quotas are intended to help. It is cruel to place a person in a position where he will be underqualified. Such a person is certain to feel his inadequacy. Many people who receive their positions as a result of quotas will drop out. They will leave more unhappy than before the quota was established.

Passage 3

In the future nuclear power will simply be so expensive that it will not be feasible. Many of the utilities who sponsored the expansion of nuclear facilities are now either cancelling or postponing their plans for new nuclear plants. In addition, nuclear power is associated with unacceptable health and safety risks. If a major nuclear disaster were to occur, who knows the genetic and ecological damage that would result? We cannot base our energy hopes on such a dangerous source.

Sample Responses

PASSAGE 1

CONCLUSION: *Those responsible for automobile repair rip-offs should be prosecuted for fraud.*

REASONS:

1. *More than half the annual expenditure on automobile repairs is wasted.*
2. *Well-publicized prosecutions of the guilty repair shops will serve as a deterrent and inform consumers of which garages to avoid.*

The author's inference is but one of several that are consistent with the reasons. These include:

a. *If the repairs are faulty because of undertrained mechanics, a better solution to the problem would be licensing of mechanics.*

b. *Let's assume that mechanics are urged to check automobiles not just for current problems but for impending ones as well. With this assumption in mind, it's possible that the survey data was focusing on a narrow definition of "waste." Perhaps, one could thus infer from the reasons that mechanics should in general be praised for their long-range care of our automobiles.*

c. *The automobile is such a complicated mechanism that it's unrealistic to expect repair records any better than those reported in the survey.*

Passage 2

CONCLUSION: *Racial quotas in colleges and jobs are wrong.*

REASONS:

1. *Racial quotas are immoral and illegal because they violate our standards of equality.*
2. *Quotas harm those who receive jobs or positions because they are embarrassed and hurt when they fail.*

Again in this passage there is a woeful lack of evidence. However, for purposes of this exercise we will simply assume the truth of these reasons.

From these two reasons we could reach the following conclusions:

a. *We should encourage affirmative action policies as an alternative to quotas.*

b. *Equality of result is more important than equality as the author is defining it. Thus, we should encourage quotas as a means of providing equality of result, especially after we have insured through proper training that those who benefit from quotas can succeed at least as often as their white counterparts.*

c. *We should enlarge our efforts to teach black history so that more people realize that we need to develop a new standard of equality. With this revised standard, we can create an environment in which quotas will lead to a higher form of equality rather than to failure.*

Passage 3

CONCLUSION: *Nuclear energy should not be a major energy source.*

REASONS:

1. *It is too costly.*
2. *It is dangerous to our health and safety.*

These two reasons are consistent with several conflicting inferences.

a. *Nuclear energy development should be encouraged because even with its disadvantages it is the energy source with the fewest risks.*

b. *We should spend more money on nuclear* fusion *research.*

c. *If Congress grants the requested funds, nuclear energy can be made relatively cheap and safe in the long run.*

Self-Examination

PASSAGE 4

During the past several years, prayer in the schools has received the endorsement of voters in such states as Alaska, Oregon, and Kansas. In each state majorities of over 80 percent favored a Constitutional Amendment permitting prayer in the schools. Surely a proposal with such support is a true "people's issue."

The Constitution ensures that no single religious group will create a national religion. The forefathers never intended to prohibit religious expression. A prayer opened the Continental Congress and the Constitutional Convention itself. So it's hard to understand how the forefathers can be used by opponents of school prayer as supporters of their position. School prayer is consistent with our national traditions.

XIV

What Are Your Value Preferences in this Controversy?

This chapter shifts the focus from issues of truth and validity to the issue of the quality of value preferences. Even under the best of circumstances in which there are both true reasons and no errors in the reasoning, you will not necessarily want to agree with the author. Before you make a personal decision, you need to consider carefully the major value conflicts and compare your value preferences to those of the writer. Once you have identified the writer's value preferences and your own in a controversy, you have a basis for accepting or rejecting her conclusion on a rational level. It would make little sense to support conclusions or accept opinions that are supported by reasoning which is inconsistent with your personal value preferences. When you realize that an author's value preferences differ sharply from your own with respect to the controversy in question, you immediately want to be very cautious about accepting her reasoning. This chapter encourages you to use value preferences as a legitimate filter for deciding which opinions to accept.

A word of caution at the outset is needed. Just because a writer has value priorities that resemble yours does not mean that you should automatically agree with her conclusions. Determining that someone trying to persuade you to accept a particular conclusion has value preferences similar to yours is only one step in critical reading. Each of the other critical questions must be answered satisfactorily before you can rationally make the author's conclusion yours as well.

A. ALTERNATIVE WAYS TO DETERMINE YOUR VALUE PREFERENCES

If you are to match your value preferences with those of authors who are attempting to convince you that a particular conclusion is correct, you must first identify value assumptions on both sides of the controversy. Chapter VI was devoted to helping you acquire a knack for identifying these assumptions. The next step in the matching process is a decision about the confidence you should have in *your* value preference.

Although we encouraged you to question conclusions that are based on values that you do not see as significant, we also want to urge you to examine your own values in the process. As you no doubt know very well, there are few universally accepted values. Who knows, maybe the ones you currently hold *are* your values simply because you grew up in a particular family at a particular time in history. Since values play such a predominant role in influencing your behavior and beliefs, you owe it to yourself to at least think about changing your values. You cannot in any way *choose* your values unless you have thought seriously about the worth of alternative values.

By respecting value differences among yourself and others, you give yourself an opportunity to decide which set of values makes the most sense for you. You should ask yourself, "Why is this set of values a good one?" One way to answer this question is to examine the consequences of these values and to compare them to those from alternative values. Thinking about the consequences or results of different values permits you to explore the effects of valuing material success more than serenity, for example. It is fair to be dubious about conclusions when they are based on value assumptions you do not share. But as you are questioning these conclusions, spend a little time analyzing the strength of your commitment to the values that stimulated your reaction. Since values have such a powerful influence on your thinking, you must be very certain that you have chosen your values with care. A willingness to listen openly to those whose values differ from yours provides you with the opportunity to question your own value assumptions.

After you have reassured yourself that you indeed do have certain value preferences, there are several techniques you could use to justify these assumptions to yourself and others. It would be reasonable for someone to ask you where you got your value assumptions. Their point is that the quality of these assumptions depends on their source.

Several sources of value assumptions are repeatedly mentioned by those attempting to justify their value priorities:

1. Personal hunch.
2. Authority.

3. Tradition.
4. Moral reasoning.

These sources are so commonly used as the basis for value assumptions that we want to discuss each one briefly.

When asked why they prefer equality of condition to individualism in a particular controversy, many will simply say that it's obvious or common sense. "I just know in my heart that equality of condition is more important in this instance." Such an answer suggests that there is no basis for further questioning because the source is a personal hunch. To defend a value assumption by a personal hunch, you would have to assert that you have a strongly felt, inexplainable personal feeling, *period!*

Authority is another frequent source used to justify particular value assumptions. "My value assumption is derived from what my family, priest, or political heroes have told me to believe." Such a defense of a value assumption does not require an explanation of why the speaker has decided to let someone else be the source of her value assumptions. The listener is asked to see the value assumption as appropriate solely because an authority approves.

A third form of justifying value assumptions is to base them on cultural or national traditions. "These are my value assumptions because they are the dominant values in my culture or nation." The value assumption is deemed appropriate because the speaker has learned it from his community. These are the majority values and, thus, reflect some historical or collective wisdom. Many of those who use this justification would say, "Who am I to argue with the value assumptions of my community?"

The fourth common defense for value assumptions (and the one primarily supported in this book) is *moral reasoning*. "My value assumptions have evolved through critical thinking applied to my observations and discussions with others." This view sees value preferences as legitimate to the extent that they are selected after rational argument and reflection. This source of values is based on an implied criticism of the alternative three sources. Personal hunches, authority, and tradition may be starting points for justifying value assumptions. However, these sources must be examined rationally and critically. Do they make sense as the source of some of our most fundamental beliefs? If not, the moral reasoning approach would reject the value assumptions stemming solely from the first three sources.

The first three sources of value preferences share a common problem. The person who accepts them as a proper source of justification for value assumptions tends not to ask himself whether the value assumption is reasonable. Instead, he obeys commands from sources beyond his con-

trol. He doesn't really choose value preferences; he accepts those chosen by others or those which pop immediately into his consciousness. Such an approach does not provide a technique for resolving value differences among people. There is no mechanism whereby one reassesses the worth of his value judgments in light of their consequences.

B. MORAL REASONING AND VALUE PREFERENCES

If you require that each of your value assumptions be justified with moral reasoning, you will always ask, "Why is this my value preference in this situation?" Is there some rational basis for believing that one value or set of values is any better than the other? You have selected your value preferences, but before you use them to form a personal decision, make a systematic attempt to justify the reasonableness of your selections. As explained in Chapter VI the basic way to provide reasons for particular value assumptions is to examine the consequences or probable outcomes consistent with the value assumptions. What will be the societal effects of acting on the value preference you have chosen? Answering this question is the basic format for moral reasoning.

Let's look together at an illustration of the use of moral reasoning:

> We must legally prevent homosexuals from teaching in the public schools. Scientific evidence is overwhelming that homosexual conduct is caused neither by genes nor birth defects. The homosexual chooses to be sexually attracted to members of the same sex. Consequently, we should not pity and protect homosexuals since they knowingly chose to endure the social judgments that are applied to homosexuals.
>
> Since homosexuality is learned, we all must be concerned about who is teaching our children. If a child has an openly homosexual teacher, will not the child be attracted to the homosexual life? Parents want to make sure that children do not see homosexuals in high status positions. These children might get the impression that homosexuality is a harmless option.
>
> There is an abundance of information that homosexuals recruit young people. Many homosexual periodicals have numerous want ads, complete with nude poses, from homosexuals soliciting partners. Most of these ads are aimed at children under 18. School teachers who are homosexuals would be in an ideal position to recruit pupils into a life of homosexuality.

The structure of this argument can be summarized in the following manner:

CONCLUSION: *Gays should not be permitted to teach in public schools.*

REASONS:

1. *We should not protect homosexuals because they knowingly chose to endure the negative social judgments applied to them.*
2. *Since homosexuality is learned, children might be tempted to adopt this lifestyle if it is presented as a harmless option.*
3. *Homosexuals recruit young people, and teachers would be in an ideal position to engage in such recruitment.*

For purposes of the illustration, overlook the sloppy evidence, reasoning errors, and questionable assumptions in the passage. *Imagine* that all three reasons are strong.

A value preference that stands out as very significant to the author of the passage is that tradition is a more important value than toleration of alternative lifestyles. He does not argue that homosexuality is bad; rather his arguments assume that homosexuality, like polio, is something which all people should be protected from. Why? He probably argues in this way because heterosexuality has *traditionally* been the only acceptable lifestyle. Suppose, again for purposes of the illustration, that you agree with the value preference of the author. Then ask yourself what consequences you would expect from acting on this value assumption. If you try hard, you should be able to identify both positive and negative consequences.

On the positive side, a society that emphasizes tradition tends to be more stable. Basic behavior and definitions of right and wrong persist for long periods of time. Those reared in such a society are not faced with choosing from among different roles. They know what is expected of them and can focus their energies on fulfilling that role. Tradition reflects a respect for one's ancestors and elders. Traditions develop over long periods of time so they are the product not of whim and spontaneity but of historical evolution.

On the negative side, those devoted to tradition tend to resist change. Many useful ideas will probably be rejected in the interests of preserving traditional modes of thinking and behaving. Those who value tradition very highly may engage in harsh forms of repression as a means of restricting change. Such repression endangers the safety and material well-being of those attempting to change traditions.

Next, let's look at the probable eonsequenees of valuing toleration of alternative lifestyles very strongly. Toleration of alternative lifestyles offers encouragement to other people to develop habits and skills in all the variety of ways possible to the human imagination. A world in whieh such a value is emphasized would be more diverse and would tend to permit human potential the broadest possible fulfillment. Less time and energy would be spent trying to restriet the behavior of others. At the same time, toleration of alternative lifestyles as a value does not lead to a clearly defined set of social and cultural standards. Many people are troubled when faeed with numerous choices about what is appropriate or good. Such people need rules as a framework for their lives, and toleration of alternative lifestyles oftcn leads to a rejeetion of such rules.

What we have attempted to do is suggest some probable eonsequenees that oeeur when either tradition or toleration of alternative lifestyles is a dominant value. You should next ask *why* these partieular consequenees are good or bad. Then you may question the basis for the answer, and so on. At some point you will simply deeide that you have traced the rationale for the value preferenee baek as far as you have time to do. This ehapter, by asking you to justify your value preferences by identifying some of the eonsequenees of acting on them, provides a method for looking at least one level beyond a gut level aceeptanee of eertain values.

When you antieipate the consequenees of aeting upon partieular value preferences, there are two problems that you will want to recognize. Initially, you need to be able to demonstrate that the predieted eonsequences are highly probable. It makes littlc sense to foeus on outeomes that arc only remotely possible. For example, in the preeeding illustration several historieal examples in whieh groups had been perseeuted by those preserving traditions would make it more convincing that valuing tradition very highly may indeed lead to repression. Only those eonsequenees that arc very likely should strongly affeet your selection of value assumptions. Seeond, even if you show that the eonsequences are highly probable, you must present arguments that demonstrate the goodness or badness of partieular consequences. If one effeet of aeting upon your value assumption is the elosing of many small businesses, you will still have to form a reasonablc argument for why that effect is good or bad as you justify your value assumption. When you ean show that the eonsequences of your value assumption arc both highly probable and better than those flowing from alternative value assumptions, *then* you have engaged in responsible moral reasoning.

The next ehapter foeuses on the final step in eritical reading—the formation of personal decisions. After you have evaluated the author's assumptions and reasons, you are ready to form a eonelusion for yourself.

XV

Judging the Worth of Opinions: Making Tentative Decisions

You now have many of the tools you need to make reasoned personal opinions. The techniques you have learned can save you from sloppy thinking and from being unduly influenced by the thinking of others, but they cannot provide you with a set of indisputably correct answers to the complex dilemmas you will face. They *will* enable you to avoid being a sponge in reacting to other people's attempts to persuade you, thus permitting you to make decisions that are the right ones for you and your value system.

A. INAPPROPRIATENESS OF CERTAINTY

You can never be *sure* that your opinions are correct. You can have more confidence in carefully reasoned opinions than other kinds, but the complexity of most important questions requires us to form conclusions before we can be absolutely certain that we are right. Even when we *know* we cannot be wrong, there is some shred of information we have not yet considered or some important implication of our conclusion that we have failed to analyze. Most of us want to be definitely certain that our opinions are accurate, but the limitations of our intellects and the complexities of human dilemmas work together to confuse this search for certainty. Thus, you should not define a good decision or conclusion as an absolutely correct one but as a decision which is most appropriate for you *at a given time.*

B. MAKING TENTATIVE PERSONAL DECISIONS

After you have "asked the right questions," you are ready to form your reasoned conclusions. You begin this process by first asking yourself, "What is the controversy?" Then, you should list for yourself the various conclusions, or answers, that seem feasible. Then the major task becomes one of deciding which reasons supporting the various conclusions are *strongest.* The less you were able to criticize a reason used in support of a conclusion, the stronger the reason. Typically, the strongest reasons will be those that are well supported by evidence and by appropriate assumptions, and which are compatible with *your values.* Thus, in arriving at a decision, it is of utmost importance to do the following:

1. List those reasons which you were least able to criticize.
2. List alternative inferences.
3. Make explicit personal value preferences and definitions of key ambiguous terms which are relevant to this particular controversy.

Once you have done this, it is time to make your decision.

Your decision will be tentative in most cases. Answers to your questions will not be enough to provide you with *certain* conclusions. Whatever you decide you should realize that a different conclusion may be more reasonable if only you knew more about each controversy. But, making *reasoned* tentative decisions is a rewarding experience to most of us because *we* have gone through the mental exercises to form the conclusion—we have not been sponges.

In many cases, because the reasoning you have encountered may be so weak or so abbreviated, the best tentative decision will be no decision. You will want to wait until you can find the relevant information elsewhere. In such cases, asking the right questions has been useful to you because you have been smart enough not to make a premature judgment. You have not been easily swayed by a weak argument.

While frequently you will choose to put off making a decision, many issues will require conclusions *right away* although it might take a decade to gather all the relevant information. Many of the debates discussed in this book require answers *now.* We need to help schizophrenics *now.* If foods are causing cancer, we need to know *now.* Decisions about building nuclear plants need to be made *now.* Thus, even though you would like to be *sure* before you form an opinion, many times you will have to make a decision now.

C. WHEN HAS A WRITER DONE HIS JOB?

One final precautionary note. If you consistently ask the right questions, we will be surprised if you do not have a tendency to judge virtually everything you read as a bad argument, or as a weak argument. Why? Because all of the arguments related to the kinds of issues we have been talking about will be flawed *in some respect*—if only because the writer does not have sufficient space to present his point of view thoroughly. You will find that it is much easier to find a flaw in someone else's reasoning than it will be to construct your own reasoned arguments. Thus, keep in mind limitations as you judge the writer of a magazine article, of a letter to the editor, of an editorial, or of a textbook. No position will be perfect. But some will be better than others. What you decide to call a well-reasoned article will be up to you. You now have the tools to judge the weak from the strong. But we suggest you do not demand perfection and that you keep the writer's purpose in mind.

Look for the *best* argument you can expect, given the writer's purpose and the complexity of the issue.

D. PUTTING IT ALL TOGETHER

You are now ready to form your opinions. To help you "put it all together," the next and final chapter presents a checklist of critical thinking steps and takes you through one long example of critical thinking in action. Chapter XVI is an illustration of what you should now be able to do—engage in a process that culminates in reasoned opinions. We suggest that you keep the checklist handy as you practice applying the skills you have learned.

XVI

Practice and Review

If you have completed the previous chapters of the book, you now know what questions you ought to ask in order to be a critical reader. You have gone through many chapters and have become acquainted with many critical questions. In this chapter we "put it all together" for you. We first provide you with a checklist so you can picture all the critical questions together. The checklist should serve as a handy guide for you until the critical questions become second nature. When you encounter articles, lectures, debates, textbooks, commercials, or any other materials relating to an issue that is important to you, you will find it useful to go through the checklist and to check off each question as you ask it.

The checklist is presented in the next section. Following the presentation of the checklist, we *apply* the checklist questions by critically evaluating one position on a contemporary controversy. We have written the essay with the major purpose of providing an example of a coherent application of *all* the critical reading steps.

We suggest that you follow the essay with several goals in mind. First, you can treat it as a check on your understanding of previous chapters. Would you have asked the same questions? Would you have formed similar answers? Second, you should analyze the impact on *you* of considering the answers to the critical questions. Do you feel better able to judge the worth of someone's reasoning? After all, that is the whole purpose of "asking the right questions."

A. CHECKLIST FOR CRITICAL READING

CRITICAL QUESTIONS:

1. What are the issue and the conclusion?
2. What are the reasons?
3. What words or phrases are ambiguous?
4. What are the value conflicts and assumptions?
5. What are the definitional and descriptive assumptions?
6. Are the samples representative and the measurements sound?
7. Are there flaws in the statistical reasoning?
8. Are the causal explanations adequately supported?
9. Are there any errors in reasoning?
10. What significant information is omitted?
11. What alternative conclusions are consistent with the strong reasons?
12. What are your value preferences in this controversy?

B. ASKING THE RIGHT QUESTIONS: AN ESSAY

We first present a passage that summarizes one position with respect to the desirability of racial characteristics as a basis for admitting students to graduate and professional schools. This section is followed by our own essay illustrating the process of asking the right questions.

> (1) Most professional schools have many more applicants for admission than the schools can admit. (2) Since access to education that will result in graduates becoming either doctors, dentists, or lawyers is so valuable an opportunity, this access should not be decided by reference to the racial characteristics of applicants. (3) Yet, many nonwhites argue for admissions policies that reflect "affirmative action." (4) Affirmative action is a euphemism for making admissions decisions on the basis of race. (5) Those for whom racial equality has been requested are now trying to be more equal than white applicants to professional schools. (6) If admissions and hiring decisions are illegal when they exclude nonwhites

from fair consideration, then they should be illegal when they favor these same nonwhites.

(7) Affirmative action admissions policies for professional schools are disruptive, unnecessary, and even dangerous. (8) If one desires racial harmony, as I do, then affirmative action policies that unfairly aid nonwhites will be disruptive of our hopes. (9) Whites who are denied access as well as their sympathizers will probably be quite negative in their future attitudes toward nonwhites. (10) Affirmative action reminds us of our race and the fact that other racial groups are advancing at our expense. (11) If the objective that affirmative action is attempting to achieve is more nonwhite doctors, lawyers, and dentists, then a more acceptable option would be the creation of more professional schools.

(12) Those who support admissions policies based on affirmative action should be very careful. (13) If the goal of these policies is to bring representation in professions up to a level consistent with the minority's representation in the general population, then shouldn't the same reasoning be applied to other occupations? (14) Since there are a disproportionate number of nonwhites on professional sports teams, wouldn't it be a natural extension of affirmative action admissions policies to require coaches to reserve a certain number of team positions for white players?

(15) Affirmative action admissions policies are highly discriminatory. (16) How do admissions committees decide which minorities to discriminate in favor of? (17) Surely many other groups besides nonwhites are treated unfairly in our society. (18) In all seriousness, why shouldn't women, poor, fat, ugly, or dirty people be given preference for admissions since no one can deny that they have been victims of prior discrimination? (19) In fairness we should either grant special admission privileges to all past victims of injustice or else we should continue the current admissions policies based on merit.

(20) Nonwhites who are not qualified simply should not be granted scarce training slots in professional schools. (21) The United States Post-secondary Testing Center has conclusively demonstrated that the average nonwhite applicant is more poorly qualified than is his white counterpart. (22) Yet, we all know that under the guise of affirmative action, this inequity is encouraged. (23) For instance, a recent survey of

law schools estimated that eighty percent of black law students admitted in 1976 would not have been admitted in open competition with whites. (24) Twenty percent of white law students, but only one percent of black and four percent of chicano applicants, have undergraduate averages above 3.25 and LSAT scores above 600. (25) Thus, we are undercutting the quality of our professions by admitting relatively unqualified applicants.

What follows is a comprehensive essay that should serve you as a model of the product of critical reading. Each of the elements on the checklist suggests a specific step toward the ultimate goal of forming your own reasoned reaction to what you read. The essay evolves in a step-by-step sequence based on the checklist. Initially, the controversy and the conclusion are identified. Then the remainder of the essay evaluates the argument. The essay will not conclude by suggesting what you should decide about the merit of affirmative action admissions policies, but it will provide a reasonable basis on which you can make a decision.

☛ *CRITICAL QUESTION:* WHAT ARE THE ISSUE AND CONCLUSION?

The passage denies the desirability of affirmative action admissions policies in the professional schools which train the nation's doctors, lawyers, engineers, and administrators. It is clearly opposed to the creation and continuation of special admissions policies for minority applicants. This conclusion is a response to the issue: Are affirmative action admissions policies for professional schools desirable?

☛ *CRITICAL QUESTION:* WHAT ARE THE REASONS?

Let's paraphrase the reasons that lead to the conclusion that *affirmative action admissions policies in professional schools are* undesirable.

1. *If racial discrimination is illegal, discrimination against whites is also illegal.* (*Sentences 2–6*)
2. *By highlighting racial characteristics, affirmative action admissions policies create greater hostility between whites and nonwhites.* (*Sentences 8–10*)

3. *An alternative method for creating more nonwhite professionals is the sponsorship of more professional schools. (Sentence 11)*
4. *The absurdity of attempting to assure that the proportion of nonwhites in each occupation is equal to the proportion of nonwhites in the workforce can be seen if one will admit that competence in particular occupations may not be distributed identically to the distribution of racial characteristics in the population. (Sentences 13–14)*
5. *Class and sex are as important as race in determining social inequity. Thus, a focus on race perpetuates inequity while pretending to limit it. (Sentences 15–19)*
6. *Nonwhites admitted to professional schools by affirmative action admissions policies are frequently relatively unqualified. Admitting unqualified applicants reduces the eventual quality of professional services. (Sentences 20–25)*

☞ *CRITICAL QUESTION:* WHAT WORDS OR PHRASES ARE AMBIGUOUS?

In the arguments against affirmative action admissions, we look first for possible ambiguity that might weaken the reasoning presented, keeping in mind that we should be focusing on the author's major reasons. In sentences 15–19 it is claimed that affirmative action on the basis of race is discriminatory, and by implication, unfair. Remember that the word discrimination merely means to show favor to a particular person or group. There are many reasons, some justified and others unfair, that might cause one to discriminate. In analyzing this implication you should thus distinguish between (1) discrimination designed to attain a specific national goal such as equal opportunity, and (2) discrimination for the purpose of maintaining the status quo. The author's failure to clarify which usage of discrimination he has in mind creates unnecessary confusion. To label some behavior discriminatory is not sufficient evidence to prove that the behavior is unfair, even when the label is accurate. Discrimination can be consistent with fairness, and, thus, it is possible to be confused about the implication of sentences 15–19 for the conclusion we ultimately must reach about the value of affirmative action admissions policies.

Another ambiguity pervades the entire argument concerning the desirability of affirmative action admissions policies. What precisely are

affirmative action admissions policies? Notice how one's reaction to their desirability would be affected by the choice of either of the following alternative definitions:

> *a. active efforts to seek talented minority students in high school and then provide them with special training so they can eventually meet existing professional school admissions standards.*
>
> *b. encouragement of a racial quota which the admissions office is pledged to meet. Failure to meet the quota must be explained fully to the public.*

The first definition would find many more supporters because these kinds of affirmative action policies are more consistent with the competitive and individualistic values that predominate in our culture. That definition requires all applicants to eventually meet the same standards prior to admission. Yet we cannot tell from the passage what the author had in mind by "affirmative action policies."

☛ *CRITICAL QUESTION:* WHAT ARE THE VALUE CONFLICTS AND ASSUMPTIONS?

One value conflict that has a strong impact on this entire debate is that between (A) equality of condition defined in this instance as minorities receiving a proportional number of admission slots in graduate and professional schools, and (B) individualism. Those who attack affirmative action admissions policies tend to prefer individualism to equality of condition. They assume that it's up to each individual to earn the right to a position in graduate or professional school without any help from the government. This value assumption links the set of reasons to the conclusion. Equality of condition would result in the type of proportional representation condemned explicitly in the fourth reason. A preference for equality of condition over individualism might cause one to reject the author's conclusion while granting both the truth of each of the reasons and the absence of any errors in reasoning. In such an instance, a *strong* preference for equality of condition over individualism might lead to the conclusion that affirmative action admissions policies are needed.

Other value conflicts that affect the reasoning of the author can be derived from a closer look at individual reasons. The second reason reflects a value preference for social harmony over racial equality. The claim that affirmative action admissions policies will cause hostility be-

tween blacks and whites is based on the fear that whatever social harmony now exists would be disrupted by immediate movement toward racial equality. The sixth reason is based on the value assumption that excellence is a more important value than equality of condition. The alleged negative effect of affirmative action admissions policies is that future professionals will be less competent. The author is apparently less concerned about assuring proportional representation of minorities among professionals than he is about the level of skill exhibited by graduates of professional schools.

☞ *CRITICAL QUESTION:* WHAT ARE THE DEFINITIONAL AND DESCRIPTIVE ASSUMPTIONS?

One definitional assumption made by the author involves the use of "applicant quality." In sentences 20–25 it is alleged that nonwhites admitted under affirmative action guidelines are often relatively unqualified. Yet, the evidence that is presented is all based on a particular definition of applicant quality, namely, school performance records and their correlates. A broader definition of applicant quality that incorporated such applicant characteristics as verbal communication skills, willingness to empathize, or breadth of appreciation for the impact of lifestyle of clients on their behavior, might result in a very different attitude toward the worth of affirmative action admissions policies.

At least two descriptive assumptions play a key role in shaping the attack on affirmative action admissions policies. Specifically, the first reason assumes that the past history of the treatment of racial groups should not be a relevant consideration in determining the fairness of hiring policies. The author fails to recognize that rewarding certain representatives of a racial group may be the most effective strategy for compensating those who have been prior victims of racial discrimination. The author fails to consider the historical context in which affirmative action is occurring, thus he perceives hiring and admissions decisions based to any degree on racial considerations as universally repugnant.

In the second reason the author assumes that white reaction to affirmative action admissions policies will be molded by the predictably negative attitude of rejected white applicants. This assumption is questionable because the white-dominated legislative bodies which have enacted civil rights and equal opportunity statutes apparently have sensed a growing commitment on the part of white voters to affirmative action policies. The author asks us to believe that this support for affirmative action will wither as soon as rejected white applicants become visible. Perhaps he is right, but the assumption he makes is only hypothetical.

☛ *CRITICAL QUESTION:* ARE THE SAMPLES REPRESENTATIVE AND THE MEASUREMENTS SOUND?

Some of the evidence used in making the case against affirmative action admissions policies is also flawed. Notice in particular the evidence used for the sixth reason. Sentences 23 and 24 refer to a survey of law schools from which the authors infer nonwhite candidates are less qualified than white applicants for admission. However, we are told very little about how the survey was conducted. How many schools were surveyed? How representative were the schools? How did they define "quality"? For example, it would be helpful to know whether the schools surveyed had identical definitions of applicant quality. If schools surveyed have divergent definitions of applicant quality, use of a common definition in a later study might lead to very different inferences.

☛ *CRITICAL QUESTION:* ARE THERE FLAWS IN THE STATISTICAL REASONING?

Sentence 24 provides us with data which appear to indicate the relatively poor quality of nonwhite law students. A couple of possible problems in this data should prevent us from immediately making the inference that the quality of law schools and the legal profession would be diminished by affirmative action admissions policies. First, he is comparing very different groups. The grade point averages and LSAT scores of white law *students* are compared to those of nonwhite *applicants* to law school students. Surely, those admitted would have higher average scores than would the total set of applicants. The author apparently set up the comparison of scores so that it would be most supportive of his conclusion. Finally, the study cited may mean nothing more than that nonwhite applicants are less capable *students* than are white applicants. It certainly does not necessarily follow that affirmative action admissions would result in less capable *lawyers*.

☛ *CRITICAL QUESTION:* ARE THE CAUSAL EXPLANATIONS ADEQUATELY SUPPORTED?

Sentences 8–10 attempt to attribute increasing racial hostility to affirmative action admissions policies. These sentences do not present a very convincing causal explanation. They certainly don't reflect a controlled study determining the effect of these policies on incidence and severity of racial hostility. Sentence 9 is especially weak because it overlooks the

positive effect on whites' attitudes toward blacks of seeing successful black professionals in their midst.

☞ *CRITICAL QUESTION:* ARE THERE ANY ERRORS IN REASONING?

Reason three offers a proposed alternative method for increasing the number of nonwhite professionals. The alternative is in some sense a diversion. Many of the arguments for affirmative action admissions policies are based on a concern for the *relative* number of nonwhite professionals, rather than the *absolute* number. Therefore, sentence 11 is not an argument against attempts to increase the *proportion* of nonwhite professionals.

The fourth reason also has a logical problem associated with it. It is not a convincing argument to claim that such proportions should not be imposed on the professions because they are ignored in other key occupations such as in sports. This reason is using a questionable analogy. In sports there are clear performance criteria. Coaches and general managers will want players on their teams who can run faster, score more often, or serve more effectively. If a particular racial group has these skills disproportionately, they will predominate in a particular sport. However, there are no similarly clear criteria for what makes a competent lawyer, doctor, or engineer. Thus, the argument in reason four that a criteria which would be unfair in sports is equally unfair in determining who gets into graduate school is not convincing.

In at least one more respect the analogy in reason four is flawed. The skills required to become a successful law or medical student are acquired in our educational system. There is no similarly strong link between the development of sports skills and the schools. It is probable that there has been significant historical discrimination against racial minorities in our educational system and no similar discrimination in the process whereby sports skills are developed. Therefore, there is a basis for providing affirmative action help to racial minorities when they seek admission to graduate and professional schools; no corresponding basis is available to support the use of affirmative action in athletics.

Even if the analogy were a strong one, a supporter of affirmative action admissions policies could reasonably respond by noting that the existence of one *misallocation* of job slots does not provide a defense for continued misallocations in other occupations. Such supporters might see the professional schools as but the first battleground in a general struggle against occupational discrimination defined in terms of a smaller proportion of desirable job slots than would be held if the

percentage of job slots by racial grouping equaled the percentage of that racial category in the workforce. A similar response could be made in answer to reason five. Yes, we should compensate all groups victimized by previous discrimination. But we must start somewhere, and racial discrimination is as significant a focus for our initial efforts as would be any other form of past inequity.

A couple of more blatant reasoning errors are committed in sentences 19 and 22. Sentence 19 commits an either-or reasoning error. The author of the essay gives the reader only two choices—either all victims of past injustice should be aided by affirmative action or no victim should be aided. That false dilemma makes little sense. Many alternative actions are possible. Helping a few who have been mistreated would make a start toward a more fair society. The demonstration effect of such an expression might encourage further efforts to compensate for past injustices. Alternatively, there may be many effective ways to help certain groups that do not require affirmative action. Some victims of past injustice may need affirmative action and others may need a different social commitment. Sentence 19 does not permit that flexibility.

Sentence 22 attempts to persuade through the use of the phrase "we all know that." This persuasive device is an error in reasoning because the author does not tell us *why* we should agree with most people that the generalization in sentence 22 is accurate.

☞ *CRITICAL QUESTION:* WHAT SIGNIFICANT INFORMATION IS OMITTED?

One highly significant piece of information that would be useful to know in evaluating the first twenty-five sentences is the extent to which school performance predicts success as a professional. In the medical field, postoperative juries can assess the need for and quality of surgery. However, in most professional areas the definition of competence is vague. Consequently, in the absence of any consistent data relating professional competence to school performance, the common measures of applicant quality (on which so much of the argument against affirmative action admissions policies is based) are suspect. If someone could demonstrate a strong relationship between school and work performance by professionals, the arguments in the first twenty-five sentences would be more potent.

☞ *CRITICAL QUESTION:* WHAT ALTERNATIVE CONCLUSIONS ARE CONSISTENT WITH THE STRONG REASONS?

Let's first list the strong reasons, that is, those we were least able to criticize. Next we will identify any alternative conclusions consistent with these reasons.

Strong Reasons

1. *If racial discrimination is illegal, discrimination against whites is also illegal.*
2. *Class and sex are as important as race in determining social inequity. Thus, a focus on race perpetuates inequity while pretending to limit it.*

Remember that we are looking for conclusions other than the one provided by the author that are reasonable inferences on the basis of the strongest reasons we could find in the passage.

One alternative conclusion is actually hinted at in the passage—work to make discrimination against blacks and whites illegal. Until the legality of such policies is determined definitively, there will continue to be widely divergent admissions policies by professional schools. An equally reasonable conclusion that could be inferred from the two strong arguments is that affirmative action admissions policies based on sex and class should be encouraged. Notice that this inference is quite different from the one reached by those who suggested the arguments, but it is just as consistent with their reasons.

☞ *CRITICAL QUESTION:* WHAT ARE YOUR VALUE PREFERENCES IN THIS CONTROVERSY?

We are not going to state a value preference of our own. We will suggest some of the possible consequences associated with placing a heavy value on either individualism or equality of condition. From studying these consequences, you can select your personal value preference with respect to the desirability of affirmative action admissions policies at graduate and professional schools.

Individualism usually leads to a wide range of achievement. In a society in which each person is encouraged to achieve as much as possible without any help from anyone else, it is highly probable that levels of achievement will vary greatly. Some members of society will be very rich, famous, and skilled; others will be poor and highly uncomfortable. Individualism tends to create a society in which people are very posses-

sive and property-conscious. Those emphasizing individualism believe that an individual typically gets what he or she deserves. Consequently, the comfortable *deserve* their comfort and the miserable have earned their misery. Such beliefs provide support for widely unequal distributions of property and income. The rewards for success and the penalties for failure are generally great when individualism is emphasized.

Equality of condition tends to create a loss of incentive. The necessity for struggle is much less if there is a social assurance that equal results will eventually be provided regardless of performance. In such a society those who wish to distinguish themselves from others by earning lots of money often express their unwillingness to work hard when such striving offers them no clear reward. This value is conducive to social stability, however, because it stimulates few of the tensions among classes that are often associated with great inequality. Those who would have otherwise lived lives of poverty often feel part of a cooperative community when equality of condition is a prevailing social value.

Our critical reading is completed and the personal part of decision making remains. Our critical essay responds to only *some* of the facets of the controversy over affirmative action admissions policies. You may want to focus on other parts of the argument. Ultimately, you must decide which of the inferences to support. Critical reading can take you only so far. The final step is yours. You can feel relatively confident after following our checklist that you have asked the right questions about the arguments and that you are finally ready to form a reasoned opinion of your own.

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