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ABSTRACT

Having a twofold purpose, this booklet serves as an instructional guide for teachers and as a text for junior high students. Emphasis is upon students learning to think reflectively about major issues facing a Democratic society and to analyze various claims that they read and hear everyday in the world around them. An objective of the study is to help students understand the complicated task of being an intelligent, alert, and informed citizen. New vocabulary, ideas, and ways of applying the ideas help students learn to use critical thinking skills in clarifying issues. Chapter topics are: Describing the World Around Us; Testable Statements; Proof Process; Value Judgment; and Argumentation. The first three chapters focus upon identifying and naming different kinds of statements according to definitions, specific claims, generalizations, statistics, explanations, hypotheses, and evidence. Chapter four discusses value judgment, decisions, statements of preferences, loaded statements, and dilemmas. The last chapter relates the way in which different kinds of statements are put together in an argument. A glossary and subject index are provided. (SJM)

LEARNING TO THINK CRITICALLY

UTAH STATE BOARD OF EDUCATION

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UTAH STATE BOARD OF EDUCATION

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P R E F A C E

This booklet is the result of a cooperative effort by the staff of the Harvard Social Studies Project. This research project was sponsored by the United States Office of Education, Department of Health, Education and Welfare, and was Cooperative Research Project Number 8145. The Director of the Project was Donald W. Oliver, now Professor of Education at the Harvard Graduate School of Education. Others working on the booklet were: James P. Shaver, now Professor of Educational Research at Utah State University; Harold Berlak, now Assistant Professor of Education at Washington University in St. Louis; Ernest Van Seasholes, now teacher of social studies, Newton High School, Newton, Massachusetts; and Leonard Godfrey, teacher of social studies, Concord Junior High School, Concord, Massachusetts.

The Harvard Social Studies Project was primarily concerned with teaching students to think reflectively about major issues facing our society. This instruction took place within the framework of the seventh and eighth grade U.S. history program. This booklet was written to fill the gap of appropriate instructional materials for the purposes of the Project. It is based primarily on two sources: Philosophical writings concerned with reflective thinking; and introspection combined with discussion among the Project members as to appropriate intellectual strategies for handling political controversy. The booklet should not be viewed as a terminal document, but as a working paper presenting, for students, what were thought to be essential elements in an approach to public controversy. It should not be viewed as a final statement, but a document to stimulate thinking and, therefore, due to undergo change as teachers and students reflect on its applicability to their own circumstances.

Individuals desiring more detailed knowledge of the Project--its purposes, methods and evaluation--can find it in the research report by Donald W. Oliver and James P. Shaver entitled, The Analysis of Public Controversy: A Study in Citizenship Education, Cambridge, Massachusetts: The Laboratory for Research in Instruction, Harvard Graduate School of Education, 1962 (mimeo), or in a book by the same two authors, Teaching Public Issues in the High School, Boston: Houghton-Mifflin, 1966.

This booklet was duplicated for use in a research project at Wahlquist Junior High School, Weber School District. Teachers, working as a teacher team, used the booklet as a part of the eighth and ninth grade social science and English program. The booklet is used as an instructional guide by the teachers and also as a text by students. Further use of the booklet is anticipated by participants in the Western States Small School Project in Utah and by the Division of Elementary and Secondary Education.

LEARNING TO THINK CRITICALLY

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TO THE STUDENT . . .

The government of our community and our country is always doing things which affect our lives in many ways. As citizens, we have the right to influence the decisions that our government makes by voting for the representatives who best reflect our point of view! But we can and should do more than just vote. We should keep alert to the decisions that our government must make, and use every means at our disposal--petitions, letters to magazines and newspapers, letters to our representatives--to influence the way our representatives vote on important issues.

How do we know who to vote for? How do we know which decisions to urge upon the government and which to discourage? In order to make intelligent and wise choices, we must have the ability to sift through the thousands of words, written and spoken, which bombard us every day. Radio, television, newspapers, magazines, and pamphlets are always telling us to do something--everything from buying the "best" soap to voting for the "best" candidate. What do they mean by "best"? We are not told that. Can we get the facts to determine what's best--and probably as important, do we really know what a "fact" is? We are not told that either. Perhaps you have thought about some of these problems and tried to figure out some way to cut through the dense fog of conflicting claims, facts, and opinions.

"Learning to think critically" means just this--learning to cut apart the claims we read and hear every day to see what's inside. This book is an attempt to help you understand the very complicated task of being an intelligent, alert, and informed citizen. As you can see, this book is tackling a very difficult problem. Although the authors have made every effort to make the book clear and readable, you will find it is not an easy book to master. Many of the ideas are difficult. You will have to read carefully, think about what you read, and reread some parts. We hope, however, that when you finish, you will think it was well worth your efforts, that you will be better able to perform your job as a citizen.

THE AUTHORS

D E S C R I B I N G T H E W O R L D A R O U N D U S

DEFINITIONS

If a strange but friendly creature landed in your backyard and tried to communicate with you, there would be some real difficulty. It would be unable to understand you, and you would be unable to understand it. If it happened to be an intelligent and ambitious creature, you might want to teach it some English. You could point to yourself and say, "Me boy" (or girl), and then point to it and say, "You creature." You and the creature would thus have reached some common understanding of what to label two beings. With a little practice the creature would be able to look at any young adult male human and say, "boy."

Many things in the world are in fact labeled in the same way. Someone at some time or another looked at a striped horse-like animal and called it "zebra." Now, if someone asked you, "What is a zebra?" the simplest definition you could give would be to point at a zebra and say, "That's a zebra." One way to define a term is simply to point at a person or object or action and label it. Such a definition is called a pointing definition.

Pointing definitions are useful, not only for defining simple concepts like zebra, chair, table, desk, and so forth, but for defining more complicated terms as well. If you were asked to write a definition of a sports car, you would certainly need to write at least two or three paragraphs. Perhaps a simpler way of defining "sports car" would be to point at an Austin-Healy, a Jaguar, and a Morgan as examples. Of course, it is

inconvenient, if not impossible, to point at every object which you want to define. Usually there are few zebras and few sports cars handy. Instead of pointing you might want to do something else that is commonly done--that is, just name your examples.

Request for definition:	What is a sports car?
Pointing definition:	A sports car is a car like an Austin-Healy, Jaguar, or Morgan.

In short, a pointing definition may consist of one or more examples.

A pointing definition is an easy and helpful way of making it possible for people to understand one another. Pointing definitions of boy, zebra, and sports car give us enough information so that we can generally use these words without confusion; however, read the following conversation:

Louie: See little Sam over there? He's a moron.

Charles: What's a moron? (Request for definition)

Louie Any person like Sam, Dave, Clyde, and Louella. (Pointing definition)

Charles: Dave is not a moron; I think he's a smart guy.

In this case the pointing definition broke down. In order to settle their disagreement over whether Dave is a moron or a smart guy, Louie and Charles may list distinguishing characteristics or criteria that mark a "moron" and those that mark a "smart guy."

A moron is:

1. A person who cannot tie his shoelace at age fifteen.
2. A person who cannot talk intelligently.
3. A person who never knows the answer to a question in class.
4. A person who bites his fingernails.

A smart guy is:

1. A person who gets A's or B's on his report card.
2. A person who always knows the answers to a question in class.
3. A person who always does his homework.

Anyone is, of course, free to disagree with the criteria for a moron and a smart guy; but at least we can now locate exactly on what criteria we disagree. If, after discussing the criteria, we can come to an agreement on exactly what distinguishes a "moron" from a "smart guy," then we can decide whether, according to our criteria, Dave qualifies as a "moron" or a "smart guy." (Of course, it may happen that we won't be able to agree whether the criteria applies to Dave.)

Thus, a second way to define an object is to describe what we think are the most important distinguishing features of that object. Such a definition is called a criterial definition. The most useful criterial definition will list all the criteria which are necessary to distinguish one term from all other terms. A complete criterial definition of a football game would be contained in a football rule book; but it is possible to construct a useful criterial definition using only a few essential criteria.

> Football is a game which is played on a field 100 yards long with goal posts at either end and which uses an oblong ball about 11 inches long.

These two criteria are quite enough to distinguish football from most other sports. If you were trying to define football to someone who knew nothing at all about it, more criteria would, of course, be necessary.

Pointing definitions depend upon common agreement among people as to what to label any person, object, behavior, or state of mind. The labels to which pointing definitions are attached can be changed whenever we can persuade people that a different word or lable would be more suitable for a particular object. We could, for example, change the word "sports car" to "bongomat" if we could get enough people to agree to our change.

On the other hand, a criterial definition involves listing the characteristics that distinguish one thing from another. We cannot change a criterial definition merely because we can persuade other people to agree to change. Criterial definitions are based upon our idea of what the object being defined is really like, and they can change only when our idea of the thing being defined changes. Thus, elements in a criterial definition of zebra may state that "it has four legs and is striped." We cannot change this criterial definition to "it has one and a half legs and is plaid," because our understanding of what zebras are like still shows them to have four legs and to be striped. The second definition is inaccurate.

CLASSES

Lemon, orange, potato, apple, banana. What is there about this particular list which strikes you as being strange? Potato somehow seems out of place. Lemon, orange, apple, and banana fit together because they all have something in common; all are fruits. A potato is a vegetable. Can you pick out two groups of things that seem to belong together from the following list?

Frenchman	electric mixer
refrigerator	Mexican
toaster	sink
American	washing machine
German	Australian

From these two examples we can see that we group objects together. We can easily tell that sink and Frenchman are not the same kinds of objects and that they do not fit in the same group. Words which refer to whole groups or categories of objects, persons, or actions are called class labels; the groups or categories they refer to are called classes.

The process of putting objects into classes and labeling these objects with class names goes on all the time. It gives us a shorthand method for remembering information. It is a natural part of the way we think. It is not so natural, however, for us to define carefully the classes into which we place objects and people. We see a man giving a speech criticizing the United States. We classify him as a "Red" or a "Communist." Is the only criterion for "Communist," then, that a person criticize the United States? We see a man talking about how great President Eisenhower is. We may classify the man as a "Republican." Does this mean that everyone who likes Mr. Eisenhower is a "Republican"? We hear that Russia has just had an election. We classify Russia as a "Democracy." Is the only criterion for calling a country a democracy that that country hold elections? Thinking about these examples should make it clear that there are a number of dangers in classification.

Two dangers follow:

The Danger of Classifying an Object on the Basis of Limited Information.

If a class name is to be adequately defined, several criteria are usually needed. We might define a Communist as one who:

1. Believes in the teachings of Karl Marx.
2. Goes to Communist Party Meetings.
3. Works for world domination by Russia, China, or any other country friendly to Russia and China.

If this were our definition, a person would have to meet all of these criteria to be classified as a Communist. The fact that a person believed in the teachings of Karl Marx would not be enough to enable us to classify him as a Communist. We might call him a Marxist but not a Communist. The fact that someone had gone to Communist Party meetings would not give us sufficient information so that we could classify him as a Communist. An FBI undercover agent would go to meetings of the Communist Party.

We must be cautious about using class names in the social studies. We should identify the important criteria that define or describe any class to which we refer frequently. We should get information about as many of these criteria as possible before we give the class name as a person or object we wish to classify.

The Danger of Using Classes Which Refer to Averages.

"Boys are taller than girls."

In the above statement we use two class names. In order to make such a statement true, we must either say "most boys are taller than girls" or state clearly whether we are referring to a class average or whether we are referring to all the persons or objects within the class; this example

shows us that it is important to say, "The average boy is taller than the average girl." We might say, "The average Negro does not do as well on intelligence tests as the average white person." It would be incorrect to say, "Negroes do not do as well on intelligence tests as whites." Many Negroes do better than whites. It would be incorrect to say, "Americans are better fed than Chinese." Some Chinese people are better fed than some Americans. The point is that in using class names we often include more people or objects in the class than we mean to. We should, therefore, be careful to state whether or not we are talking about all the persons or objects in the class, whether we mean some of the people in a class or the average of all the people in the class.

DEFINITIONS AND TERMS WITH VALUE LOADINGS

> Six murderers under orders from their boss shot six men, wounded five others.
>
> Six soldiers under orders from their officer shot six men, wounded five others.

These two headlines are reports of the same incident. They differ only in their use of two words. Why is it we feel strong dislikes for the men in the first headline and not those in the second? It is because we have strong likes and dislikes for the ideas that certain words call to mind. The use of the words "murderers" and "boss" makes us completely unsympathetic toward the men in the first headline, while the use of "soldiers" and "officer" in the second may well leave us, if not with sympathy, at least with respect for the job the men did. When we use words which refer to things toward which we have strong likes or dislikes, we say that such words have value loadings.

Many class names and definitions have value loadings. A few are: Communism, America, democracy, labor unions, freedom, and mother. Class names with strong value loadings are especially difficult to define and to use. When we use words with strong value loadings, we must remember to keep our eyes on the accuracy of the description or criteria which define the words.

SUMMARY

We have presented two ways of defining objects, persons, and the way they act and feel. The first is the pointing definition which requires only that we point to or give examples of the words we are defining. The second is a criterial definition which requires only that we list the distinguishing characteristics of the object or thing to which a word refers.

Using class names gives us a way of grouping together persons, objects, and actions which have something in common. It is necessary to use classes in order to remember and think in an orderly manner. The dangers in using class names are that an object may be classified on the basis of limited information, that classes refering to averages may be used carelessly and that definitions and terms with value loadings may introduce confusion. Because most words have some value loading, we must define them with great care if we want to communicate our thoughts to others.

TESTABLE STATEMENTS

The first type of statement we talked about was the definition. We learned that there were two kinds of definitions. When there is an argument over a pointing definition, we settle it by finding out how the word is most commonly used. When there is an argument over a criterial definition, we have to observe the object or class of objects we are trying to define and see whether or not the criteria accurately and adequately describe those objects.

> It is the last half of the ninth inning, the score is tied, and there are two outs. The batter hits the ball over the fence and trots around the bases to home plate, but an argument develops. The manager of the other team claims that the ball went just outside the foul line, that it was foul. The batter's manager claims the hit was a fair one inside the foul line and that the homerun should count. The two managers would agree on what "foul" and "fair" hits are; they are not arguing about definitions. They do not agree about whether this particular hit was fair or foul; they are arguing about a <u>fact</u>.

Once we have common labels and common criterial definitions of people, actions, and objects in the world around us, we can solve some very important problems that arise when we discuss controversial social issues. There is, however, a second major type of disagreement which leads to argument--that is, disagreement over "facts" or statements that describe the world around us such as statements like "That was a foul ball." In a baseball game, such a disagreement is settled by the umpire. In other areas of life we must usually settle disagreements about "facts," about statements that describe the world around us, ourselves. Such statements are based upon observations of events. When we say, "The batter hit the ball over the left field fence," we have described an event. When we say "Columbus discovered America in 1492," we have described an event. When we say,

"Eisenhower is President," we have described a state of affairs. An event is a happening or a state of affairs in the world around us observed at a specific time in a specific place. All social studies knowledge depends upon observation and description of events.

Events occur in the real world. The raw materials of an event are living things, objects, and actions. The way to find out whether an event has happened is to observe it. We can never know for sure that an event has actually happened; we only know what our senses tell us.

Larger and Smaller Events

> You observe the following events: The color of John's skin is whiter than usual. John tells you that he is nauseated. John has a temperature of 102 degrees. After you have made all of these observations, you are likely to report that John is sick.

When we report events, we have a tendency to lump a great many very specific observed events into one large event.

Here are other examples of larger events based on smaller events:

Larger Events	Smaller Events
It is a hot day.	The thermometer outside reads 98°. The radio announcer says the humidity today is 92 per cent. Every person I've seen in the last hour has had sweat on his forehead. All the dogs in the street are lying still and panting.
The thief stole the car.	The man broke the window of the car. He reached in and opened the door through the broken window. He reached under the dashboard and fumbled with some wires. He drove down the street rapidly. A second man appeared later where the car had stood and was heard to say, "Where is my car?"

STATEMENTS THAT DESCRIBE EVENTS IN THE WORLD AROUND US

Specific Claims

Penelope J. Dolphineum is sitting in the classroom today.

Thaddeus Hornblower is President of the United States.

Each of these statements describes an event that has happened in the world or a state of affairs resulting from such an event. Such a statement is called a specific claim.

It is easy to prove whether or not Penelope is sitting in a classroom by looking at her, by touching her, and by listening to her.

It is easy to prove whether or not Thaddeus Hornblower is President of the United States by looking up Presidents in a new almanac, or by reading a newspaper, or by watching a TV news broadcast.

When a claim is supported by a great deal of evidence, as these claims are, we call it a fact. It sometimes is difficult to tell exactly when a claim can be considered a fact; this depends on how much we question the evidence that supports the claim. The more questionable the evidence for a claim, the less likely it is for the claim to be considered fact. When we come to doubt the evidence supporting a "fact," we no longer consider such a statement a fact.

Summarizing Statements

A specific claim is a statement that describes a specific event. Any specific event takes place at a particular time in a particular place. There is another kind of claim which is not tied to a particular time and place. Here are four such claims:

1. Fat people eat more than thin people.
2. Ramblers burn less gas than Buicks.
3. The earth goes around the sun.
3. January is a colder month than June.

These claims describe or summarize some type of event or class of event which has been or can be observed over and over again in a predictable way. We call these events general claims or generalizations. Can you change each of the generalizations on the preceding page to specific claims?

We wonder whether or not Ramblers burn less gas than Buicks. We decide to compare the gas mileage of five Ramblers with the mileage of five Buicks. We get the following results:

Ramblers	Miles per gallon	Buick	Miles per gallon
1	24	1	15
2	26	2	21
3	31	3	18
4	29	4	12
5	27	5	14

As a result of our study, we say that Ramblers burn less gas than Buicks. This statements is a generalization.

Generalizations or general claims are based on specific claims. The generalization, "Ramblers burn less gas than Buicks," was based on the specific claims, "Rambler 1 burned less gas than any of the five Buicks," Rambler 3 burned less gas than any of the five Buicks," and so on for Ramblers 4 and 5. One of the major characteristics of generalizations is that they go beyond the specific claims or specific instances which we have actually observed. The generalization we have been discussing applies to more Ramblers than the five we actually observed. It applies to all Ramblers and all Buicks.

The statement, "Ramblers burn less gas than Buicks," allows us to make certain predictions. Because this has been true of certain Ramblers and Buicks in the past, it will probably be true of other cars of the same make in the future. If Joe buys a Buick and Sam buys a Rambler, then we

predict that Sam's Rambler burns less gas than Joe's Buick. Generalizations not only summarize a number of specific claims of facts, but they also make the prediction that, because particular types of events have been observed in the past, the same events will also be observed in the future. It may be, of course, that knowledge about five Ramblers and five Buicks is not sufficient to enable us to predict accurately about future Ramblers and Buicks. In checking to find whether or not a generalization is sound, it is important to note exactly how many specific instances or specific facts support that generalization and to consider whether or not they are sufficient.

We commonly call generalizations, as well as specific claims, "facts." Whether or not a generalization, like a specific claim, is a fact, depends upon how much evidence we have to support that generalization.

STATISTIC

A generalization is one kind of a summarizing statement. There is a second kind of summarizing statement--a statistic. If, instead of saying, "Ramblers burn less gas than Buicks," we had said, "Four out of the five Ramblers we actually tested burned less gas than the Buicks tested," this second statement would have been a statistic. A statistic is a count or an estimate based on a count of several events that have been observed; it summarizes a number of observations that have been counted.

> We might say that there are 20 rooms in this building. Observation of each room results in a specific claim. We add up the specific claims and arrive at a statistic, 20 rooms.

Statistical statements are not generalizations because they refer to a specific number of observations.

A statistic, then, is a count of a specific number of observations made at given times and places. It is a summary of a specific number of observed events. A generalization is more than a count of specific events. A generalization is also a prediction or guess that, because these types of events have been observed in the past, they may be in the future.

Explanations

Specific and general claims describe events in the world. We call well-supported claims "facts." Suppose we want to know not only what is happening in the world around us, but also why it is happening. We may observe that while we were away from home our house was broken into and that some valuable furs and jewelry are now missing from the bedroom. We might explain these facts by suggesting that a thief broke into the house and stole them. An explanation is a particular kind of testable statement which attempts to answer the question, "Why has this event occurred?" Our explanation shows the relationship between two other facts--the broken windows and the missing valuables. Some explanations are very simple and explain the cause of one fact with only one other fact; some are complicated explanations which show the relationships among many facts.

It is important to understand the difference between more complete explanations and partial explanations. We may say, "I catch cold when a man on the bus sneezes in my face," or we may say, "I catch cold whenever, at a time when my body resistance is low, a man with a cold sneezes in my face." After making the first statement, we may realize that on many occasions people have sneezed in our face and we did not catch cold;

therefore, we refine our statement so that it explains that we caught cold because two conditions existed at the same time: we were exposed to cold germs, and our body resistance was lowered. The first is a partial explanation; the second, a more complete explanation.

Satisfactory explanations are generally complicated. For any particular event, there are a large number of possible explanations or causes. Why did the States engage in a Civil War? Was the war fought over slavery? Was it caused by economic competition? Was it caused by personal hatred between Northerners and Southerners? Did it take place because of poor leadership? Or can all of these reasons be included in a single, more complicated explanation?

When we gave the explanation for catching cold, we tried to describe the cause of the cold. In explaining the Civil War we were looking for its cause. When we give explanations, we are trying to answer the question, "Why?" Most explanations are complicated and must include a number of causes in order to explain a single fact or set of facts.

TELLING HOW SURE WE ARE

John Traynor plays basketball.
Labor Unions help workers.
England is ruled today by King George.
We will go to school 160 days next year.
There are men on the planet Venus.
Negroes learn more in racially integrated schools.

Are these statements claims or are they facts? Do you feel equally certain about the truth or falsity of all these statements?

Whether or not a claim can be called a fact depends upon the amount of supporting evidence for the claim we have available. Because our evidence is always limited, we can never know for sure whether a claim is

absolutely correct or absolutely false. Because there is always an element of doubt about the truth or falsity of a testable statement, we need some way to express how much doubt or certainty we feel when we make a claim. Below are some terms that help us label statements so that others may know how certain we are that these statements are true.

True Beyond Reasonable Doubt

When we have a great deal of evidence to support a claim, we call it a fact. A fact is a claim like "John Traynor plays basketball." That can be proven beyond reasonable doubt. This does not mean that it is absolutely true. It may still be possible to prove that the claim is false or to cast doubt on its reliability; however, for all intents and purposes, we can treat such statements as true.

Probably True

In many cases there is some scarcity of evidence or some contradictory evidence supporting a claim. The history of labor unions shows that they usually do help workers, although there is also some contradictory historical evidence that unions sometimes harm workers as well. When most of the evidence we have indicates that a statement like "Labor Unions help workers" is true, we say that that statement is "probably true." We should never shorten "probably true" to "true." When we say "true," we mean only "true beyond reasonable doubt."

Specific claims are more likely to be "true beyond reasonable doubt" than are generalizations and explanations. We should be especially cautious about saying that generalizations and explanations are "true"--that is, that they are "true beyond reasonable doubt."

False Beyond Reasonable Doubt

All the evidence available to us indicates that Queen Elizabeth rules England. When we find a great deal of evidence indicating that a statement like "England is ruled today by King George" is not true, we may say that the statement is "false beyond reasonable doubt." When we have proven a claim is not true, we say that it is a false claim. People who intentionally make false claims are sometimes called liars.

Probably False

When most of the evidence we have indicates that a statement like "We will go to school 12 months next year" is false, we say that the statement is "probably false."

These four phrases--"true beyond reasonable doubt," "probably true," "false beyond reasonable doubt," and "probably false"--apply only to statements about which we can get some good evidence. Some statements cannot ever be labeled by any of these four phrases because the evidence is too scarce or because the evidence we do get is contradictory. When such situations arise, we can label the statements "doubtful" or "controversial."

Doubtful

The clouds that cover the planet Venus prevent us from gathering evidence about men on Venus; therefore, statements about men on Venus will probably be "doubtful." A doubtful statement is a claim supported by little or no evidence.

Controversial

"White people are born more intelligent than Negroes." There is not enough evidence on both sides of this question which means we cannot label it either "probably true" or "probably false." At best we can call the

statement "controversial." In general, when some evidence supports a claim and other evidence contradicts it, we can call the claim a controversial statement. It is wise not to dismiss a doubtful or contradictory statement as worthless. We can look harder for more evidence or change the statement so that it can be proven "probably true" or "probably false." For example, if we revise the statement,"White people are born more intelligent than Negroes," to read, "In the South, white people tend to make higher scores on intelligence tests than Negroes," there is enough evidence to label this statement "probably true."

In telling how sure we are that a statement is true or false, we usually assume that the person we are talking to, or the people we imagine we are talking to, are reasonable--that is, we have to take for granted that they are not so stubborn or stupid that they will believe statements or refuse to believe statements regardless of how much evidence we have to support those statements. The most important test of reasonableness is whether or not a person will label statements differently depending upon how much evidence is available to support them. When the person refuses to recognize the varying weights of evidence supporting different statements, we can consider him unreasonable. It is not particularly fruitful to argue with unreasonable people.

SUMMARY

Besides disagreement over definitions, there may also be disagreements over statements that describe specific events or states of affairs in the world around us. Among such statements are specific claims, summarizing statements, and explanations. A specific claim describes a single event

that takes place in a particular place at a particular time. There are two kinds of summarizing statements. They are: generalizations and statistics. A generalization describes some type of event or class of event which has been or can be observed over and over again in a predictable way. A statistic is a count or an estimate of a number of observed events. An explanation tells the causes for an event.

Before we can call any of these statements that describe events in the world a statement of fact, we must examine how much evidence there is to support the statement. If most of the evidence is supporting and we have sufficient evidence, we call the statement "true beyond reasonable doubt," a true fact. If only the major part of the evidence is supporting, we call the statement "probably true." If all the evidence is against the statement, we call it "false beyond reasonable doubt." If only the major part of the evidence is against the statement, we call it "probably false." If we have little or no evidence about the statement, we call it "doubtful." If we have evidence for and against the statement, we call it "controversial." Whether we are considering claims, generalizations, statistics, and explanations by ourselves or in a discussion, we should be careful to use the right one of these phrases to show how sure we are about important statements we use. Anyone who refuses to do this is not behaving reasonably, and it will probably be useless to continue a discussion with him. The statements we have described in this chapter can all be tested by a proof process. In the next chapter we shall deal with how to go about testing such statements.

P R O O F P R O C E S S

FRAMING HYPOTHESES

You are driving along in your car and the motor dies. What is the first thing you do? You think to yourself, "I am out of gas." This is a claim. How do you test this claim? You look at the gas gauge if it reads empty, then you have good evidence that your claim is probably true. What have you done? In this instance you have put your claim into the testable form and you think, "If I am out of gas, then the gas gauge will read empty." Putting a claim in a testable form is called framing a hypothesis. After finding that the gauge reads empty, you can, with good reason, draw the conclusion that your hypothesis has been confirmed by the evidence and that your original claim, "I am out of gas," is probably true.

Now it may be that the gas gauge reads full. Your first hypothesis has not been <u>confirmed</u> (strengthened), but <u>infirmed</u> (weakened). Does this mean that your original claim, "I am out of gas," is false? No, your gas gauge may be broken. You might want to make an additional test by setting up the new hypothesis, "If I am out of gas, then when I put a rod into the gas tank, the rod will remain dry." If you put the stick in the tank and it remains dry, then you conclude that your hypothesis is confirmed: and your original claim is true beyond reasonable doubt.

Claims are very often stated in a vague or general language. It is important that everyone try to rework a claim into a hypothesis. These are the steps in reworking a claim into a hypothesis:

State general claim:	Ted Williams is a better hitter than Mickey Mantle.
Put claim into testable form:	If Ted Williams is a better hitter than Mickey Mantle, then Ted will have a higher lifetime batting average.
Gather evidence:	Compute lifetime batting averages for each player.
Draw Conclusion:	Judge original claim "true beyond reasonable doubt," "probably true," "probably false," "false beyond reasonable doubt," "doubtful," or "controversial."

You are sitting in the living room one Saturday afternoon watching a football game on television. The set goes dead.

State general claim:	The TV set went dead because the electricity was turned off.
Put claim into testable form:	If the TV set went dead because the electricity went off, then other electrical appliances such as lamps, the refrigerator, and the radio should not work either.
Gather evidence:	Check to see if other appliances are working.
Draw conclusion:	Your claim is "true beyond reasonable doubt," "probably true," etc.

In school you generally learn only claims which have been made by the teachers and textbooks. Many of these claims are "true beyond reasonable doubt." (Example: There are 50 states in the United States.) Some are "probably true." (Example: The winning of the American Revolution brought greater freedom to the United States.) Others may not be true at all. (Example: The United States has always won the wars she's fought.)

If you learn to frame hypotheses, gather evidence, and draw conclusions, you will be better able to check claims and to choose among conflicting claims.

ASSUMPTIONS OR HIDDEN CLAIMS IMPLIED BY A HYPOTHESIS

As we are driving along in our car, the motor begins to skip and finally stops. We explain this by saying the motor stopped because the car was out of gas. At this point we are making an assumption or hidden generalization that car motors will not run without gas. When we frame a hypothesis to test a claim, we often do not bother to state generalizations upon which the hypothesis depends. We take them for granted. We assume everyone believes that these claims are true. These unstated generalizations are called assumptions. Here are a few generalizations containing unstated assumptions:

Generalization:	We're in for a cold winter because the squirrels' tails were bushy this fall.
Unstated Assumption:	Squirrels grow bushier tails in years when the winters will be cold.
Generalization:	Those jokes must have been good; even Solomon Grundy is smiling.
Unstated Assumption:	It takes a very funny joke to make Solomon Grundy crack a smile.
Generalization:	The U.S. has been unable to get a rocket to the moon because there has not been enough money spent.
Unstated Assumption:	If more money had been spent, the U.S. would have been able to get a rocket to the moon.
Generalization:	Oscar Whipple will be nominated for President of the United States on the Democratic ticket.
Unstated Assumption:	Oscar Whipple will be alive.

SAMPLING: STATING HOW MUCH EVIDENCE SUPPORTS A CLAIM

Generalizations are based on specific claims or facts. Careful thinkers try to count the number of specific facts which support a generalization, or the number of exceptions to a generalization, and to summarize the number in a statistic rather than with vague language about how often the generalization seems to hold true.

A mop manufacturer has developed a Magic-Mop made out of seaweed.

He would like to be able to predict that a great many people will buy Magic-Mop.

Generalization: A great many people will buy Magic-Mop.

Before he goes into production of Magic-Mop, the manufacturer wants to test his prediction. He gathers evidence to confirm or infirm the hypothesis by a process called sampling. He gives a Magic-Mop free to a few people and asks them if they think it is a good mop. The mop manufacturer has two decisions to make about how to choose the people in his sample:

1. How many people will he give his mops to? He can't give away too many because that would be expensive. He can't give away too few because then he might accidentally choose only people with special tastes in mops.
2. What kinds of people will he give his mops to? He must have in mind all kinds of mop-users--ordinary housewives who use their mops only a few times each week, cleaning women in office buildings who use mops for hours every night, and workers in factories who use mops for heavy cleaning around greasy machines and chemicals.

After he has chosen the people for his sample, given them their Magic-Mops, and asked for their opinions, the manufacturer has the following statistic:

Evidence: Ninety out of one-hundred mop-users of all kinds like Magic-Mop.

On the basis of this evidence, he makes up his mind.

Conclusion: It is probably true that a great many people will buy Magic-Mop.

The process of selecting and observing those facts which may support a particular generalization is called sampling. From a sample we generalize or make predictions about new instances not yet observed. We try to convince people that there are enough specific facts in our sample to support our generalization and to make others accept it as fact. It is always important to describe the sample of specific claims or facts that support a generalization. It is easy to see that the reliability of a generalization depends upon the kind of sample of events we have actually observed. There are two things about a sample that are especially important. They are:

1. There must be a reasonably large sample of observed events. One-hundred properly chosen mop-users usually makes a better sample than three when predicting how well a mop will sell. Three mop-users might just happen to like special kinds of mops. One-hundred are less likely to have unusual tastes.
2. There must be a representative sample of the type of event about which we are trying to make generalizations. A sample of housewives alone would be unrepresentative

of all mop-users because housewives use mops less often and for lighter work than other kinds of mop-users. A sample of cleaning women or a factory worker alone would also be unrepresentative of all mop-users because such groups give mops unusually hard wear. By including all the more important kinds of mop-users--housewives, cleaning women, and factory workers--we get the most representative sample possible.

GENERALIZATIONS BASED ON LITTLE OR POOR EVIDENCE

> We visit a strange school and notice two boys fooling around in the hall. We then conclude, "The students in this school are rowdy and undisciplined." We meet a new person, and after a few minutes we think, "She certainly is a nice person," or, "I don't like her at all." Both these generalizations are based on very small samples of behavior. If we were to visit the same school or meet the same girl at three other times, we might have our opinion completely changed.

People not only make predictions or generalizations, but once they have committed themselves to them, they hang onto those predictions or to those generalizations even in the fact of contradictory evidence. The critical thinker is one who is willing to change his predictions and generalizations in the fact of new evidence, if it is important evidence. He does not change his mind just to agree with his friend or because he wants to avoid or to win an argument.

TESTING COMPLEX EXPLANATIONS AND CLAIMS

In our examples so far we have considered testing only very simple claims. Testing many claims, especially those made in explanations, is a very complicated process. When we give a complicated explanation, we can set up a great many hypotheses to test it. Although testing hypotheses is a long and difficult process, the real challenge in science and in politics as well comes when we have two reasonable hypotheses or explanations for the same event. If the statement, "There are thirteen million men in the United States who do not have jobs," is correct, one public official might explain it in the following ways:

> There are always many men in the country who do not like to work hard.
>
> Such men like easy jobs.
>
> When factory owners and managers have difficulty selling all the products they make, they have to lower the price of their products in order to sell them at all.
>
> When they lower the prices, they either have to lower the wages of the men who work for them, or they have to make the men work harder. The men will not work for lower wages.
>
> The men who will not work harder must be fired or else the managers will go out of business.
>
> Therefore, the most important reason why thirteen million men are now out of work is that they will not work hard enough.

A second public official explains the statistics in a different way:

> People in the United States buy the things they think they need.
>
> Their needs are constantly changing.
>
> Factory owners and managers guess at what they think people will buy.

Sometimes factory owners and managers make poor guesses. They build great factories, have huge machines built to produce something they think people want to buy, and then are able to produce more than the people will buy.

When the people cannot buy everything that is produced, the owners and managers have to close down some of their factories and lay off some of the men working for them. These man who are laid off want to work hard, but factories are producing things that fewer people want to buy.

Therefore, the most important reason why thirteen million men are now out of work in the United States is that factory owners and managers make poor guesses about what people will buy.

We should understand that it is possible for both explanations to be partly true and that both explanations can also be partly false. Let's take for granted here that both are reasonable explanations and that we wish to test which explanation is the better of the two. By the "better" explanation we mean that explanation which is both supported by the most facts and which helps us make the best prediction about a similar event in the future. To find out which is the better explanation, we can check each fact or generalization that makes up the explanation to see whether or not it is supported by strong evidence. Suppose someone tries to explain why thirteen million men in the U.S. are unemployed with the claim, "There are always many men in the country who do not like to work hard." We can run a survey to find out whether or not there really are men at the present time who do not like to work hard.

In checking explanations, it is probably a good idea to start with any statement in one explanation that is contradicted by a statement in the other explanation. The other explanation says some men get fired whether they want to work hard or not. If we can get evidence that tells us whether or not one of these generalizations is true, we will be in a better position to evaluate the explanations.

When we look at the evidence, it is possible, of course, that as we check the statements made to support an explanation, we may find that both explanations are poor. Perhaps we can think of a new explanation which is better. We might find evidence, for example, that some men are out of work, not because they are lazy or there is no work, but because they have not been trained for the jobs that are available. If we looked into jobs in public transportation, we might find that trolley car drivers in a certain city were unemployed. Closer investigation might show that these trolley car drivers were anxious to work hard and that there were many jobs open, but only jobs driving buses.

SOURCES OF EVIDENCE

Framing the hypothesis is the first step in the proof process. The next step is gathering evidence. There are at least three sources from which to gather evidence, intuition, personal observation, and authority.

Intuition

Intuition is what we often call "common sense." Often you hear someone say, "I just know it's true; it's common sense." If you press this person, he may go on to explain, "Well, I just know that it is true." Simply thinking that Ted Williams is a better player than Mickey Mantle will not make Ted Williams a better player than Mickey Mantle. Just thinking that a claim is true doesn't make the claim a fact.

Someone who accepts intuition as proof of a claim probably will not bother to set up a hypothesis to test the claim. What is the point of setting up a test when he feels that he already knows what the result will be? The major difficulty with intuition as a source of evidence occurs when two claims are made which contradict each other. Intuition offers no way of discovering which claim is correct.

> Mr. Jones says that he got a wart on his hand from a toad. Mr. Smith says this is nonsense, that toads do not cause warts. We ask the two men to prove their claims and they both say, "I just know it is true. It's common sense. Everyone agrees with me. We all know this." When both have finished giving this kind of evidence, we are in no better position to know whether Mr. Jones did or did not get the wart from the toad.

Many claims we believe to be true are based on intuitive evidence. Intuition is a poor source of evidence because it offers no way of proving to other people that our claim is a fact and that their claim is false. When there is a disagreement over whether or not a claim is a fact, we cannot rely upon intuition. We must look elsewhere for our evidence.

Authority

A student states the claim, "The sun is the center of the solar system." When we ask him how he knows that this claim is really true, he says, 'My science teachers says so." Someone states the claim that there has been a revolution in a Latin American country. He says he knows his claim is true because he read it in yesterday's New York Times.

When we are faced with the problem of proving a claim, we may point to someone else who has made the claim. These "someones" are usually people like a science teacher or a New York Times reporter who are supposed to know more than we do about a given claim. In other words, these are people whom we believe are reliable authorities.

We are inclined to believe what the science teacher says about the sun and the solar system because we assume he had to study something about astronomy in order to become a science teacher and because we know he keeps up with the current news about science. We are likely to believe that the New York Times reporter is right about a Latin American Revolution because we know that the New York Times has a reputation for printing only accurate news articles.

What makes an authority reliable? Below are six questions we can ask to find out.

1. Is the authority a first-hand observer of the events about which he tells? Did the newspaper reporter, for instance, see the Latin American Revolution going on with his own eyes?

2. If the authority is not a first-hand observer, does he state who told him the claims he is repeating.

   Our friend tells us that the best kind of cold remedy, according to an independent testing organization, is Bufferin. Another friend contradicts him and says that the same independent testing organization has proven anti-histamine best. In order to help find out which is best we ask each of our friends where he got his information.

Different people, like our two friends, often present contradictory reports, even though they have read or heard the same piece of information. It is important when this happens to know the source from which they got their information so that we can find out what the source really said. Because we cannot check testimony unless we know where to find it, most reliable authorities mention the source of their information.

3. Is the authority an expert on the subject about which he is writing? How much training and experience has he had in the field?

   Someone reports that Mr. Smith has high blood pressure. We can understand that testimony about blood pressure requires knowledge of how to use and to read the instruments that measure blood pressure. Before we believe the claim that Mr. Smith has high blood pressure, we must be convinced he has the necessary knowledge.

When an authority is reporting upon an observation for which technical knowledge or equipment or both are necessary, it is important that we obtain information about the competence of the witness himself.

4. Is there any information about the authority that would lead us to believe that he has a personal bias for or against something?

> If you ask a Ford dealer what the best low-priced car is, he will almost certainly answer, "Ford." If you ask him why, he can give you a whole series of reasons. It is possible that he has given you a very fair view of the situation and that the Ford is actually the best low-priced car. It is also possible, however, that he "likes" Fords because he sells them and has built a set of reasons to justify his liking.

The word bias or prejudice means strong personal feelings about the truth or falsity of a claim or set of claims. It is usually difficult to force people to admit that they have biases or prejudices. They prefer to believe simply that the claims they make are true.

A person who has no personal interest in a subject under discussion is often referred to as "disinterested." He has no money, property, reputation, or happiness involved in the issue being reported. Because he has no personal interests involved, he has no obvious reasons to be prejudiced for or against the claim under question. The Ford dealer would not be disinterested because his living depends on selling Ford cars which in turn depends on convincing you of his claims that Fords are the best low-priced cars.

We want to find out whether there is racial discrimination in the South. We ask a Southern Negro. The Negro is obviously "interested" (biased or prejudiced) in discrimination, but he may still be a reliable reporter who gives us an accurate report.

An authority can be both prejudiced and reliable. Most reporters, like the Southern Negro, have a personal interest in what they report. The way to evaluate the testimony of any reporter whom we suspect may be biased or prejudiced is to find out whether or not his prejudice prevents him from giving accurate testimony. We can determine this by asking certain other questions about the authority's report.

5. Does the authority contradict itself at any point? In other words, does the authority give a careful, consistent argument or does he make two claims, both of which cannot be true, as in the following example:

   A public official reports that he owns a large country estate, two new Cadillacs, and a yacht. He also reports that he earns $7500 a year. It is very unlikely that anyone could own an estate who earns $7500 a year.

6. Are the claims made by authority supported by claims from other authorities?

The Southern Negro claims that there is discrimination in the South. Other authorities familiar with the South agree with him. We accept the Negro's claim.

Occasionally, however, in checking whether or not the claims in a report are supported by claims in another source, we find that the two sources contradict each other.

> We read one newspaper account of a bank robbery. It says that the robber slipped away in a black Buick and made a clean escape. We check it against another newspaper account. The second account says that the robber was noticed by an alert policeman and shot dead while trying to escape in a black Buick. The two sources make contradictory claims.

We note the similarities in the two reports and are fairly certain they are facts. In the example above, a bank probably was robbed, and a black

Buick probably was the intended escape car. We must then notice where the contradiction lies--between "clean escape" and "shot dead" in the same example--and look for more evidence in other sources. We should be very cautious in making up our minds on the basis of two contradictory reports alone. They may both be inaccurate.

These are the six questions that we ask about authorities if we are to judge their reliability. We often look for other signs of authority which may have little to do with the question of whether or not a person is really an authority. Some of the signs we should be suspicious of are as follows:

Being an adult

Many young people believe that age makes any authority reliable. There is a saying, "The older you get, the more you know." People sometimes try to prove claims by saying that an adult "told me so." Adults, however, have limited knowledge, and in fact often disagree with one another.

A claim in print

Some people believe almost anything they read. Black print on white paper casts a kind of magic spell, yet it is true that it is almost as easy to make false claims on paper as it is to do so by word of mouth. It is just a little more expensive.

The status or importance of the authority

Many people believe that because a man has status--that is, because he is important in the eyes of the community, he is therefore a reliable authority on all subjects. Big businessmen, political leaders, doctors, television stars, and many people with a great deal of money have high status.

We often believe such people whether or not they are expert in the area of knowledge in which they are making claims.

> Ted Zelaney is a great baseball player. When Ted states a claim about the way in which someone hits a baseball, he is a reliable authority. His status, or importance, is based upon his knowledge about hitting baseballs; however, when Ted says, "Crispy-Crunchy breakfast food builds champions," he is no longer a reliable authority because he probably has no expert knowledge about breakfast foods.

Personal observation

Other than intuition and authority, there is a third source of evidence--personal observation.

> A television commercial states the claim that Blub soap powder makes rich, billowy suds. To check this claim we dissolve Blub in hot water and observe the results. Blub soap powder does make a great many suds.

One of the best sources of evidence is our personal observation. If we can set up a test to prove or disprove the claim, then we have evidence as to whether or not the claim is a fact. We can prove the claim like that about Blub soap by personal observation. In other words, we have conducted a demonstration. Dissolving Blub soap powder in hot water is a demonstration.

Personal observation can, in some instances, be a poor source of evidence. First, the observer may lack the training or ability to make reliable observations. Secondly, in the social studies and in other areas we often cannot prove things by personal observation or by demonstrations we have set up ourselves. In history, for example, it is impossible to set up a demonstration that enables us to observe first hand exactly what happened in some earlier period. For that reason, in the social studies we try to prove things more often by use of authorities than by use of personal observation and demonstration.

Proof by analogy

Frequently we do not go through the more lengthy process of evaluating the evidence for checking our claims or more complex explanations. Instead, we use a much simpler method.

Someone claims that a constitution is necessary to run a government. Instead of gathering evidence to convince us that his claim is true, he uses analogy.

> A constitution is as necessary to a government as a rulebook is to football.

We all know that a complicated game like football would be very confusing without a rulebook. We know that government is complicated, too. We are likely to accept the claim that government and football are alike in needing a constitution or a rulebook because we know they are alike in being complicated.

In proof by analogy we try to show that, because a claim is true in one situation, it must also be true in another situation.

Analogies help us to think about broad public issues like running a government. These issues often seem like someone else's business. They do not seem personal or important. One way to think more specifically about these issues is to relate them to personal decisions and events in an area, like football, that is more familiar to us. We make a comparison. We compare the unfamiliar, a constitution for a government, with the familiar, the rulebook for football. Such a comparison is an analogy. Analogies are useful because they make larger problems meaningful and important.

Analogies can, however, be dangerous. Although two different situations or objects may be analogous or alike in certain ways, they may still be different in many other important ways.

> A football rulebook spells things out in great detail. It tells exactly how large the playing field is to be and how long the halves should be. A constitution must be much more general. If our Constitution, written in 1789, had been very specific, it would be very much out of date today, and it would require many changes. Constitutional amendments are much more difficult to make than changes in a football rulebook and have more serious consequences. In this respect, a constitution is very different from a football rulebook. An analogy between them may make us overlook the difference.

When we compare different situations, we must be careful to notice the ways in which they are different as well as the ways in which they are alike.

SUMMARY

Once we have stated a claim, we usually go through a certain proof process to convince other people that the claim is a fact. We frame a hypothesis by rephrasing our claim in testable, "if-then" form. Sometimes in doing so we make assumptions or unstated generalizations. Sometimes for a complicated claim or explanation we will need to frame a number of hypotheses. After framing hypotheses, we test them by gathering evidence that confirms or infirms the hypothesis. Such evidence may be gathered from several sources--intuition, authority, and personal observation. Intuition, to the extent that it is not supported by experience, cannot provide us with very useful evidence. When evidence is taken from authorities, there are certain questions that should be asked to test the reliability of the authority. Many people look for signs which really

have little to do with the reliability of the authority. Evidence gathered from our own observation, perhaps of a prepared demonstration, is especially likely to be useful if we have the training necessary for making the observations. Once evidence has been gathered, it is important to tell how much of it there is. If sampling has been used, we should tell how large the sample was and whether or not it was representative. Another method of proof is use of proof by analogy. Proof by analogy is helpful but cannot replace proof by gathering evidence.

VALUE JUDGMENTS, STATEMENTS OF PREFERENCE, DILEMMAS, AND LOADED STATEMENTS

VALUE JUDGMENTS AND DECISIONS

Comic books are bad.

Helping others is good.

Blue ties are good; black ties are bad.

These statements are value judgments. Value judgments suggest that some object, person, or way of acting is good or bad. They not only suggest that it is good or bad, but that we ought to do something about it. In other words, a value judgment frequently suggests one or more decisions.

Value Judgments	Decisions
Comic books are bad.	Suggests the decision that we should not read comic books.
Helping others is good.	Suggests the decision that we should help others.
Blue ties are good; black ties are bad.	Suggests the decision that we should wear blue ties and that we should not wear black ties.

Someone says, "Classical music is good," suggesting that we should listen to classical music. We may ask, "Why this decision?" The person may go on to justify the decision by saying, "We should listen to classical music because (1) it relaxes people, and (2) it makes people friendly." He has justified the decision by stating what will happen to people if they listen to classical music. He has justified it by stating the consequences or effects classical music is supposed to have for people. These effects

or consequences can be considered as claims and tested by the hypothesis: "If classical music relaxes people and makes them friendly, then if we play classical music to a group of people, it will tend to make them friendlier and more relaxed." We may then gather evidence about the hypothesis and draw a conclusion about the truth of the original claim. Knowledge about whether or not the original claim is true helps us make a better decision about whether or not we should listen to classical music.

Many musicians, composers, and others who enjoy music say that classical music is good in itself and does not have to be justified by listing any effects it may have on listeners. Such people would say that setting up hypotheses, gathering evidence, and drawing conclusions cannot settle any argument that may develop over whether or not listening to classical music is good. Such people can, of course, still try to persuade others to accept their point of view that classical music is good.

Let us analyze two other examples which may help settle arguments that arise over value judgments.

State a value judgment	School is good.
which suggests a decision.	You should go to school.
State the effects or consequences of the decision--that is, state what will happen if someone does what the decision suggests.	1. You will get a job in which you will earn more money. 2. You will be a better-informed person.
These consequences can be considered as claims and reworked into hypotheses.	1. If we asked a representative sample of people how much money they earned, on the average we would find that people who had gone to school earned more money.

2. If we measured how much information people have before and after they attended school, we would find that their score on a test of information would increase after they had attended school.

Go on to gather evidence and draw conclusions.

Some people may hold that we should attend school regardless of the consequences because school is good in and of itself. Framing hypotheses and gathering evidence will not help in an argument with such people.

State value judgment	Drinking milk is good.
which suggests the decision.	You should drink milk.
State the effects or consequences of the decision--that is, state what will happen if someone does what the decision suggests.	1. Milk builds strong bones. 2. Milk gives people a clear complexion.
These consequences can be considered as claims and reworked into hypotheses.	1. If milk builds strong bones, then if I feed milk to a group of children who do not have strong bones, their bones will, on the average, increase in strength. 2. If milk gives people clear complexions, then a group of people who drink milk should, on the average, have clearer complexions than those who do not drink milk.

Go on to gather evidence and draw conclusions.

Again, it is possible that someone may justify drinking milk by saying that it is good in and of itself. Generally, however, setting up hypotheses and gathering evidence is a more effective way to convince other people that drinking milk is good than just claiming it is good. In government, politics, and many other areas that we study in social sciences, we will teach you that an important way to approach and clarify arguments over value judgments is to identify the decision involved, state the consequences of the decision, and test to see whether or not these consequences really come about. In the classroom we will generally be concerned with justifying values by seeing the decisions they suggest and by seeing what effect those decisions may have.

STATEMENTS OF PREFERENCE

Clyde is eating his lunch. His best friend, Oscar, walks up to him and asks, "What are you eating?"

Clyde answers, "Boiled cabbage sandwiches with mustard."

"Cabbage sandwiches! How can anyone eat cabbage sandwiches?"

"I love cabbage sandwiches," Clyde replies.

How can an argument over personal taste be settled? Oscar could challenge Clyde's claim by saying, "You don't really like cabbage sandwiches." Oscar's statement could be tested after it was reworked into the hypothesis, "If Clyde likes to eat cabbage sandwiches, then if given the opportunity, he will actually eat them;" but Clyde was eating cabbage sandwiches when Oscar interrupted him, so here is good evidence that Clyde does in fact like cabbage sandwiches.

Clyde's statement, "I like cabbage sandwiches," is what we call a statement of preference. We can test a person's preference by checking to see whether or not the speaker really acts in terms of his preference. If a person says he likes cabbage sandwiches but never eats any, then we have evidence that the person has incorrectly stated his preference.

In many cases people accept statements of likes and dislikes without question. If someone says he likes cabbage sandwiches, people generally think he actually likes them.

Someone says, "I like Republicans."
We ask him, "Why?"
He says, "I just like them."

If someone wants to convince others that they should like Republicans and should vote for them, his saying, "I just like Republicans," is usually not enough. "I just like Republicans" is not very convincing because it suggests more than a personal preference. It suggests a value judgment that "Republicans are good for other people and everyone should vote for them."

Thus, when we say,	"I like Republicans,"
and we are trying to convince other people that	"Republicans are good,"
we are, in effect, making a value judgment; and we at least suggest the decision,	"You should vote for Republicans."
In order to convince others that they should vote for Republicans, we state what we think are the consequences of voting for Republicans:	"Republicans in Congress will vote for lower taxes, and they will be honest."
If these consequences are challenged, we can rework them into hypotheses, gather evidence, and thus support our hypotheses.	

In short, a statement of preference expresses our likes and dislikes; but if a speaker implies that others should also like what he likes, what he says is no longer considered a statement of preference but a value judgment.

Perhaps another example will clarify this point. When someone says, "I like labor unions," he often really means, "labor unions are good," (for others as well as himself). This is a value judgment. We justify this value judgment as we would any other value judgment. Thus, we may say, "Labor unions are good because (1) they help reduce poverty and hunger, and (2) they increase wages which can be used to buy other products." We can then gather evidence to test these last two claims.

The example below shows in summary what a person who wants to persuade others to adopt his personal preference can do:

Personal preference:	I like labor unions because...
Value judgment:	Labor unions are good; therefore...
Decision:	We should support labor unions because if we do...
Consequences:	1. More people will have money to spend. 2. Poverty and hunger will be reduced.

In real life it is sometimes hard to distinguish between a personal preference and a value judgment. A person may make what sounds like a statement of preference with the intention of influencing our opinions.

DILEMMAS

Analyzing and evaluating judgments in social studies may seem like a simple task. Unfortunately, such analysis often leads us to a more difficult problem. Take the following example:

> A thief is escaping with a stolen wallet in the crowded lobby of a theater. A policeman sees him and shouts, "Stop, or I'll shoot." The thief does not stop. If the policeman shoots, he may injure an innocent bystander. If the policeman lets the thief escape, an innocent man will have been robbed.

In this case, we are faced with two decisions, each of which leads to both positive and negative results. Let's analyze the two alternative decisions according to their consequences.

Decision:	The policeman shoots at the thief.
Positive Consequence:	Shooting may prevent other people from committing such crimes and may protect innocent people in the long run.
Negative Consequence:	Shooting may injure innocent people and may make the public lose respect for the law.

Or, if we take the other alternative,

Decision	The policeman does not shoot at the thief.
Positive Consequence:	No innocent people will be injured.
Negative Consequence:	The thief may get away.

These consequences each include a claim and a value judgment. The claim can be reworked into a hypothesis and tested.

Here we must make a decision between two undesirable alternatives--shooting and possibly injuring innocent people, or not shooting and allowing the criminal to escape. When we have two alternative decisions, each

of which leads to undesirable (or desirable) consequences, we are faced with what we call a dilemma. Although describing and weighing the importance of the consequences will help to clarify dilemmas, they will not tell us how to avoid undesirable consequences.

Many decisions faced by the government are dilemmas. For example, suppose there is a bill before Congress which would take away some of our freedom of choice among jobs but which would guarantee that everyone would have a job. Is having a job more important than having a freedom of choice among jobs? Whether or not you favored the bill before Congress would depend on whether or not you valued having a job or freedom of choice more highly. A jobless person may decide one way, and a person with a job may decide another way. Decisions about dilemmas are based on the values people place on the consequences of the two alternative decisions.

LOADED STATEMENTS

In a discussion we rarely find clear-cut value judgments. More often we find values and preferences all tangled up with claims. We call these loaded statements. Loaded statements usually contain loaded terms--words about which people have strong feelings.

We can ask two questions about any loaded statement: (1) Does the statement contain an accurate definition or claim? (2) Do we agree or disagree with the value or personal preference that the statement expresses? Let's ask these two questions of the following statement:

> "The President of the United States spends more time playing golf and vacationing than he does taking care of public business."

This statement can be treated as a claim and subjected to the usual test of setting up a hypothesis and gathering evidence. In answering the two questions about this statement, we may find that we:

1. Like the President, even though he plays golf more than he attends to public business. (We agree with the facts, but we disagree with the preference expressed.)

Or,

2. Dislike the President, even though he spends most of his time attending to public business. (We agree with the preference expressed, bur we disagree with the facts.)

Or,

3. Like the President and know that he spends most of his time attending to public business. (We disagree with both the preference and the facts expressed.)

Or,

4. Dislike the President because he spends more time vacationing than he does attending to public business. (We agree with both the facts and the preference expressed.)

We have to be very careful to analyze the feelings and claims expressed in a loaded statement. Often, although our preferences or values differ from those expressed in the loaded statement, we are forced to agree that the facts are correct. Our agreement or disagreement with a statement is then based on the use of loaded words. Sometimes it is possible to change a few key words and thereby change the preference or value expressed by the statement even though the facts expressed remain the same.

> For example, we can say, "Through radical and reckless spending on socialistic schemes, our Commonwealth is now on the verge of bankruptcy and financial disaster." Or we can say, "In our effort to provide state funds to give a decent standard of living to the sick, the needy, and the disabled, we have now spent much of our money; and new sources of revenue are needed to keep our Commonwealth solvent." From a factual point of view, both statements say pretty much the same thing; however, the feelings expressed by the two statements are quite different.

It is important that we avoid defending loaded statements which may be consistent with our attitudes but which cannot be supported by evidence.

SUMMARY

Statements which suggest that some person, object, or way of acting is good or bad are called value judgments. Value judgments which indicate not only that something is good or bad, but also that we should do something about it, are called decisions. In government and in politics we can clarify arguments that may develop over value judgments by suggesting decisions which follow from the value judgments by investigating what the results of the decision will be. These predictions or statements of consequences can then be reworked into hypotheses and tested. Statements about personal taste are called statements of preference. We can argue most effectively about statements of preference if we treat them in the same way as we treat value judgments. Many decisions made by individuals, as well as by governments, involve two or more value judgments. Decision statements which may lead to both good and bad results are called dilemmas. A loaded statement not only contains a claim, but also reflects feelings the person making the claim has about objects or actions. The claim in a loaded statement should be tested like any other claim. We must be careful not to allow our feelings about the values in the loaded statement to interfere with determining the accuracy of the claim.

A R G U M E N T A T I O N

We have already learned to identify and name different kinds of statements. They are: definitions, specific claims, generalizations, statistics, explanations, hypotheses, and evidence. We have talked about value judgments, decisions, statements of preference, loaded statements, and dilemmas. We shall now discuss how these different kinds of statements are put together in an argument. An argument is a process of reasoning by which we try to persuade others who disagree with us to accept our judgments, our decisions, our definitions, our claims, our generalizations, or explanations.

It is through open and public discussion and argument that we learn most about the important issues that face our community and country. Free speech, freedom to disagree with public officials, free access to information of all kinds, are the safeguards against dictatorship and tyranny. Unless we practice such freedoms every day, they grow weak and lifeless. The first line of defense of a few people is not its guns or atomic bombs, but it is the willingness of its people to think for themselves, to speak for themselves, and to actively seek support for their own value judgments and policy decisions. Many of us do not understand or appreciate our freedoms because we hardly ever exercise them. One of the main purposes of your social studies class is to teach you a set of skills that will help you understand and practice your freedoms.

WHERE AN ARGUMENT BEGINS

Argument begins when there is conflict or disagreement. We do not argue with a person who already agrees with us. We argue with a person who is opposed to us or who is undecided. Argument means conflict between

people; it means conflict over the way people look at some problem or situation in the world. We do not argue about a subject or problem if only one position can reasonably be taken on that subject or problem. The purpose of argument is to resolve or end conflict. Each person argues to convince another person that his position is right; and, if he is reasonable, to consider with an open mind the position of the person to whom he is talking.

Kinds of Disagreement; Defining the Issues:

There are several kinds of disagreements that get people into arguments. They are:

1. Disagreements over words or terms used to describe the world--that is, disagreements over pointing-naming definitions.
2. Disagreements over whether or not certain words accurately describe an object or situation. This is disagreement over criterial definition.
3. Disagreements over whether or not there is enough evidence to establish certain claims as facts.
4. Disagreements over whether or not there are enough facts, generalizations, and well-tested hypotheses to establish an explanation.
5. Disagreements over value judgments or statements of preference.

Sometimes an argument will center around only one kind of disagreement. At other times there will be several kinds of disagreements within the same argument. Every significant statement in an argument is an

attempt to persuade the audience that some point of disagreement should be resolved. It is important to identify the type of disagreement that is being attacked by each significant statement.

TWO LEVELS OF ARGUMENTATION

Although it may include several types of disagreement, almost every argument is carried out on two important levels. The first is the value level. People have different opinions of right and wrong, good or bad. When we express our values, we are saying that things are good or bad. In the process of trying to convince others that something is good or bad, we suggest consequences. Once we have mentioned consequences we are at the second level of argumentation where we must support the consequences with evidence.

At the value or preference level evidence will not prove that a person is right or wrong. He just has certain opinions--positive ones or negative ones--about some person or object in the world. His feelings may be different from everyone else's, but this does not prove he is wrong. Some people think it is good to sit on a flag pole for months at a time. Most of us think this is rather ridiculous. Some people eat worms and snails; Americans eat raw birds' eggs; other people refuse to eat meat because they feel it is bad.

At the consequence level there is much more agreement about ways in which people can be proven right or wrong. At this level we are making claims which we think describe the world, not how people feel about the world. In most arguments a claim is made in such a way that it is loaded with the feeling of the speaker so that we can guess his values. In other words, claims frequently contain the speaker's value judgments or preferences.

Why Do People Mix Value Judgments or Preferences and Claims in a Single Statement?

When we present our point of view in an argument, we want to describe the world in such a way that it will be consistent or in line with our own likes and dislikes, our own feelings. We often make claims to protect our feelings about what is good and what is bad. Look at the following statements:

> Senator Herman made a thorough and reasonable speech defending an eight-and-a-half hour school day for all children.
>
> Senator Herman made a long-winded speech supporting an eight-and-a-half hour school day for all children.
>
> Senator Herman made a ninety-five minute speech defending an eight-and-a-half hour day for all children.

All three statements make similar claims. The first suggests that the person who made the claim believes that it was a good speech. The second suggests the opposite, that it was a poor speech. These are value judgments. The third statement does not suggest any clear value judgment.

We want our government, our community, and our friends to make decisions that will benefit us. We want decisions which will be in line with our own values and feelings. We offer claims to support our value judgments and decisions in order to persuade others to accept the decisions.

Value Judgments and Decisions

These claims, as we have pointed out, reflect our own values and feelings. We decide to live in Concord because we like Concord. When someone asks us why, we say it is because there are large yards in Concord. We have made a claim to support a value judgment. The claim is loaded with the same positive feelings that the original value judgment had. We "like" big yards. "Liking" is positive. We did not say that we decided to live in Concord because the taxes were very high. The phrase, "high taxes," has a negative loading.

We use reasons which have a value loading or value tone to try to persuade the others that it is good or right to like or dislike a person, object, or situation. When we like something, we state claims that make it sound good. When we dislike something, we state claims that make it sound bad. Thus, we load our claims with the feelings that supported our original decision or value judgment.

An Argument in Action

1. Step One: Supporting Value Judgments and Decisions with Claims.

We might say, "Concord is a better place to live than Boston." An opponent says, "No, that is not true." We now have a setting for an argument. The main reason for the argument is that our opponent has different feelings about Concord as a place to live than we do. We like Concord very much; he likes it only a little.

We can think of likes and dislikes, or attitudes and feelings, as if they were on a scale. We might even give our feelings a number to indicate how strong they are and whether they are for or against something. Such a scale might look like this:

neutral
0

dislike a little -1 +1 like a little

dislike some -2 +2 like some

dislike very much -3 +3 like very much

When we get into an argument with another person, we are generally trying to make him feel as we feel. We do this by making claims which reflect our own feelings. Our feelings about Concord are +3. If our opponent does not like Concord as well as we do, we make claims that are loaded in favor of Concord. We think he likes good health; we claim that Concord is a healthy town. We think he likes big yards; we claim that people who live in Concord have big yards. We think he likes trees; we claim Concord has many trees. We say these things because we think big yards and trees both rate high (+2 or +3) with our opponent.

Our opponent does not like Concord as well as we do. His feelings about Concord are only +1 at best. He points to situations or objects that he thinks we do not like and associates them with Concord. He thinks we like movies; he claims it is difficult to see many movies in Concord. He thinks we like hockey; he claims we cannot see many hockey games in Concord. Our opponent says these things because he thinks movies and hockey games both rate high (+2 or +3) with us.

We can see that this argument centers around the claims we give which we think will change our opponent's feelings about Concord.

2. Step Two: Supporting Claims with Evidence.

The first problem in argumentation is to support values with claims. The second problem occurs when someone questions the reliability of a supporting claim. This second level of argument hinges on the process of proof. We must be clear in our minds whether the argument involves a disagreement over a pointing-naming definition, a criterial definition, a claim or explanation.

For example, in an argument someone claims that Concord has fine houses and big yards. Another might observe that Concord has many poor houses and small yards. The first step in settling this disagreement is to come to some understanding about what "big houses" and "big yards" means. Once this has been done we should agree upon some way of sampling houses and yards in Concord. This is a claim and evidence problem.

Jones might state that Concord has a great many good stores. This would be a generalization if both Jones and Smith could agree on the definitional problems of what "a great many" and "good store" meant. The method of proof would be to establish that there is a certain number of "good stores" in Concord. The observation of each store would be a fact. We could confirm the generalization by accumulating such facts.

As we have found out, explanations are more complicated than specific claims or generalizations and are more difficult to prove. Jones might say, "Concord has clean government because everyone is honest and civic minded." Smith might reply, "I agree that Concord has an honest government, but this is because everyone in town is so stingy that each taxpayer watches how the government spends every cent. No one dares spend the public money dishonestly." The problem of proving such an explanation is great. There would first have to be agreement on definitions of "honest," "civic-minded," and "stingy." We would then have to look for evidence that particular people are honest only because they are either civic-minded or stingy.

SUMMARY

The first stage of an argument is to identify the statement over which two opponents disagree and to support this statement with reasons. We must decide which side our opponent is on and which side of the statement or question we are on. We must explore our own feelings about the statement. We must find out how strongly our opponent feels about the statement. Each of us must give reasons that can be tested through some process of proof. The second stage of an argument is to prove that the reasons which the opponent doubts are true.

G L O S S A R Y

ANALOGY ..... A partial likeness between two things that are somewhat different. (p. 33)

ARGUMENTATION ..... The process of discussing a conflict over definitions, claims, or feelings. (p. 45)

ASSUMPTION ..... A claim or generalization on which another claim is based and which is often left unstated. (p. 20)

AUTHORITY ..... A person or document which states claims, definitions, or value judgments. (p. 28)

BIAS ..... Personal feelings of a writer or speaker which may affect the truth or falsity of a claim. (p. 29-30)

CLAIM ..... The statement that a particular event or series of events has taken place. (p. 12)

CONFIRM ..... Strengthen (a hypotheses). (p. 20)

CONSEQUENCES ..... Effects. (p. 37)

CONTROVERSIAL STATEMENT .. A statement supported and contradicted by about the same weight of evidence. (p. 18)

CRITERIAL DEFINITION ..... Defining a person, object, or action, etc., by giving important characteristics. (p. 4)

DEMONSTRATION ..... A test set up to prove or disprove a claim. (p. 35)

DILEMMA ..... A situation in which there are two or more alternative decisions, each of which leads to undesirable (or desirable) consequences. (p. 41)

DISINTERESTED ..... Having no personal interest in the sense of money, property, reputation, or happiness in a subject under discussion; not necessarily unreliable as an authority. (p. 30)

DOUBTFUL STATEMENT ..... A claim supported by little or no evidence. (p. 16)

EVENT ..... A happening or state of affairs in the world around us. (p. 10)

EXPLANATION ..... A claim which attempts to answer the question, "Why?" (p. 14-15)

FACT ..... A claim that is supported by a great deal of evidence. (p. 12)

FIRST-HAND OBSERVATION ..... Seeing events for oneself. (p. 28)

FRAMING A HYPOTHESIS ..... Putting a claim in testable form. (p. 20)

GENERALIZATION ..... A general claim. (p. 12)

GENERAL CLAIM ..... A statement that describes or summarizes some specific event and makes a prediction about similar events. (p. 12)

HIDDEN CLAIM OR GENERALIZATION ... A claim or generalization on which another claim is based and which is often left unstated. (p. 21)

HYPOTHESIS ..... A claim stated in testable form. (p. 20)

INFIRM ..... Weaken (a hypothesis). (p. 20)

INTUITION ..... A feeling that something is true, unsupported by any other evidence. (p. 27)

INTERESTED ..... Having a personal interest in the sense of money, property, reputation, or happiness in a subject under discussion. (p. 30)

LOADED DEFINITIONS OR TERMS ..... Definitions or words which not only refer to things but convey the feelings of the speaker about those things. (p. 10)

LOADED STATEMENT ..... A claim which reveals the feelings of the speaker. (p. 42)

POINTING DEFINITIONS ..... Pointing at an object or giving an example of an object and labeling it. (p. 3)

PREJUDICE ..... Personal feelings of a writer or speaker which may affect the truth or falsity of a claim. (p. 29-30)

REPORTER ..... Someone who reports claims, definitions, or value judgments. (p. 28)

REPRESENTATIVE SAMPLE	A sample with the characteristics of the larger number of events about which we are trying to make a prediction. (p. 24)
SAMPLING	Selecting and observing a number of representative events in order to make a prediction about a larger number of similar events. (p. 22-23)
STATEMENT THAT IS FALSE	A claim contradicted by some evidence and perhaps supported by a little evidence. (p. 17)
STATEMENT THAT IS FALSE BEYOND REASONABLE DOUBT	A claim contradicted by a great deal of evidence. (p. 17)
STATEMENT THAT IS PROBABLY TRUE ...	A claim supported by some evidence and perhaps contradicted by a little evidence. (p. 16-17)
STATEMENT THAT IS TRUE BEYOND REASONABLE DOUBT	A claim supported by a great deal of evidence. (p. 16)
STATISTIC	A count or estimate based on a count of several events. (p. 14)
STATEMENT OF PREFERENCE	A statement of personal like or dislike. (p. 39)
SPECIFIC CLAIM	A statement that describes one particular event. (p. 12)
TESTABLE STATEMENT	Claims which can be tested by gathering evidence. (p. 10)
VALUE JUDGMENTS	Statements that suggest that some object, person, or way of acting or thinking is good or bad for most people. (p. 36)

I N D E X