2 Writing to See and to Think

Learning about a subject means more than memorizing axioms, dates, and formulas. You need also to develop general intellectual skills that will allow you to understand your discipline in its entirety, that is, to approach it intelligently, knowing what questions to ask, where to discover answers to those questions, and, finally, how to develop and organize your own ideas about the subject. A body of knowledge about the discipline is fundamental, but a student of any subject should also learn how to acquire and interpret additional knowledge. This chapter describes and discusses the ways in which writing can help you to learn, to think about, and to understand the disciplines in the arts and sciences.

To use facts and ideas, you must store them in your memory in a way that allows you to retrieve them when you need them. The complex working of the human memory remains to a considerable extent mysterious, but we do know some facts about memory, and these are important to how you ought to study. We know that the number of isolated facts that can be remembered is quite small. We know that they can be remembered only if they are constantly gone over, rehearsed. We also know that new material can be learned only by absorbing it into material and concepts already held in the memory. These facts, provided by cognitive psychology, suggest the value of writing to learning, for writing can be the tool by which you can engage in the constant rehearsal necessary for successful integration of new material into old.

The new understanding of learning that we have gained from cognitive psychology—that to learn is to absorb new information into preexisting patterns of thought—stands in opposition to the older view that students, like robots, can learn just by sitting down and memorizing several chapters at a time. We now believe that to learn new material, you must work with it, must give it some kind of structure. You must represent it to yourself in some way, whether it be visually or metaphorically or just in an outline. What is essential is some active involvement with the material. Writing about the material provides the active involvement.

Another characteristic of memory is that embedded within it is both a great deal of factual information and the capacity for organizing that information. Locked away in your gray matter are assets you are probably not aware of and, therefore, are not using. The strategies discussed in this chapter can help you to get into that "great raveled knot" and use its resources.

In short, writing is one of the most important intellectual activities that you do in college, for writing is not simply a method of communicating what you know about a subject; it is an extremely useful tool for assisting you in a variety of academic tasks, from observation to argument. From making simple lists to analyzing and synthesizing complex data, intellectual functions, especially the more complex ones, "seem to develop most fully only with the support system of verbal language—particularly, it seems, written language."[1] The most useful writing in this kind of learning is what we call "private" writing, that is, writing that you do for yourself.

Some characteristics of private writing

To appreciate fully the value of writing to your education, you may have to overcome some prejudices that exist in most students. Foremost among these is the belief that writing is a one-dimensional skill to be learned only for the purpose of communicating what you know so that an instructor can grade it. This view is not only limiting, it is destructive, for it reinforces patterns that make writing a chore to be avoided or, at best, tolerated. It is important to think of private writing as you would think of a painter's sketchpad. Before many painters apply paint to canvas, they sketch out some ideas in draft form. They use their sketchpad to try out many different ways of seeing and shaping their material.

Private writing, like the sketchpad, will be of little use, however, unless you appreciate its value and learn how to use it effectively. There are ways to increase the usefulness of your private writing. First, you should always keep in mind that writing to see and to think is intended for your eyes only. It will not be graded, so suspend the rules of writing. Don't worry about spelling and grammar; don't stop to rewrite parts, not even those that you know would be unacceptable to an instructor. It has been said, "Your editorial instinct is often much better developed than your producing instinct."[2] You might be one of the people who have to concentrate consciously on "turning off your internal editor," that nagging voice reminding you of all the possible things that you might do wrong.

1 Janet Emig, "Writing as a Mode of Learning," *College Composition and Communication*, 28 (May 1977), 122.

2 Peter Elbow, *Writing Without Teachers* (New York: Oxford Univ. Press, 1973), p. 25.

One way to gain a reprieve from this voice is to practice "freewriting," that is, writing whatever comes to your mind without going back to read, edit, or correct any of it. The purpose of this practice, at least ten minutes a day if possible, is to help you become more comfortable with writing and to begin to think of it as a natural part of your academic skills. Freewriting will also help you to associate writing with thinking.

Second, make writing a part of your regular study habits. Too often students think that by copying, paraphrasing, or working through an assignment on paper they are adding another step to an already time-consuming process. In fact, thinking on paper does take time, but it is time well spent. And if you learn to form and organize your thoughts more effectively, the time will justify itself.

Last, to encourage yourself to develop your private writing abilities, make space for these informal jottings. For each course, set aside a separate part of your notebook or carry with you a notepad to be used exclusively for freewriting. You will find it more useful to keep all your private writing for a course in one place since you can then look through it all together, and you can turn to it quickly when you want to write. There may be greater frustrations than not remembering where you wrote something down, but few are as irritating.

The private journal

The best way to create thinking space is to keep a journal. For a long time instructors in some disciplines have required students to keep these informal written records. Composition teachers use them to teach students to write down thoughts and observations that might be turned into essays, as places for "expressive" writing or "reflective" writing. Subjects such as sociology, psychology, and education often rely on logs, running records by students of their observations in the field. But journals, separate notebooks for your private writing, need not be used only for assigned academic tasks. Their real value may well be as permanent, cumulative records of your thoughts as you work through intellectual problems.

Journals are not class notebooks, where you record others' ideas; nor are they diaries, where the emphasis is largely on one's personal experiences and reactions to the day-to-day world. They are places where you can generate and think through ideas for paper topics, work out a problem presented in class, log experiences that are a part of a course, record thoughts and insights that you think might be useful, but are not exactly sure how. Journals are kept to record dialogues you have with yourself in your academic life.

Naturally, the degree to which and the ways in which you use a journal are up to you, but experience has taught that the more one writes, the more useful a journal is. If you record observations, you may notice over weeks or months patterns forming that may stimulate you to think freshly about the subject observed; if you jot down questions that come

to you in lectures or in your reading, you may well come back to them for paper topics later in a semester. In short, journals can be used to keep records of the ideas, reactions, questions, and random thoughts that come up during any semester.

Another use of a journal is to copy passages from materials you read. It is, of course, time consuming to copy a great deal of material, but especially difficult parts of articles, book chapters, or poems can profitably be copied. The simple act of slowly recording the exact words of an author can often impart meaning that you did not see when you first read them. A journal can also serve as a permanent repository of your favorite lines and passages.

Beyond copying, you might find summarizing a useful way to understand a difficult written piece. Summarizing, like copying, has often been overlooked as a way of learning, probably because in addition to being more time consuming than underlining, it appears to be an old-fashioned form of busywork devoid of real value. Quite to the contrary, summarizing fits almost all of the requirements of a good intellectual exercise: it forces you to make hard choices, to find the essence of an argument, to identify and select from among the subordinate parts of the argument, and to reduce the piece to manageable proportions without either directly quoting or losing the tone of the author. (See chapter 5 for suggestions on summarizing.) These are challenging tasks, but the rewards are considerable. To create a helpful summary, you will have to understand what you are reading quite thoroughly. Since thorough understanding is the purpose of most reading assignments in the arts and sciences, the summary can be a good aid to learning. And when it is time to review the book or article for an examination or recitation, your summary may be the only review you need.

Use your journal to record your responses to things you have read or to conferences or discussions you have just finished. Our responses to the world are of two kinds, immediate and delayed. Often when a reader finishes a piece of writing, he has already developed some immediate responses. They may be emotional or seemingly illogical, but they will almost certainly get lost as the piece is either forgotten or thought about in more organized ways. These responses should be recorded. You may have occasion to wonder later what you thought of the piece, or you may get feedback from others and wish to incorporate that into your understanding. You may find your initial responses very useful when you go back to write about the piece in a more organized fashion. You can remember only so much; you need a written record. Similarly, after returning from a conference with your instructor, or when reading his comments on an essay or paper, record your responses to his responses. This record will be especially helpful when you write your next exam or paper.

Journals also give you a place to write out ideas from sources or from forms of presentation that are unfamiliar to you. For example, if you are

primarily a verbal person working with visual materials, try to verbalize in your journal what you see. Visual information (drawings, graphs, charts, tables) needs to be interpreted to be useful. Try writing out what you see, describing, establishing relationships, seeing patterns. Having to choose adjectives and verbs may provide keys to understanding the direction of lines or the differences between two colored bars. Describing a flow chart or an organizational table forces you to identify relationships, movement, and purpose that might otherwise flow by you. This translation into connected discourse will also allow you to see gaps in your understanding.

Academic problems

While you will spend much of your time in college acquiring new information, you will spend at least as much time trying to interpret and understand that material. Many of your assignments will be designed to make you think about the subject matter presented. Thinking seriously about an academic subject requires you to do something meaningful with your material. Generally, your task is to make sense of the material, to draw conclusions about it. To develop your own understanding of facts, you need to be able to discover relationships between facts and to make assertions about those relationships.

Discovering relationships and making assertions are important steps in solving academic problems as they were defined in chapter 1. Academic problems range from assessing the impact of the French desertion from NATO to determining the composition of a chemical compound to discovering the symbolism in Yeats's "Sailing to Byzantium." Problems are focused questions. To answer these questions, you need to gather information and to think. Frequently, students gather enough information, but they do not think about it in ways that yield acceptable or complete solutions. Some of the strategies below can help you think about academic problems.

Another common difficulty students often encounter is an inability to identify or create academic problems. While the purpose of many essay examinations (chapter 3) is to pose problems for solution, one of the main purposes of paper assignments is to encourage students to formulate the problems they themselves wish to solve. Too often students try to write on a "topic," when they should be writing on a problem. A topic is a static entity, a thing, and it is possible to write anything at all about a thing. The topic "Charles II, King of England," for example, encourages unfocused research and random, wide-ranging thinking. To take as your focus a topic results in meandering, disconnected papers. One important academic ability is to generate a question out of a topic. Some of the strategies below can help you to shift your focus from what you know about a subject to what you want to know about it. For example, you could ask, "What do I want to find out about Charles II?" This movement

away from your present state of knowledge to goals for future knowledge is the beginning point for the development of a problem.

Strategies

The following strategies are creative ways to help you define and solve problems. Experienced writers employ them routinely and naturally. Here we have defined them and described them perhaps too formally. They are, simply, ways of thinking, of recasting and redefining problems so that they lend themselves to solutions. If these strategies seem artificial at first, it is probably because they are so structured. As you learn them and use those most helpful to you, they will become natural parts of your thinking processes.

Brainstorming

Select a topic: Charles II, the Republican party, free will, *Great Expectations*, the periodic table, Athens, Expressionism, Wallace Stevens, the Panama Canal, inflation, the Bronx. Now for five minutes write down anything that comes to mind about the topic. You might begin by writing down all the possible questions you would like to ask and the fragments of knowledge you already possess about the topic. These jottings need not be organized—you just want to get your thinking down on paper.

A sheet of paper on which a student was brainstorming about Charles II might look like the notes in figure 2.1. These notes and ideas were gleaned from reading an English history textbook. The student is recording important topics and asking questions about them. Such a brainstorming sheet might produce some ideas if studied by itself, but there are several ways to use such a sheet to help organize random writing into a problem. The important point is that you have these items down in writing so that you can study them, add to them, underline them, and extract from them.

Your next step is to try to see relationships among the items recorded, for it is in relationships that you will probably discover a problem worth investigating. Here are some strategies for finding connections.

Lists

Go back through your notes and pull out the key words or concepts, that is, those items that seem to be the most interesting ones to explore. A list from the sheet above (figure 2.1) might be as shown in figure 2.2.

Try to see relationships. Ask questions. For example, as a king, Charles was lazy, was a ladies' man, didn't get along with Parliament, and had secret relationships with Louis XIV of France. Why didn't he like Puritans and Parliament? Was Parliament made up of Puritans? How could he be lazy and enter into those secret relationships with Louis XIV? Did Louis XIV help him against Parliament and the Puritans?

This writer is moving toward some questions that are at once more concrete and complex than those on the brainstorming sheet.

Explaining statements of fact

Select a fact. Then see if you can create a list of items that might explain it. For example, you might select the item, "Charles II was restored to his

Charles II, was he a good king? Catholicism. Louis XIV of France. He was supposed to be a ladies' man. Restoration to his throne 1660. Where was he before? Was 30 years old in 1660 — Two wars against Dutch. Why? Didn't like the Puritans. Why not? Textbook said he was lazy, wasn't a strong king. I wonder why not? What did he do until he was 30 years old? Married a Portugese princess? Clarendon Code against Puritans. Did not get along with Parliament? Why not? Took bribes from Louis XIV. Popish plot against Anglicanism. Treaty of Dover 1670 — Meet with Louis XIV, etc., etc. Did this meeting lead to Popish plot? Was Louis XIV Catholic?

FIGURE 2.1

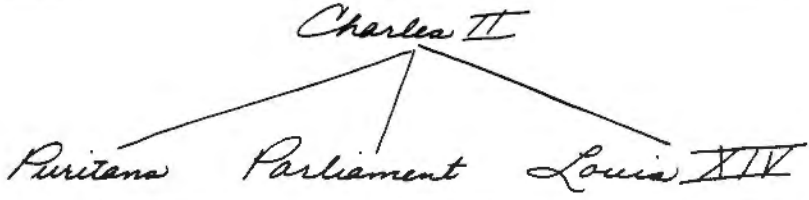
FIGURE 2.2

good king
ladies' man
Restoration —
30 years old
against Puritans

lazy
did not get along
with Parliament
bribes from Louis XIV
secret treaty of Dover

throne in 1660, when he was 30 years old," and then try to relate other items to it by forming questions such as: Was he lazy because he became king when he was thirty years old? Was his attitude toward the Puritans caused by what happened before the Restoration? Was his attitude towards Parliament and Louis XIV caused by what happened during his first thirty years? Such questions lead to other questions: How was Charles II restored

FIGURE 2.3



to his throne? What happened during his first thirty years? What was the effect of those thirty years on his rule when he was restored?

Treeing a topic

Since you are interested in trying to find relationships, you might try creating a topic tree, the purpose of which is to see the connections among several items and to establish dominant and subordinate relationships. The working out of a topic tree can help you see different kinds of relationships and can be especially valuable if you are a visually oriented person. (You do not need to explain the relationship, just that it might exist.)

A tree generated from the brainstorming sheet on Charles II might look like figure 2.3. This tree is based on a simple question: "Who were the people with whom Charles II worked?" The tree contains very little information, but even with just these four entries, you can begin to ask further questions about the connections among them. Do they all belong in the same category? Can you find differences in Charles's relationships to the others? Well, an obvious difference is that he was hostile to the Puritans and to Parliament but friendly with Louis XIV. You now have subcategories to add to the tree (placed in parentheses in the tree in Figure 2.4). These subcategories encourage you to ask a further question: Are there others with whom Charles II was friendly or hostile? Looking over your brainstorming sheet, you might want to add that Charles seemed to be friendly with Catholics. The tree is beginning to fill up (figure 2.4).

You now have a basis for asking a "why" question. Why was Charles hostile towards the Puritans and Parliament and friendly to Louis XIV?

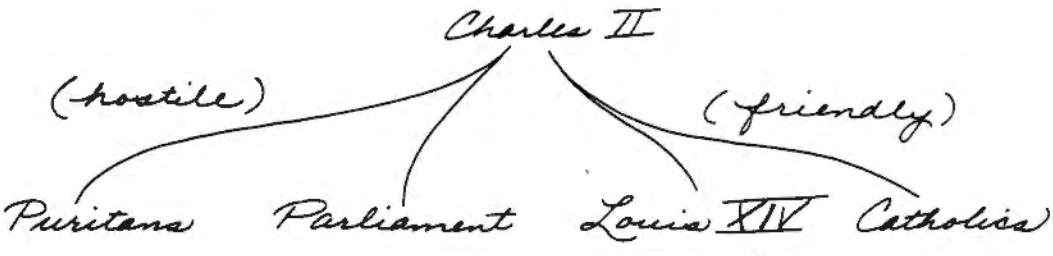


FIGURE 2.4

Are the causes related? Looking back over the material you have written down, you try to pick out possible causes (Dutch wars, exile, Restoration, Catholicism) and fit them into the tree. Some additional directed reading to find if relationships between these items and those on the tree exist may be necessary for a better understanding of the topic. A revised tree (figure 2.5) might reflect the discovery that the Puritans in Parliament had forced the young Charles II into exile and had lopped off his father's head and also that the secret Treaty of Dover with Louis XIV called for a Dutch war and the establishment of Catholicism in England.

These known relationships generate a lot of questions, among them, why did Charles think that siding with Louis XIV and with Catholics in England would protect him against Parliament? If you were aware of Charles's experiences in exile, you might wonder how they influenced his performance as king. The revised tree—the plan for your paper—looks like figure 2.6.

The topic tree allows you to develop an overview of Charles II's reign. Having worked out some basic relationships, you will see a problem in Charles's policies. You might pose the problem in a variety of ways:

1 Why did Charles II establish a close relationship with Louis XIV when his Parliament was hostile to Louis XIV?

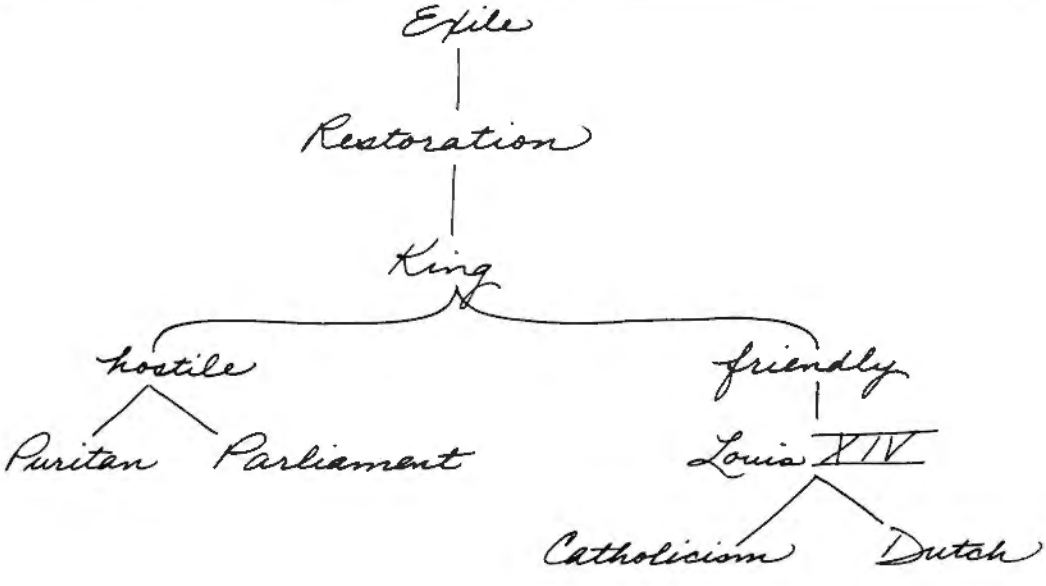


FIGURE 2.5

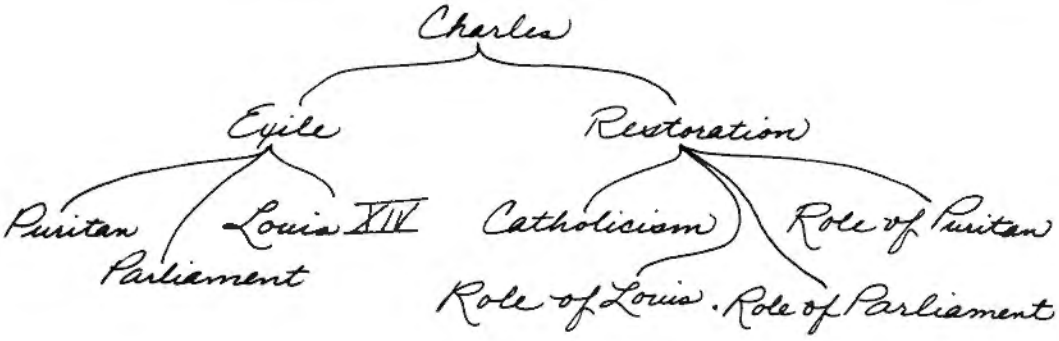


FIGURE 2.6

2 What was the role of foreign policy (or religious policy) in Charles II's relationship with Parliament?

Seeing another relationship, you might form the question: "In what ways were Charles II's foreign and religious policies as king of England influenced by his experiences while in exile?"

Word associations, analogy, metaphor

Another useful way to think about a topic is to compare it to something else. You will find a source for an analogy in word associations. Let us say that you are trying to write on the topic of the American presidency in the seventies. Your train of word associations might look like this: *presidents, Nixon, Ford, Carter, peanuts, Watergate, power, charisma, celebrity*. With the word *celebrity* you have the possibility for an analogy. You might learn something about the informal powers of the American president by comparing the president's role, point by point, with the role of a public figure from the sports or entertainment worlds. The responsibility of the president differs greatly from that of others who appeal to the multitude, yet viewing the American president as a crowd-pleaser, a *People* magazine figure, may help you to see your topic from a new angle.

When your general topic involves an abstract concept, look for a concrete comparison. Sometimes you will discover new ideas about your topic if you set out on purpose to compare it to something that seems quite different on the surface. Is there any common ground, for example, between learning to write and learning to ski? Both are complex processes that involve coordinating a great diversity of activities. Both processes involve taking risks. And with enough motivation and dedication, most individuals can learn both processes, although individuals will differ greatly in the degree of agility that they will eventually develop. By seeing the abstract intellectual process of learning to write in terms of the concrete, physical process of learning to ski, you give yourself a chance—through metaphor—to develop fresh ideas on the subject.

Seeing a topic as a particle, wave, or field

Young, Becker, and Pike, in *Rhetoric: Discovery and Change*,[3] suggest that you look at a topic as a particle (a thing, or a static entity); as a wave (a process); and as a field (a system of relationships). We suggest their excellent book for a full discussion of this idea, but we will introduce this heuristic as a way of helping you to see and think about a topic.

These three perspectives help you to see your topic in a new way and to generate fruitful questions for your research or contemplation. Consider again the topic of King Charles II of England. An experienced historian is trained to explore this topic from a variety of angles. Particle, wave, field questions give you a structure by which you can discover questions that a historian asks naturally.

Particle. What are the implications of viewing Charles II as a particle? First of all, you are interested in him alone. What kind of a king was he? What were the effects on him of his father's execution or his subsequent exile for ten years? What was his private life like? What kind of personality did he have? Any of these problems, if researched, could be organizational ideas for a paper or could become part of a larger paper on Charles II.

Wave. Thinking of Charles II as a wave is trying to see him as part of a continuum or a process. Where does he fit into that which went before or came after him. How did his foreign policy compare with that of Oliver Cromwell? How successful was his reign in comparison to other Stuart kings? Where does Charles II's reign fit into the English struggle for civil liberties? What was his role in the development of the English empire?

Field. To see Charles as part of a field is to look at him in a context, as part of a network. What was his relationship with Louis XIV of France? What was the opinion of Charles among European monarchs? What was his relationship with Puritanism and Catholicism? What were his political or foreign policies?

Asking who? what? where? when? and why? about a topic

If you have studied journalism or worked on your school newspaper, you have already been introduced to the questions that are the journalist's tools of the trade: Who? What? Where? When? Why? You may not have realized that these questions are heuristics, strategies to help the journalist record and organize the facts about an event. These questions have wide applications to your thinking about all your academic subjects. Even though they are familiar and obvious, these questions can still be useful.

The problems explored below in our description of Kenneth Burke's pentad are similar to the journalist's questions, although Burke combines Where? and When? into a single question about *scene* and then adds the question of how? (which he calls the *means*, or *agency*).

3 Richard E. Young, Alton L. Becker, and Kenneth L. Pike, *Rhetoric: Discovery and Change* (New York: Harcourt Brace Jovanovich, 1970).

Seeing a topic as an action, actor-agent, scene, means, purpose

Kenneth Burke, a twentieth-century rhetorician, has developed a way of looking at a topic in dramatic terms. Because his plan involves five different perspectives, he calls it a pentad. You may want to read Kenneth Burke's own explanation of this system in his "Introduction" to *A Grammar of Motives.*[4] You may also want to look at William F. Irmscher's explanation and application of Burke's system in *The Holt Guide to English.*[5] W. Ross Winterowd, in *The Contemporary Writer: A Practical Rhetoric,*[6] applies the pentad specifically to the analysis of published pieces of writing. Here we intend to present only a brief overview of Burke's suggestions for viewing a topic as a dramatic action.

Burke's dynamic view of topics forces you to add a predicate to any topic name. When you employ the pentad, you can no longer write generally on Charles II. You first have to think of an *action* involving Charles II. Then you can look at the *actors* or *agents* (the people performing the action). You can next look at the *scene* (the setting in which the action takes place), the *agency*, or *means* (the ways that the actors have used to achieve their purposes), and finally, at the *purpose* itself (the point of all this activity).

If, for example, you have decided to write a history paper about Charles II, you must begin by thinking about an action involving Charles II. A likely choice might be the signing of the secret Treaty of Dover in 1670. As you think about that action, you will recognize that you must consider an additional agent. Charles II of England signed the Treaty of Dover with Louis XIV of France. Just this initial consideration of *action* and *actors* raises fruitful questions to help you to generate ideas. The image of the two actors leads to questions about characterization. What kind of person was Charles II? Louis XIV? What kind of people were they when they interacted? Consideration of the action, the signing of the secret treaty, leads to questions about the specific details of the event. But questions about an action involve more than what was done in deed. What was done in thought? What sort of planning, conspiring, or imagining took place as part of this event?

Questions about the *scene* lead you to focus on the time and place of the action. What was England like in 1670? What was Dover like? What else was going on as the backdrop to this historic event?

Questions about the *means* or *agency* will lead you to study the bargaining that went on between Charles and Louis to insure Charles an annual income from France and to encourage Louis to look forward to the establishment of Catholicism in England.

4 Berkeley, Calif.: Univ. of California Press, 1969.

5 *The Holt Guide to English: A Contemporary Handbook of Rhetoric, Language, and Literature*, 2nd ed. (New York: Holt, Rinehart & Winston, 1976), pp. 27–45.

6 New York: Harcourt Brace Jovanovich, 1975.

Finally, your question about *purpose* will help you to explore Charles's determination to free himself from Parliament and Louis's desire to encourage the spread of Catholicism. You may suspect other purposes as well. Did each king believe that this treaty would extend his own personal power?

This pentad provides a structure for you to pursue an idea to a logical conclusion. Instead of simply deciding to write about Charles II or about the Treaty of Dover and then reading about the topic with no specific questions in mind, the pentad can help you to organize your thinking and your notecards. You will be better prepared to read actively, to think through the situation to causes, means, and implications. The questions in the pentad will help you to organize what you read and then to discover what you still need to know. Even after pursuing all the questions in the example, you still need to find out whether the Treaty of Dover was ever put into effect. What happened? But now at least you have developed a specific line of inquiry, and you can apply the pentad again to explore the resulting actions.

Seeing your topic as X and then asking questions about it

Burke's dramatic view of a topic requires active questioning, and this active questioning is a necessary step in seeing and thinking about your topic. In chapter 1 we suggested that different disciplines define themselves in terms of the questions that they pose about experience. Knowing the appropriate questions to ask about a topic displays your understanding of the approaches within a particular discipline. In our companion anthology, *Readings in the Arts and Sciences*, you will find an essay by Professor Bernard Mausner entitled, "The Nature of Social Science."[7] In that essay, Professor Mausner looks at Eugene O'Neill's play *Mourning Becomes Electra* from the points of view of various disciplines. In the questions listed below, substitute *Mourning Becomes Electra*—or anything else of your choice—for X, to see some of the questions that different disciplines pose about a topic.

Literary criticism
What is X about?
What are the themes of X?
What is the structure of X?
Can we view X symbolically?
What is the genre of X?
What are the sources for X?
What have other literary critics said about X?
What effect does X have on an audience?

Psychoanalysis
What does X tell us about the emotional development of children?

7 Bernard Mausner, *A Citizen's Guide to the Social Sciences* (Chicago: Nelson-Hall, 1979), pp. 1–16.

Anthropology
What does X tell us about a particular society and culture?

Sociology
What does X tell us about the interactions of social classes in a particular country at a particular time?

Political science
What does X tell us about the sources of power and the ways in which power is exercised in a particular community?

Economics
What does X tell us about the ways people work, exchange the products of their labor, and use money as a vehicle for these exchanges?

Seeing your topic graphically

We really know very little about the way people think and see. The mind of another person is a mystery, unknowable in many fundamental ways. Different people use different means to generate and invent ideas. For some writers, invention most frequently requires words, and most of the suggestions in the preceding pages involve verbal thinking. But some people may need to see experience graphically before they can translate that experience into words. Others may need to see things numerically before they can write connected discourse. It is important to experiment with different procedures in the preliminary stages of the composing process. In this way, you will get to know your own cognitive style, your individual way of seeing and thinking about experience. In this section and in the two sections that follow, we offer some suggestions for using pictures and numbers to find out what you think and know about a topic.

Sometimes studio art majors are unnecessarily intimidated by a composition course. If you are a studio art major, try sketching your rough draft in pictures, rather than in words. Or try making a *story board* on your topic. A story board involves several graphically presented scenes, each one with a caption of a sentence or two. Most rough drafts, whether in words or pictures, tend to be episodic, anyway. You may be one of those writers who need to see your material graphically before you can write connected discourse. Reread the material on Burke's pentad. A story board necessarily treats a topic dramatically. Combine your creation of a story board with perspectives derived from Burke's view of a topic as dramatic actions.

If you are basically a visual thinker, making a *collage* may help you to generate ideas on your topic. Let us suppose that you have to write a paper on the impact of primary elections on the American system of nominating a president. It may help you to get interested in the topic if you begin by looking at or collecting pictures from old magazines of volunteers working in New Hampshire and of candidates campaigning in California.

No political science instructor or composition instructor will accept

this collage in place of a paper, just as no studio art instructor will accept a paper in place of a collage. The story board, the collage, and indeed all the invention techniques suggested so far are merely means to an end, ways of getting started on the process of generating ideas on a topic.

Static and dynamic diagrams

If you choose to represent a situation graphically, then the form chosen should be appropriate to the material. First we will indicate how you might diagram Aristotle's theory of government in a static diagram or table, and then how you might represent Plato's more dynamic theory in a flow chart.

Aristotle believes all states can be classified into six types depending on two considerations: the number of persons who rule the state and whether they rule well or badly. Table 2.1 shows the six types.

Plato, too, has a theory that classifies states by their form of government. But in addition his theory purports to account for how one form of government changes into another; that is, Plato's theory is a process theory. To represent this theory adequately in a diagram it would not be sufficient to give a list of his classification of states (aristocracy, timocracy, oligarchy, democracy, despotism). To show the changes his theory permits you should use a flow chart, in which arrows are used to express change. For example, see figure 2.7. So if you were assigned a paper on Plato or Aristotle, their theories could be usefully summarized in similar diagrams or tables. Of course, you would also need to define what Plato means by each term; and for this explanation you might have another diagram—see figure 2.8.

The full value of a flow chart appears when the process to be described has "feedback loops," that is, when the process does not travel just in one direction and when it can return to earlier states. Consider figure 2.9. This diagram tells you that an aristocracy can change into either a timocracy or an oligarchy. If it takes the left-hand branch, then from a timocracy it will change into despotism, then an oligarchy, then democracy, and will then return to aristocracy to oligarchy, from that to democracy, and from that back to aristocracy, where the process begins again. Notice the "feedback" from democracy to aristocracy. The diagram tells you that democracies always are preceded by oligarchies; that democracies are always followed by aristocracies; that timocracy can come

TABLE 2.1 *Aristotle's classification of states*

Number of rulers	*True*	*Corrupt*
One	Monarchy	Tyranny
Few	Aristocracy	Oligarchy
Many	Polity	Democracy

Source: W. T. Jones, A History of Western Philosophy, *vol. 1 (New York: Harcourt, Brace & World, 1969), p. 291.*

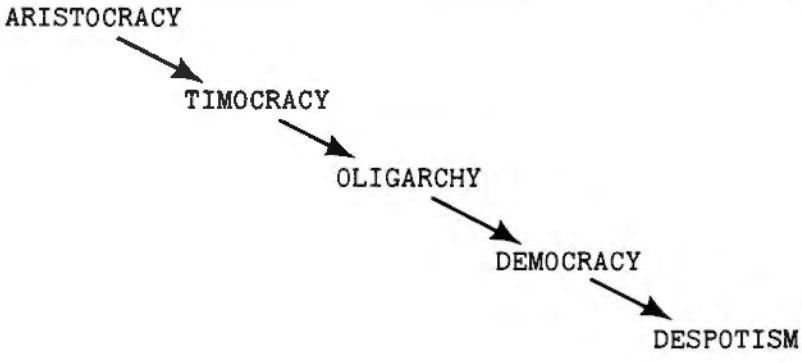


FIGURE 2.7
Plato's theory of the state.

Aristocracy = rule by the best
Timocracy = rule by the ambitious
Oligarchy = rule by the wealthy
Democracy = rule by the many
Despotism = rule by a tyrant.

FIGURE 2.8
Plato's classification of states.

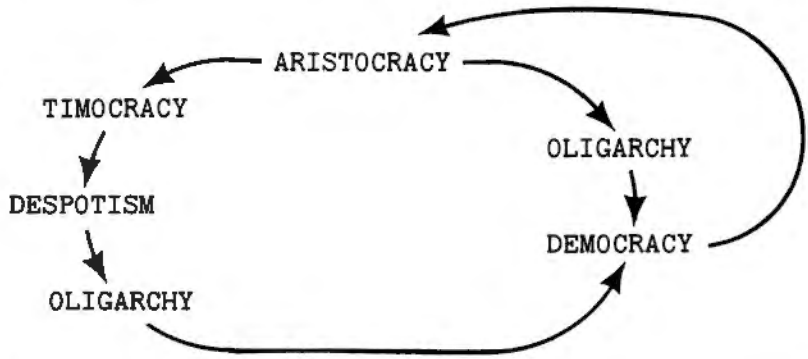


FIGURE 2.9
Flow chart of political change.

only from aristocracy. But an oligarchy can be preceded by either aristocracy or despotism.

Flow charts are valuable, then, in representing processes. But we will give another example of a flow chart that does not depict a process. We give it to illustrate how very complicated information can be translated from a verbal description to a diagram. The example is taken from a regulation of the U.S. Internal Revenue Service concerning whether or

not you are obliged to pay social security taxes for domestic services performed by relatives. Here is the regulation:

> Social security taxes now apply if you pay cash wages for domestic services to your mother or father, or your spouse's mother or father, if you meet the following conditions for at least 4 continuous weeks in a quarter: (1) you have a son or daughter (including an adopted child or stepchild) in your home who is under age 18, or who has a physical or mental condition that requires the personal care of an adult; and (2) you are either a widow (widower) or a divorced person who has not remarried; or you have a spouse in your home who, because of a physical or mental condition, is not capable of caring for the son or daughter.

What makes this difficult to read is that although it seems to have just two conditions that, if satisfied, oblige you to pay social security taxes, in fact, each of the conditions has qualifications and alternatives. To interpret it, it is best to break it down into a series of questions, each corresponding to one of the conditions mentioned in the passage, and show in a diagram (figure 2.10) the consequences of answering each question "yes" or "no." In this case there are only two consequences that count—you must pay social security taxes or you are not obliged to pay them.

In reading this chart you need only proceed until you come to a question whose answer leads you directly to the consequence on the bottom. Thus, if you answered the second question ("Do you have a child in your home?") by a "no," then you go immediately to the consequence that you are not obliged to pay. This arrow shows that having a child in the home is a necessary condition of having to pay these taxes. By contrast, the two questions on the third level—Is the child under 18?" and "Does the child have a condition that requires the care of an adult?"—are neither of them individually necessary conditions; that is, you could answer "no" to one of them and still be liable to taxation. They are jointly necessary; one of them must be answered "yes" if you are to be liable to taxation. The same is true for the questions on the fourth level of the diagram. And notice that no one of these questions represents a sufficient condition of being liable to taxes; a "yes" answer to any individual question is not by itself sufficient to make you liable.

When you are writing a paper from library sources, you will not be able to find ideas to write about until you organize the source material into forms that are usable to you. For some students the flow chart on social security taxes may be harder to read than the paragraph about the regulations. For other students, the visual form will help to clarify the information.

In this section we are concerned primarily with techniques to help you organize your information. Diagramming it in one of these ways (or one of the other ways mentioned later in chapter 11) forces you to organize

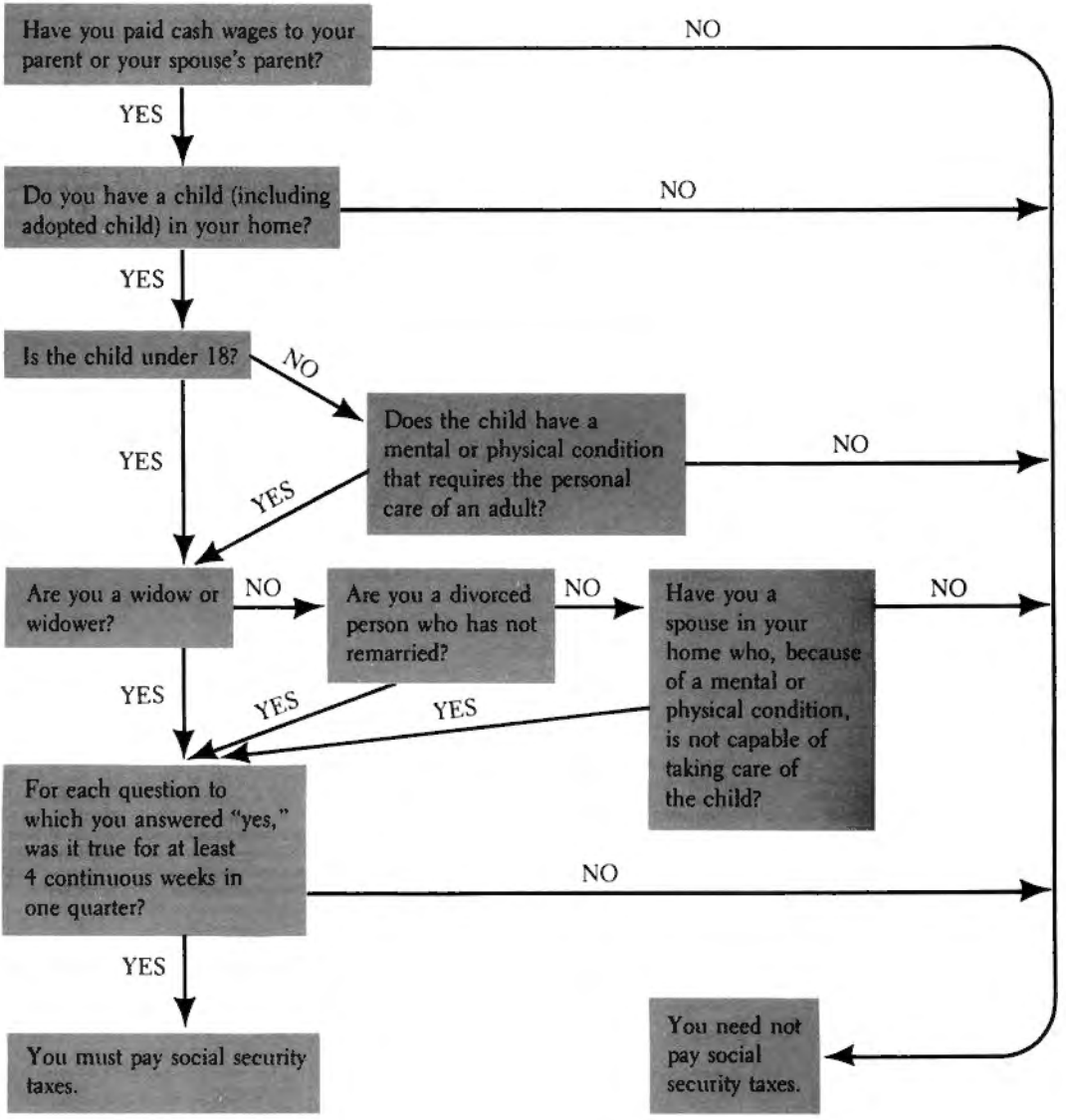


FIGURE 2.10
Flow chart for tax regulation.

it for yourself. But you might also consider that if these diagrams help you understand the material you are working with, they may be helpful also to readers of your paper.

Seeing your topic in numbers and tables

Some writers need to see a topic in unadorned numerical form before they can put together any sentences on the subject. Let us suppose that you are reading in preparation for doing a paper on "Teaching Writing

to the Gifted and Talented." You have decided that you can't get far with this project until you have figured out at least a working definition of *gifted* and *talented*. You know that simple Stanford-Binet IQ scores will not be enough, but you also know that you are the sort of writer who needs to see your material first in numbers. Figure 2.11 is a first step toward writing a definition. When you actually write the first draft, you may decide not to use this numerical representation at all. The important point is to write facts and ideas down initially in the way that helps you to see and think about them.

If you do decide to use the numerical definitions in your actual paper, you must not assume that the simple presentation of numbers will be self-evident to your readers. You would have to take the additional step of translating these numbers into words and then drawing appropriate inferences from the data. For example, you might write:

In Teaching the Gifted Child (1960), Gallagher identifies the academically talented, gifted, and highly gifted in terms of their scores on the Stanford-Binet IQ test. The talented are those

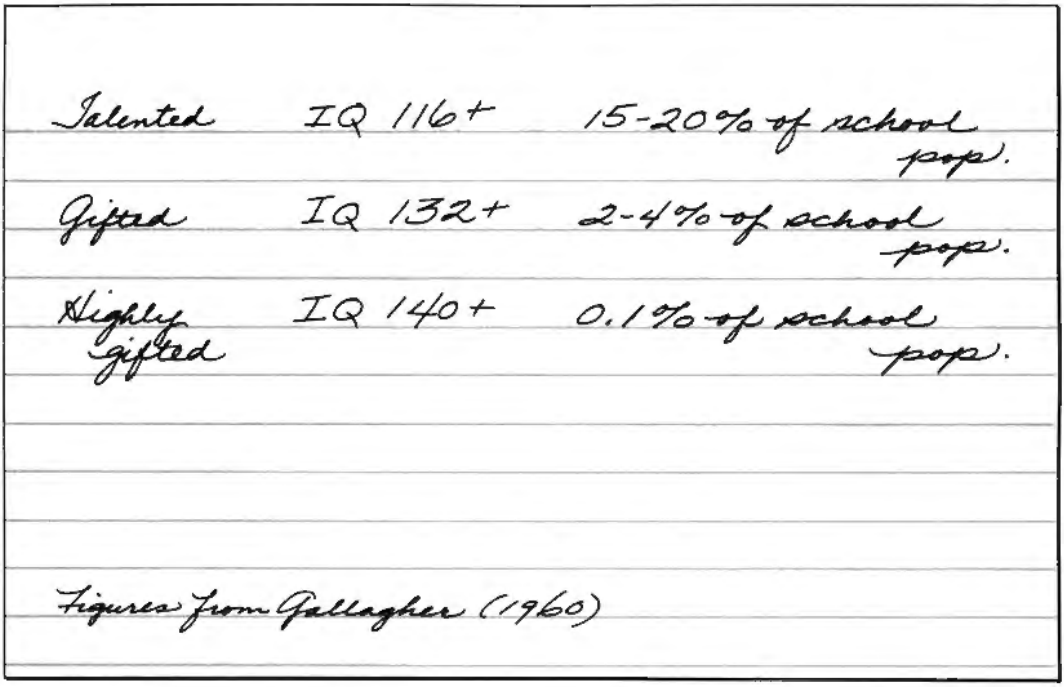


FIGURE 2.11

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who score 116 or above on the test, and this
group includes 15–20 percent of the school
population. The gifted, those who score IQ 132 or
above, constitute 2–4 percent of the school
population, while the highly gifted (IQ 140 or
above) make up only .1 percent of the school
population. Since many school systems use the
Stanford–Binet test as an initial screening
device, understanding the scores on this test is
a first step to defining the special category of
student: the gifted and talented.
```

Sometimes a writer who thinks numerically will present tables even more complicated than the one above, without any accompanying verbal explanation. If you are a numerical thinker, remember that many of your readers are not. You should use numbers freely to help you to see and think about your topic. Then learn to generate verbal explanations to help your readers. (See chapter 11 for help in devising tables and graphs and for developing sentences and paragraphs to explain them.)

Writing and reading as logical processes

Each of the techniques recommended in the preceding sections are ways or organizing or making sense of information you have gathered. Each encourages you to ask specific questions of the material with the purpose of revealing relationships that may not be obvious. The relationships you might find within your information are of many kinds, for the kinds of questions your readers might have in mind will vary. Thus, the heuristic used by novice journalists—who? what? where? when? and why?—helps them to keep in mind the kinds of questions their readers are likely to ask about any news item. Similarly, in academic writing, there are many different kinds of relationships to find among the items you discover. You might relate them by time (which came before the other?), or causally (which caused the other?), by classification which item is an instance and which the class?), by motivation (what motivated an action?), by function (what does a process do?), and so on.

By contrast, there is just one relationship in which logicians are interested: the relationship of evidence to a conclusion. The focus of logic is on arguments, where an argument is defined as a set of statements such that one (called the "conclusion") is said to "follow from" or to be "supported by" the others (called the "premises"). A fully explicit argument, then, has three components: the evidence (premise or premises), the conclusion, and (not to be forgotten) the claim that it is an argument. Here is an example of a simple argument that has all three components: "The butler's fingerprints were found on the murder weapon. Therefore,

the butler is the murderer." The first sentence is the premise; the second is the conclusion; and the word "therefore" communicates that the relationship between them is an argument. The person writing or saying this is accusing the butler on the basis of the fingerprint evidence. To a logician, this assertion is equivalent to making two claims: the butler's fingerprints were on the weapon—that is, the premise is true; believing the premise true is a good reason for also accepting the conclusion—that is, the relationship between the premise and the conclusion is such that the evidence makes the conclusion more likely to some degree.

So of any argument you can ask two questions: Are the premises true? Does the conclusion follow from the premises? The defense attorney for the butler can defend the butler in two ways. He can reject the premise, by showing the butler's fingerprints are not on the weapon. Or he can reject the inference, by showing that the fingerprints are not sufficient evidence to convict the butler. If the attorney succeeds at either one of these, the argument is not a good one.

When you are dealing with an argument you are confronted by two problems. The first is simply to identify the argument: as a reader of another's argument, to figure out what the author intends the argument to be; or as a writer, to communicate the argument clearly to your reader. The second problem facing you is how to construct a *good* argument, or how to assess whether a stated argument is a good one or not. On the first problem, we offer here a strategy useful for identifying arguments, and we will draw from it a lesson for writing your own arguments so that your reader can understand what you are doing. A complete treatment of the second problem would take a course in logic, but we will offer some suggestions on how you might evaluate arguments as well.

The identification strategy is very similar to the method of treeing a topic. It depends upon the fact that any argument has a structure, and that the structure can be represented by arrows, so that to each arrow there corresponds an inference. Thus, the argument given above can be represented as

Nothing very illuminating is gained by building a "tree diagram" for a simple argument like this one. But take a more complicated one:

After examining the locks and the windows carefully we found no reason to believe they were forced. So it must have been an inside job. The only two people who had access to a key were Mark and Joan. So one of them must have done it. But we know that Joan

could not have done it, for she was out of town that weekend—we have several witnesses to testify to that. Consequently, Mark did it.

If you represented this argument in a tree diagram, you would get figure 2.12. This diagram allows you to see that there are seven inferences made in the argument (one for each arrow), and that the whole argument depends on three basic premises, the three statements that do not have arrows leading into them. The structure indicates the questions that are appropriate to ask of each sentence. Of the three basic premises, you need to ask, "Is it true?" Of each sentence connected by an arrow to another sentence, you need to ask whether the statement at the top of the arrow is a good reason for you to believe the statement at the bottom of the arrow.

But how do you construct this diagram? You do it in two steps. First you make as much use as you can of the structural information the author gives. Then you fill in the rest of the diagram by your sense of what a

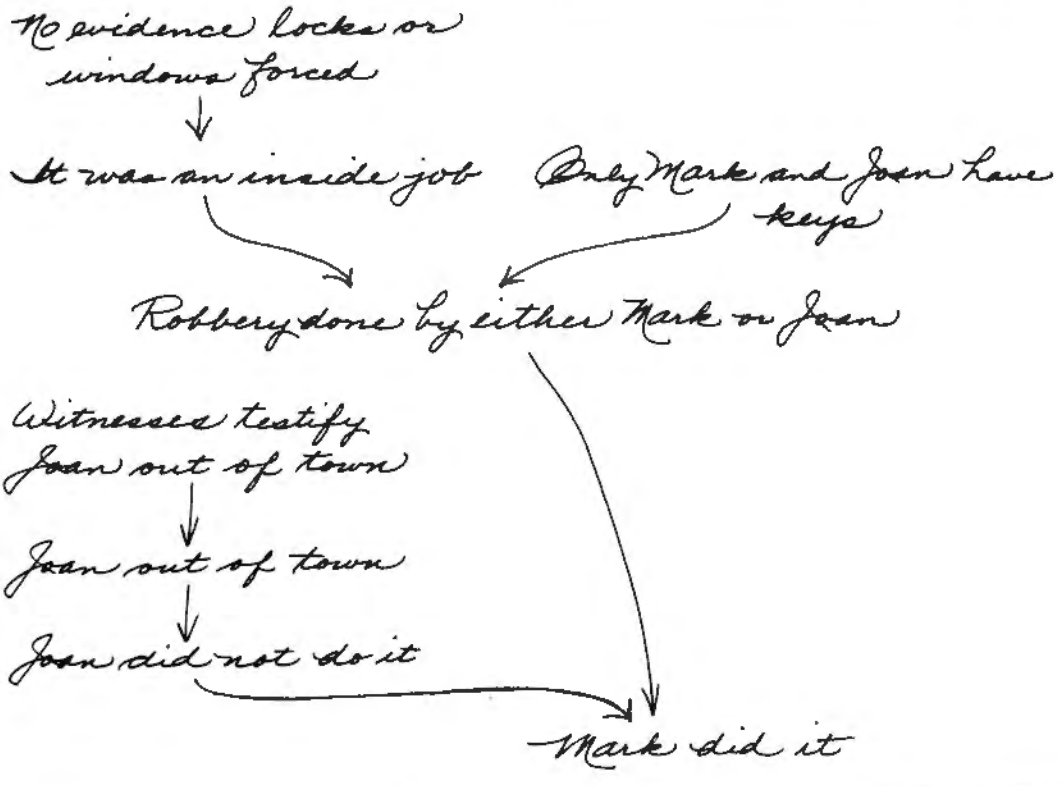
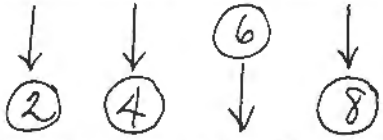


FIGURE 2.12

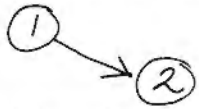
good argument is. The structural information is contained in the small transitional words like these:

Premise indicators	*Conclusion indicators*
Because . . .	Thus . . .
Since . . .	Hence . . .
In view of . . .	Therefore . . .
Inasmuch as . . .	Consequently . . .
For . . .	So . . .

The first step in argument identification is to pick out these words and begin to place arrows accordingly. Suppose we take the argument given above and number the different sentences and circle the words that give structural information (figure 2.13). Of the words we have circled, "so" comes before a conclusion, so the end of an arrow must point to statements 2 and 4. "For" comes before a premise and "consequently" comes before a conclusion, so 6 must be a premise for something, and 8 a conclusion. Thus far this is the information you have extracted:



Now you go back to the argument and see if you can fill in the other end of each arrow. Some of it you can do mechanically. For example, there is but one sentence that precedes 2, so 1 has to be the other end:



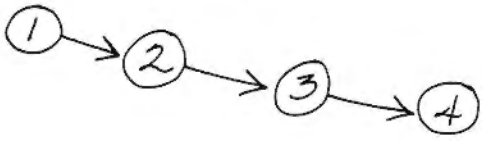
Then use other structural information. Notice the "but" that introduces 5. The "but" indicates an interruption in the natural flow of the argument. In this case the evidence points toward Joan. The sentence introduced by "but" rebuts the conclusion that Joan did it by giving reasons that go counter to the implicit accusation against Joan. Consider how natural it would be for someone who wishes to defend Mark to start the rebuttal

FIGURE 2.13

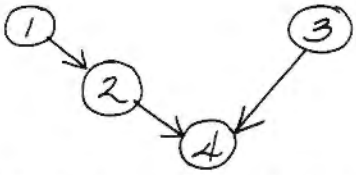
After examining the lock and the windows carefully we found no reason to believe they were forced. So it must have been an inside job. The only two people who had access to a key were Joan and Mark. So one of them must have done it. But we know that Joan could not have done it, for she was out of town that weekend. We have several witnesses to testify to that. Consequently, Mark did it.

with: "But Mark could not have done it because. . . ." There are many other words and phrases that give information about the intended logic of the argument. For example, "although" and "despite the fact that" indicate that the writer is conceding a point against what he is about to say. A defender of Mark who wishes to concede that the evidence against Mark is strong will say, for example, "Although it might seem that Mark alone could have done it, in fact he was out of town that weekend too."

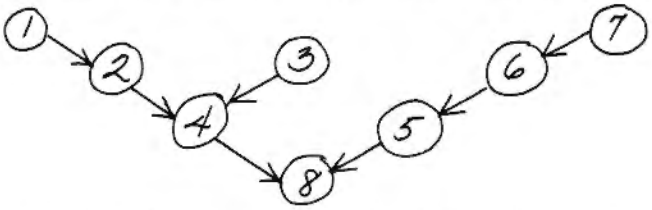
Still, it would be unusual to find an argument in which all the logical relationships among the sentences are indicated by some words or phrases. When you have exhausted the search for argument-indicator words, you must go to meaning and ask which arrangements make the better argument. You must go to meaning to see further connections: Is it to be read as



or as



You resolve this difficulty by your view of which interpretation makes more sense: is the fact that it was an inside job—2—a good reason to believe that only two persons had access to a key—3? Is the fact that it was an inside job a reason to believe Joan or Mark did it—4? These decisions are not mechanical, for you are now beyond the structural information provided by the author. You have to see that 2 and 3 together give a good reason for 4. In the end, your diagram should be this:



The most important lesson to be drawn from this example is how significant the small transitional words are in communicating to the reader what the argument is. By omitting them, you tax the reader. Notice also the variety of usages through which structural information is communicated—in this passage, by the "but" and by the dash. If the "so" before the second sentence had been omitted, the use of "must" should tell you an inference is being drawn. You could write out the same information by using these forms over and over again: "My first conclusion is. . . .

My evidence for that is. . . . My second conclusion is. . . . My evidence for that is. . . ." and so on. But such writing would be mechanical and dull. So good writers vary the forms and vary the direction. Notice how the first two sentences are ordered: premise-conclusion. But see how in the fourth sentence, which combines our 5, 6, and 7, the order is: conclusion-premise-premise.

The value of a tree diagram is that it allows you to see the logical relationships: that 1, 3, and 7 are the basic statements that are not further supported; that 4 depends on 2 and 3; that 5 depends on 6 and 7. But the tree diagram is very sparse in the information it provides. It gives you only the bare skeleton of the argument.

A second value of forcing yourself to do such a diagram is that it forces you to "chunk" the information contained in the argument: you try to pick out just the essential information to put into the diagram. Here is an example from Charles Darwin's *On the Origin of Species:*

> As many more individuals of each species are born than can possibly survive; and as, consequently, there is a frequently recurring struggle for existence; it follows that any being, if it vary slightly in any manner profitable to itself, under the complex and sometimes varying conditions of life will have a better chance of surviving and thus be naturally selected. From the strong principle of inheritance, any selected variety will tend to propagate its new and modified form.

In this passage Darwin uses "as" twice ("as" comes before a premise); "consequently," "it follows that," and "thus," once each (they indicate a conclusion); and the underlined "from" in the last sentence, although not usually an argument indicator, here signifies that the strong principle of inheritance is a premise. "As P, and as, consequently Q, it follows that R, thus S" means "Because of P, it follows that Q; because of Q, it follows that R; because of R, it follows that S." (P is his first sentence; Q, his second sentence; R, his third; and S, his fourth.) Its tree diagram is shown in figure 2.14.

The tree diagram method of analysis need not be confined to sentences, as we have done here.[8] You can use it also on whole chapters of a book or on paragraphs of a chapter. It is useful at the editing stage of your paper to see if you can draw a tree diagram of the relationship between the sections or paragraphs of your paper. If your paper is intended to be an argumentative paper and you cannot do a tree diagram of it, then something is wrong.

8 For more on the method, consult Monroe C. Beardsley, *Thinking Straight: Principles of Reasoning for Readers and Writers*, 4th ed. (Englewood Cliffs, N.J.: Prentice-Hall, 1975) and Michael Scriven, *Reasoning* (New York: McGraw-Hill, 1976).

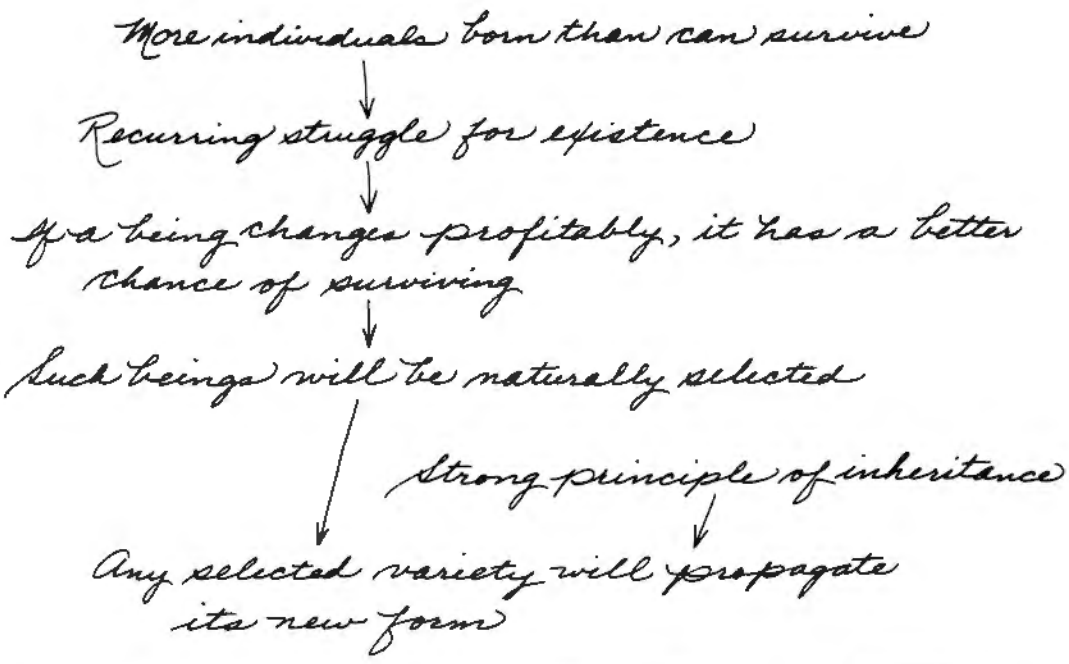


FIGURE 2.14

Stephen Toulmin has suggested an alternative method for analyzing arguments.[9] He believes any good argument has at least three elements: a ground, a claim, and a warrant. The relationship between the ground and the claim is similar to the relationship of the premise (ground) to the conclusion (claim). It is his notion of "warrant" that introduces something new. Its significance can be seen from the questions each element is intended to answer. Imagine the following dialogue:

Q: Who do you think is guilty?
A: The butler. (*Claim*)
Q: How do you know? What is your evidence?
A: His fingerprints were on the murder weapon. (*Ground*)
Q: So what?

Reflect for a moment on what an appropriate answer is to this last question. It does not call for you to justify the ground. It does not question whether the fingerprints were on the weapon. Nor does it ask for additional

9 *The Uses of Argument* (New York: Cambridge Univ. Press, 1958) and Stephen Toulmin, Richard Rieke, and Allan Janik, *An Introduction to Reasoning* (New York: Macmillan, 1979). It should be noted that Toulmin analyzes arguments into six components, of which we mention only three.

evidence, as would the question "Do you have any other evidence against him?" To be told the murderer also had a motive does not answer "So what?" The question asks that you establish the link between your evidence and the conclusion you want to draw from it. What it calls for is a "warrant," some general principle of inference which when applied to this case, justifies your inference from this ground (premise) to this claim (conclusion).

The search for a warrant will uncover, if it is successful, what else you are committed to if you want to draw the inference. But you need to choose a warrant that is neither too strong for the case nor so weak as to be trivial. Thus, "If the butler's fingerprints are found on the murder weapon, then he is guilty" is too weak; it is too specific to the case. It just says there is a link between the claim and ground, which is the question at issue. On the other hand, "Whenever a person's fingerprints are found on a murder weapon, we may infer that that person is guilty of the murder" is too strong. We know there are other explanations for the fingerprints being on the weapon. So the criteria for a good warrant are that it be strong enough to explain the inference but not so strong that it is false or implausible. In our example, you can find a plausible warrant either by weakening the relationship between ground and claim ("If a person's fingerprints are found on a murder weapon, then very possibly that person is the murderer") or by adding restrictions to the circumstances under which you think guilt may be inferred from fingerprints. Thus, for example, it seems plausible to say, "Whenever a murder has been committed and there is one suspect who has a motive and opportunity and whose fingerprints are on the weapon, and when we have eliminated other candidates, then we may infer that that person is very likely to have committed the crime." But now notice that if this is the route you take to find a plausible warrant, you need to get more information on the case: Did the butler have a motive and opportunity? Are the other candidates really eliminated? In effect, to search for a warrant is to search for other *relevant* facts about the case. The warrant shows the relevance of the ground to the claim.

The importance of the distinction between warrants and grounds for academic writing in particular is this: Because most academic assignments are intended as exercises in the particular techniques of some discipline, instructors are usually interested not so much in the facts you accumulate but in how you use them. In other words, instructors are interested in how well you can use the warrants of that particular discipline. The warrant may be a definition (for example, the ground that a poem has fourteen lines is relevant to literary analysis because of the warrant that defines sonnets as poems with fourteen lines). The warrant may be a scientific law, or a particular technique of statistical inference, or a principle of experimental procedure. In history a warrant might be a principle of historical interpretation, or it might be a generalization about what motivates human beings in particular situations. In law a warrant might

be a statute or a rule of evidence. (Consider, for example, how the principle that a person is innocent until proven guilty "warrants" the conclusion that a person is innocent when the case against him is insufficient.)

These warrants are substantive principles to be learned in courses in these disciplines. Logic can tell you only that you need a warrant. Logic by itself cannot always tell whether a given warrant is acceptable or not. The diagnosis of an illness, for example, is an argument in which a list of symptoms takes the place of the grounds, and the statement that the patient has a particular illness is the claim. The diagnosis is justified—that is, the argument is a good one—only if there is a plausible warrant that connects those symptoms to that illness. You need to study medicine to find out whether there are such warrants. But by logic alone you can tell what the warrant should look like: People with S_1, S_2, S_3 . . . S_n are likely to have illness X. So this method of analysis can point you in a direction, although it may not give you the final answer.

The lesson from this analysis is that for each inference you draw in your paper, you should ask yourself whether the reader has an answer in the paper to the question "So what?" Have you shown the link between the claim and the ground? Or is it so obvious that it need not be stated?

Two final points about this technique are worth making. The first is that the technique can be used generatively, to find gaps in your information before you write your paper. After the research phase of your paper, when you are trying to organize your information, for each claim you propose to make you can ask what else are you committed to if that inference is to be justified. The second point is based on the fact that there is a difference in the order of generality between the warrant and the ground: in going from grounds to warrant, you go from a set of facts to some more general principle. It is a characteristic of academic papers that they all move within the paper itself between the general and the specific. A paper entirely on the same level is a bad paper. If you keep in mind the distinction made here it will help you to vary the level of reasoning within the final paper.

Conclusion

As you are probably aware by now, the strategies discussed in this chapter can be overwhelming if you think of them all together. Their application must be selective. You should try them as they seem to apply to the particular problem you are working on. All of the strategies represent ways of thinking about or seeing problems that occur at any stage in the writing process. Before you begin to write, you may, for example, need to generate a list or develop a table to clarify in your own mind the relationships between parts of a problem. But the table can also be used in the paper to illustrate the same point for your reader. During the drafting stage you might arrive at a point at which your ideas run out. To get started again,

you should try one or more of these heuristics. For example, if a draft of a paper on a political group bogs down after you have described and evaluated the group, where do you go next? You might consider the group as a "wave" (Where did it come from? Within what political tradition does it belong?), or as a part of a "field" (What is its relationship with political groups of its ideological orientation? Where does it fit into the current political power structure?). Even as you revise a paper you may need to think about your problem in a new way, especially if you want your conclusion to be more than a summation. At the end of your writing process you can still make use of strategies like brainstorming or asking questions (What are the implications of X?).

In fact, we are faced here with the question "How do we end this chapter?" Brainstorming on this problem might look like the notes in figure 2.15.

What can we say that doesn't merely repeat, but which follows from and adds to this chapter? Already discussed the strategies — Can say that they will all be used and illustrated in more detail when we discuss individual paper assignments. No — sounds too bland. What is more important to add? What are some of the implications of this chapter? Well, they're useful — too obvious. Could say that in the writing process you will most likely not only be generating new ideas at all stages, but will be doing other tasks at all stages. Good! Need to discuss recursive nature — "messy." Nature of writing — that the process is not neat and sequential — the conclusion of this chapter would be a good place to do that.

FIGURE 2.15

Writing is not a process, but a series of processes. That is, writing does not often move smoothly from generating ideas and making a plan to revising, editing, and proofreading. You will find yourself doing various subtasks at every stage of writing a paper. While you are trying to develop an organization, you may well be formulating your topic sentence. While you are writing a draft, you will also still be discovering and working out new ideas. While you are editing for punctuation, you may still be rewriting parts or reorganizing your paragraph sequence. The needs of your readers should rarely be far from your mind. Writing by process means that at each stage of your development you should be focusing your attention on a few things at a time. In fact, this orderly way of organizing your writing will help to make you aware of particular problems as you write and will encourage you to move back and forth among the various subtasks until you are satisfied that the paper reflects your plan clearly and completely. We suggest that you use this chapter for reference as you proceed through the various writing assignments in the rest of the book. But to prepare yourself to use these thinking devices, it would be a valuable exercise to practice them in your journal. Select a topic from one of your courses and "play" with it on paper. Try as many of the strategies as you can to see how they actually work. You may be surprised to discover how creatively you can see and think about the topic.

QUESTIONS

1 In what specific ways can writing be an aid to learning?

2 How does private writing differ from writing for someone else?

3 What are some uses of a personal journal?

4 How is a topic tree different from an outline?

EXERCISES

1 Without stopping or editing, for ten minutes each day write in a private journal. At the end of a week review your journal. How could such a journal be useful to you?

2 Figure 2.16 illustrates an example of brainstorming on the topic of television. Draw up a list of the key ideas and try to establish relationships between some or all of those ideas. Transform one or more of the relationships you discover into a thematic paragraph.

3 Consider the following analogies and metaphors. In each case, make a list of the implications that follow if the analogy is true; that is, make a list of what you can know or assume about the first item by transferring to it those things you know about the second item. Compare your lists with those of others in the class.

a The Teapot Dome scandal was the Watergate of the 1920s.

b The atom is very much like a mini solar system.

T.V. – children waste too much time watching — too much violence? Effects on homework, can't be good — does it make kids antisocial? — Can be educational – why isn't it? T.V. is more harmful than useful — is that true? Parents need to exercise control — advertising directed toward children puts a lot of pressure on parents to buy things — whose fault? Why so many ads directed toward children? — what happens when children watch too much T.V.? One study showed that they become immune to violence — makes them passive — what are bad effects of this? They become irritable after too much watching.

FIGURE 2.16

c The Boer War was to England at the turn of the century what Vietnam was to America in the 1960s and 1970s.

d A cerebral stroke is like a short circuit in an appliance.

4 Consider each of the following topics as a particle, a wave, and a field. Make a list of each category for each topic. Compare your lists with those written by classmates.

a your college

b the Beatles

c the United States Government

d your favorite friend

5 Each of the following topics is followed by three questions. Identify each question as representing a particle, wave, or field approach to that topic.

Socrates:

a What was Socrates' ethical theory?

b What contributions did Socrates make to the history of ethics?

c In what ways did Socrates' ethics differ from the ethical views of his contemporaries in the fifth century B.C.?

Darwin:

a What impact did Darwin's theory of evolution have on nineteenth-century England?

b Was Darwin really the first evolutionist in the history of biology?

c What does Darwin actually say about the value of his voyage on the *Beagle*?

6 Following is a list of items from an American history textbook. Using all of these items, write a short, focused paragraph establishing relationships among the items:

Declaration of Independence, 1776
Yorktown, British surrender, 1783
American colonies
first shots fired, Concord, 1775
King George III of England
George Washington
United States of America

7 You are a parent who has advertised in the local newspaper for a full-time housekeeper and babysitter for your three-year-old son so that you can work. You have received the following short note from a person named Deborah Draft. After reading the note carefully, make two lists, one containing your positive reactions to the application, the other, your negative responses. What positive and negative inferences do you draw from the application? Would you hire Deborah Draft? Why or why not?

I am interested in your advertised job for a housekeeper. I am experienced at routine housekeeping chores since I have had to take care of our five-room house since the age of twelve, when my mother left us. I have also had three positions in housekeeping while in high school. The letters of reference from those jobs are inclosed. This kind of day work will also allow me to finish my undergraduate degree at night school where I am studying elementary education. I think that my courses in childcare and pre-school learning will also help me in this job.

Thank you,
Debbie
Debbie Draft

8 Following are some facts about a student who is running for election as president of the student government. You are editor of the student newspaper. Write two lead paragraphs for two different newspaper stories about him. One of the lead paragraphs must be favorable (to help him gain election); the other should be unfavorable (to convince people not to vote for him). The success of the two paragraphs will depend on your selection and interpretation of the facts. Keep in mind that the apparent reason for the paragraphs is to announce his candidacy.

Name: John Prose, junior, Clearwriting State College
Offices held: Junior class president
Activities: Basketball (3 years), captain (junior year); Alpha Rho Alpha social fraternity, social chairman (freshman and sophomore years); volunteer, municipal youth athletic league (junior year).
Academic record: cumulative grade point average 2.3 on a scale of 4.0; academic probation (freshman year); academic warning (sophomore year); began as a chemistry major, switched to business administration in sophomore year, and to physical education in junior year.
Social record: social probation (sophomore year) for organizing parties without a college permit; suspended for four basketball games (sophomore year) for partying after curfew.
Campaign platform: Pledges to advocate the abolition of the fraternity system on campus.

9 Following is a series of seven facts presented in simple chronological order. Write a sentence that presents a claim based on these facts. Explain the warrant for your claim.

a John Smith, graduate student, married Maggy Olsen, 1945.

b John Smith, Ph.D. in political science, was hired by Central University as an assistant professor, 1947.

c John Smith published major book, promoted to associate professor, 1950.

d Announcement made that he was being investigated as a Communist by the House Un-American Activities Committee, 1952.

e His wife divorced him, 1953.

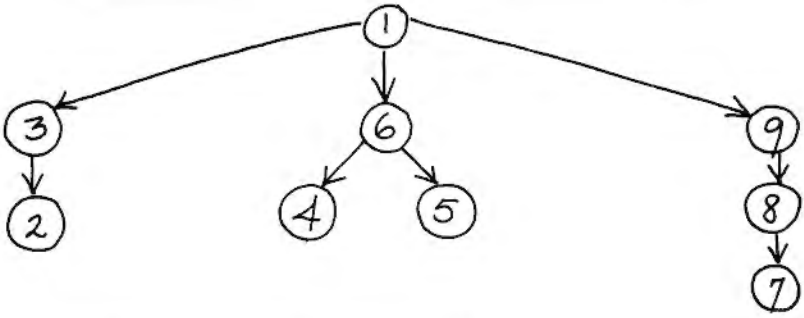
f He married one of his students, 1953.

g He was fired by the university, 1954.

10 Figure 2.17 is a tree diagram of an argument, the numbers in the diagram corresponding to the sentences given immediately below. Try to write the argument in paragraph form, using number 1 as the thesis statement.

1 Americans should eat less meat.

FIGURE 2.17



2 It takes twenty pounds of grain protein or more to produce one pound of meat.

3 Meat is a wasteful source of food.

4 Americans now eat twice as much meat as Americans did twenty-five years ago.

5 Americans twenty-five years ago were healthier than are Americans now.

6 A diet with less meat in it would be a healthy change for most Americans.

7 Protein consumed in the form of meat is far more expensive than grain protein.

8 Decreasing the proportion of meat in the American diet would result in a smaller proportion of family income going to food.

9 If American families spent less on food, then more money would be available to stimulate the economy and attack inflation.

11 Suppose the following were regulations that governed whether or not a person is entitled to vote in an election. Devise a flow chart with two outcomes, one reading, "You are not entitled to vote" and the other reading, "You are entitled to vote."

Only citizens of Patagonia are entitled to vote in national elections, but not all citizens are entitled to vote. A person younger than eighteen years of age may not vote, nor may convicted felons vote, unless they have been pardoned and their right to vote reinstated by the court that found them guilty of a felony. Married couples have only one vote, although they may choose for themselves which one will exercise the vote. Only persons who have paid income tax within the previous five years may vote, and no person is permitted to vote more than once in any given election.

12 Figure 2.18 is a simplified version of a flow chart which the Internal Revenue Service uses to explain to prospective taxpayers whether or not they are obliged to file a tax return for a given year. Please answer the following questions by referring to the flow chart.

a Keith Larson is seventy-six, unmarried, and has an income of $4,000. Is he obliged to file a return?

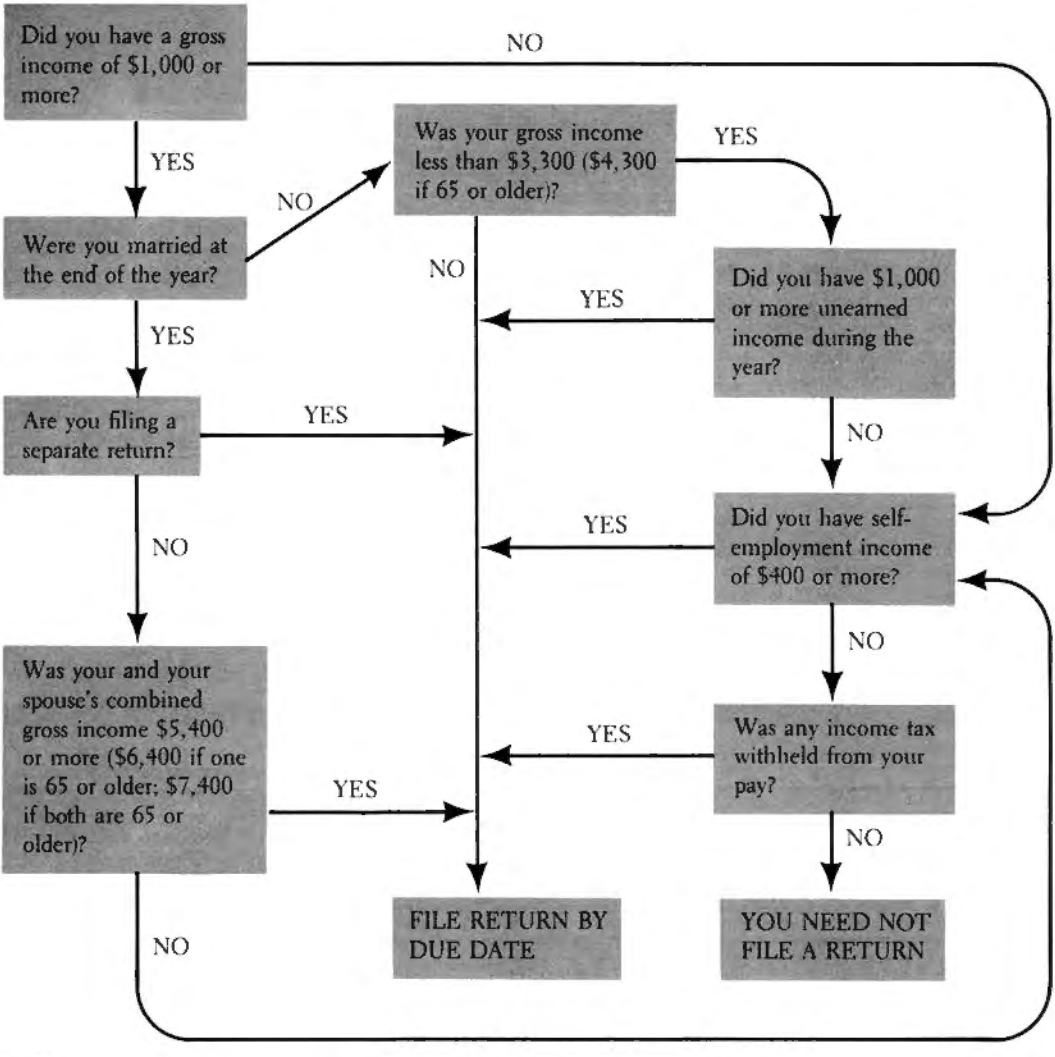


FIGURE 2.18

b Lois and David Cohen are married to one another. David is forty-three; Lois is forty-five. Their combined income for the year is $23,500. Are they obliged to file a return if they file separate returns? If they file a joint return?

c Sally O'Brien is sixty-six and unmarried. Her income for the year is $4,000, of which $2,200 is unearned income. Must she file a return?

d Sam and Reina Mortimer are a married couple with a combined income of $7,000. They are both seventy-two. Of the $7,000 income, $800 is unearned income and $900 is self-employment income. Must they file a return?

Write two paragraphs that state the conditions under which a person must file a tax return. Begin the first paragraph with the words "You must file a tax return if . . ." and the second paragraph with the words "You need not file a tax return if. . . ." Hand your paragraphs to another student in the class and have that student answer the questions above on the basis of your rewriting of the conditions.

13 What generalization would *warrant* the inference from these premises to these conclusions?

a There are more neutrinos in the universe than was previously thought. Therefore, the Big Bang theory is false.

b The number that solves a puzzle is divisible by three. Therefore, the number must be odd.

c *Hard Times* was written by Charles Dickens. Therefore, *Hard Times* is a Victorian novel.

d Gertrude promised she would come to my party, so it was discourteous of her not to come.

e The ceiling of the basement was more scorched than any other part of the house. Therefore, the fire started in the basement.

Discuss how you would find out if the warrant is true.

14 Using the information below, apply Burke's pentad. Write a sentence on the topic "Socrates" that transforms the topic into an *action*. Then write a sentence that views the topic as an *actor-agent*, as a *scene*, as a *means*, and as a *purpose*.

In 399 B.C. Socrates accepted the verdict of an Athenian court that condemned him to death. He took hemlock in the presence of his friends and died. He had been prosecuted for corrupting the youth of Athens and for introducing new gods. Because of an Athenian law that banned executions during one month of the year, Socrates had to wait for about a month after the trial before the sentence

could be carried out. During this time his great friend Crito tried to persuade Socrates to flee from prison, but Socrates rejected the plea on the grounds that at seventy years of age he had no reason to fear death; in fact, he welcomed it. Death, he said, is what a true philosopher spends his life preparing for. And so, obeying the law, he drank hemlock and died.