

2

Ways of Seeing: From Observation to Reflection

This chapter focuses on helping you learn to see and to pay attention to what you see. One goal is to help you become a more discerning “reader”—of the world around you as well as of books. Another goal is to help you develop or fine-tune your senses, using the techniques of biologists and botanists in the field. You will gain practice in observing and reflecting as you record your impressions of what you see and translate those observations into words. The logs, poems, and essays you write will convey your particular view of the world to others.

The field notes work will guide you as you record your observations, use research to supplement your own vision, map your data, and reflect on and write about your experience. Layered into the field-work are poems, essays, dialogues, and letters, as well as opportunities to enhance your seeing through drawing, talking, and writing. These activities are designed to help you think about your ability to see through your own and others' minds and eyes. We hope that you will come to a deeper understanding of the many aspects of vision—from the physical sense of *eye-sight* to the mental set of *in-sight*, which actually enables you to make meaning of what you see.

Literature selections range from those by well-known authors—Henry David Thoreau, Helen Keller, and John Steinbeck—to works of lesser-known poet/naturalists or naturalist/poets. You will examine writing by other students. Some of the pieces are grouped in order to show different perspectives of similar experiences.

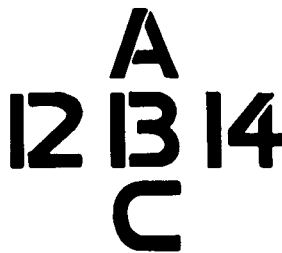
Here are a few specifics that are important in this chapter:

1. You will need to keep all of your work—log entries, drawings, and drafts—in a writing folder.
2. Groups will work together to discuss literature, explore options in writing, help each other with the re-visioning process, and serve as a supportive audience for finished work.
3. You may decide to include several finished pieces from this chapter in your course portfolio.

Perception

Thoreau was right when he wrote in *Walden*: “There is no power to see in the eye itself, any more than there is in any other jelly.” Yet it is through the eye that we receive the electromagnetic band of en-

ergy that allows our minds to construct meaning from marks on the page. "I'll believe it when I see it," the saying goes, but what happens when you turn that phrase around? "I'll see it when I believe it!" Seeing, as you will discover from your work in this chapter, is not all in the eyes. Look, for example, at the following arrangement of numbers and letters:

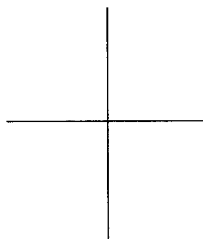


How did you first read the character in the middle? Did your perception change as you looked at it longer? Look at it again. What is it now? Does it keep changing?

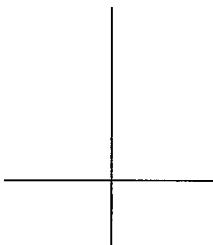
Our minds have the power to transform the character in the middle from a "B" to a "13" and back again as we make sense of the arrangement of impressions that bombard our retinas. When we use the word *see*, then, we generally mean more than what the eye can do; we mean what we do, with our personal backlogs of experience, our own preconceptions, our own histories. The eye receives impressions; we see.

Scientists and artists have been experimenting with optical illusions for years, trying to understand how the eye can fool us into seeing something different from what can be proved. Here are some examples of such illusions, all taken from the book *Science, Art, and Visual Illusions* by Robert Froman (Simon and Schuster, 1970, pp. 48, 49, 50, 89, 90, 91):

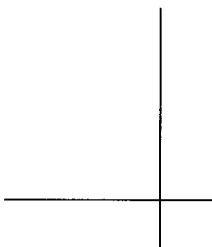
If two lines of equal length interrupt each other at their centers, most people experience no illusion:



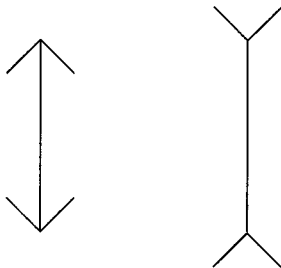
But if the lines interrupt each other unequally, the illusion crops up again—the line with the greater uninterrupted stretch seeming longer than the other:



The illusion disappears again when the interruption again is equalized:

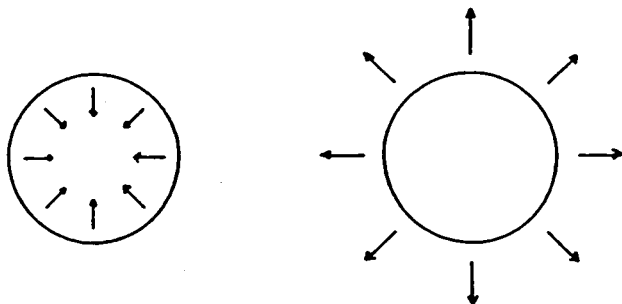


Another visual illusion, discovered in 1889 by a German psychologist, Franz Muller-Lyer, has led to a wide variety of hypotheses:



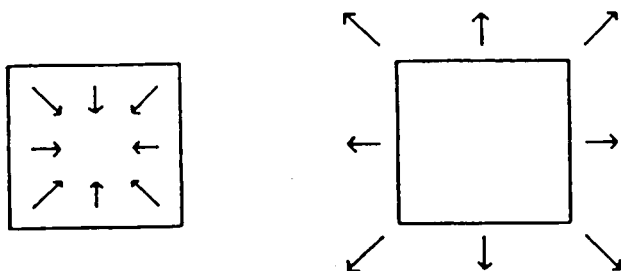
The illusion that the vertical line on the right is longer than the one on the left is so strong that you probably will have to measure with a ruler to persuade yourself that the two are of the same length. Muller-Lyer and other research workers showed drawings like this to many people, all of whom found it hard to believe that the lines were equal.

A number of other illusions involving arrows also have been studied. For example:

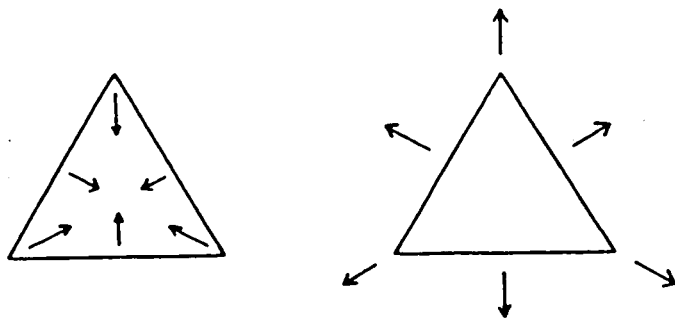


Almost everyone who sees these drawings thinks the circle with the outward-pointing arrows around it is bigger than the one with inward-pointing arrows inside it. One hypothesis is that the arrows direct attention in a way that makes one circle seem to expand and the other to contract. A similar effect seems to occur with other figures.

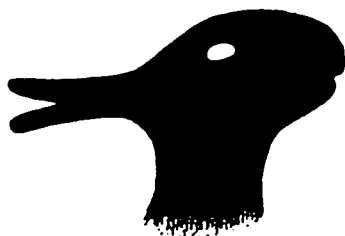
Here is the effect on equal squares:



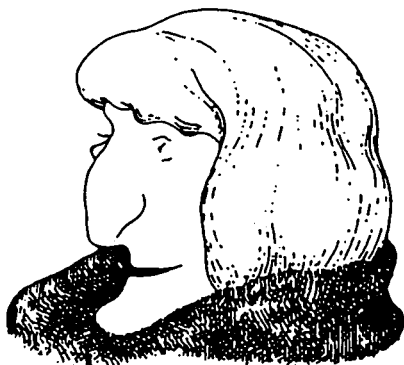
And here is the effect on equilateral triangles:



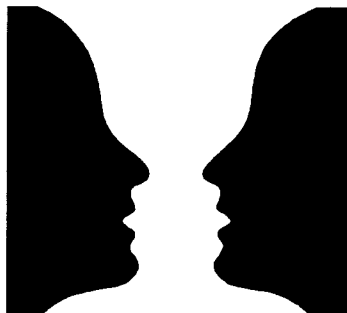
It is not only with geometrical figures that this sort of thing happens. Complex drawings depicting familiar things also can present contradictory information, causing us to construct first one image and then another quite different one. One of the oldest and best-known examples is the duck-or-rabbit drawing:



Still more complicated and more startling when you first switch from one visual image to another is a drawing sometimes called *Daisy or the Duchess*:

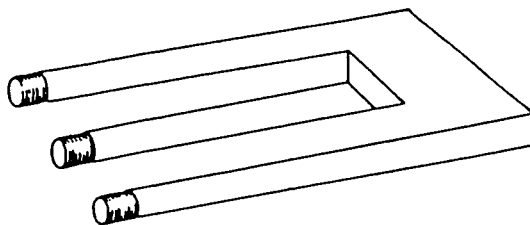


A slightly different kind of drawing offering two sets of information is the sort in which the viewer must decide what is foreground and what is background. For example:



If you take the white space to be the foreground, you construct a visual image of a wide-topped vase. If you take the black space as the foreground, you construct an image of two human profiles facing each other.

But the most interesting drawings of this sort are the so-called "impossible" ones. For example:



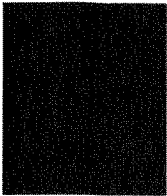
Many people report that looking at this figure for any length of time makes them feel uncomfortable, in some cases even dizzy. There is, obviously, an important difference between this drawing and the others we have been considering.

In the case of the vase-or-profiles drawing, for instance, one can make a choice between two sets of information. One can concentrate on the set of information that makes it possible to construct a visual image of a white vase against a black background. Or one can concentrate on the set that makes it possible to construct an image of black profiles facing each other across a white background. What makes the new drawing "impossible" is that the two contradictory sets of information are so thoroughly blended with each other that it is difficult to separate them and attend to one while ignoring the other.

Informing the eye is a way of talking about how we actually perceive the world and how we can use our minds to make sense of the billions of images our retinas receive every second. Even though Thoreau was right, in a scientific sense, we will use the word *eye* the way people do when they say such things as, "He has a good eye for a fastball," or "Keep an eye out for a gas station. We're running on empty."

Collaborating

Take a few minutes to list common English phrases that use the word *eye* to mean the act of seeing. Then check with others to see what phrases they came up with. (An unabridged dictionary will give you a lengthy list under the heading "eye.")



The point of generating such a list is to see how the eye, the organ that permits us to see, permeates our language. Try the same exercise with the other sense organs—the ear, the nose, the tongue, the skin—and see whether they are reflected as strongly in the idioms of English.

The Individuality of Perception


It's difficult to realize that when people are looking at the same thing, they are, in fact, each seeing something different. We know that to be true intellectually. We have all experienced some variation of listening to three different eye-witnesses describe an incident, but most of us find it hard to know what “really” happened. The instant replay that television football viewers have become accustomed to has now become a formal part of officiating. What one official sees is not necessarily what another sees. The coach who storms up and down the sidelines shouting his version of a play knows he is right. The official knows otherwise. Even the players involved in a controversial call give different versions; each of them is “right.” Who is to say? Is the television camera able to see all angles at once? Does instant replay solve the problem of what “really” happened? Do multiple angles come closer to what we call *objectivity*?



Log Entry 1

Jot down your perceptions of your classroom. Just write what you see. Share your log with two or three other students and compare versions. Here are a few questions to consider:

- What particular things in the room did you focus on? Did you and your discussion partners describe any of the same things? If so, compare your descriptions.
- Did you focus on the people in the room? Other students? Your teacher?

- 
- Did your journal entry express your feelings about specific objects in the room or about the room itself?
 - Did you include color in your description? Did you and others include any of the same colors?

Most of us take our perception of color for granted. White is white; we don't need to define it. Naomi Shihab Nye has something to say about defining white in her poem of the same name.

Defining White

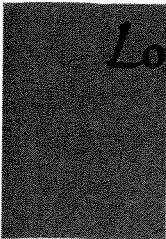
Naomi Shihab Nye

On the telephone no one knows what white is.
My husband knows, he takes pictures.
He has whole notebooks defining
how white is white, is black,
and all the gray neighborhoods in between.

The telephone is blind.
Cream-white? Off-white?
I want a white, we say,
that is white-white,
that tends in no direction
other than itself.

Now this is getting complex.
Every white I see is tending
toward something else.
The house was white, but it is peeling.
People are none of these colors.

In the sky white sentences form and detach.
Who speaks here? What breath
scrawls itself endlessly,
white on white, without being heard?
Is wind a noun or a verb?



Log Entry 2

Write your response to “Defining White” in your journal. What images does it create for you? What thoughts? In what ways is it a poem about color? About ideas?

Careful observers pay particular attention to color, exploring how color affects our moods and speculating about whether what we call *blue*, for example, appears the same to different people. A contemporary artist, Lynn Lonidier, gives us this suggestion: Go to a paint store and ask for a sample color chart for any brand of paint. Take any strip of colors and observe the subtle differences as your eye moves from one to another. Are there any that look the same to you?

- If you have a numbered chart, try giving each paint sample an appropriate name, one that clearly distinguishes it from the ones directly above or below.
- If your chart already has names, do you find them descriptive? Can you tell whether the words influenced you to see the color you did? Try changing the names.

Lynn Lonidier constructed a mock paint chart using color chips that were all the same color but giving each chip a distinctive name. The observer, because of the power of the different names, found it difficult to believe that the chips were all one color. You might try this yourself to test the power of the mind on what we think of as vision.



Work in Progress

Choose one of the writing possibilities that follow to draft a piece for your writing folder. You may decide to revise and edit it later for inclusion in your portfolio.

- Select a color that interests you and write a sustained prose exploration of the impact that color has on you.

- Write a poem entitled “Defining _____,” whatever color you find interesting. You might want to reread “Defining White” before you begin, although you don’t need to follow Nye’s pattern in your own poem.
- Consider the clothes and hairstyles that are in fashion today. How would the way your parents describe your clothes differ from the way you would?
- Think about all of the cars and trucks you see on streets and freeways. Describe the one that you like best—either one that you own or one that you would like to own. Then think of someone you know who wouldn’t appreciate that car or truck at all, someone who would describe it very differently. Describe it as it must appear to that other person.
- Choose another subject to describe from two points of view. You might even write a dialogue, with two people discussing or arguing about the appearance of the object.

Extending the Boundaries of Perception

You may have discovered that people often make assumptions about how something looks without really noticing its distinguishing details. The psychologist William James observed that our senses not only permit us to know objects in the world around us, but they also serve as a filter or fuse, to prevent us from sensory overload. Most of the time, we see what we expect to see. Unless we stop and really look, however, we will never extend the boundaries of what we expect to see.

Careful observation is a habit of mind, one that can be altered by direct training. The activities suggested here are adapted from methods used by naturalists, people who study plants and animals in their natural habitats or settings. Naturalists talk of going into the field to study their subjects; the “field” is wherever they can find their subjects. The notes they take in the field they call, appropriately, *field notes*.

Field Notes

To get an idea of how naturalists in the field actually work, read the following recorded dialogue between Ann Zwinger and Gary Nabhan (from "Field Notes and the Literary Process," *Writing Natural History*, University of Utah Press, 1989, pp. 78-80). They were comparing notes at a writing seminar about how they record their field observations.

Zwinger, nature writer and illustrator, said, "When you take field notes, there are a lot of devices that I think you use to observe well. I certainly sketch in the margin of the page, which provides a wonderful backup. You consciously call on all six senses; you have a way of ticking them off in your mind: What does it smell like? What does it look like?"

Nabhan, botanical researcher and writer, seemed to understand what Zwinger meant when she reported calling on all "six senses." Most scientists acknowledge that we possess more than the traditional five senses—sight, sound, taste, touch, smell; we lump all of the senses that we don't understand into the catch phrase "the sixth sense." Although some people may use the term to refer to some kind of telepathy, scientists believe that eventually we will understand and be able to identify a number of additional ways of knowing.

Nabhan responded to Zwinger's comments with, "Well, I depend upon all senses when I'm out there. Unless I do, when I get back to a cozy room with my notebook . . . I won't be able to remember the sounds that were there, or what the light was like. When I take a lot of notes in the field, there is a chance that some of the sounds I hear in that landscape will carry over into the sounds of the words I use to describe a place. I work hard on that because I can't do that again later. Recording the weather is also important. I feel I have failed when I read a journal entry and I can't even tell whether it was raining on me at the time other than that the ink is smeared . . ."

To which Ann Zwinger retorted, "That's why I use a pencil."

"It's the sensory data that I want to record in detail," Nabhan continued.

"It's strange that so many people nowadays depend on a camera or a tape recorder . . . ; it doesn't altogether serve, does it? You have

to find some salient feature which comes through the other senses, or a combination of the senses. One of the things in that boiling down is olfactory—the sense of smell, which is so often left out of our recounting of experience.”

Zwinger agreed: “You know, our sense of smell is a very primitive sense. Do you realize the only way you can describe smells is to say it smells *like*? There is no precise primary vocabulary. . . . I’ve just sweated blood trying to describe the odors of desert plants.”

“That’s why we call it the hot, stinking desert,” said Nabhan.

It is not surprising to find that many naturalists move from recording stark, scientific field notes to writing personal essays, journals, and poems. In the field, a scientist attempts to be objective, to record only what is “out there,” yet as Nabhan and Zwinger show us, their perceptions of light, weather, and smell all figure strongly into their scientific field notes.

The scientist Werner Karl Heisenberg gave voice to what naturalists and poets had long known—that what is “out there” is determined by what is “in here.” Heisenberg’s principle, which has had an enormous effect on how scientists perceive experiments and observations, states that what is observed is affected by the observer. This theory, which underlies the belief in the interrelatedness of all aspects of our world, affects the entire idea of being able to look at something objectively. If the person looking affects the thing being looked at, then two persons observing the same object or phenomenon will end up with different descriptions. We know from our own experience that this kind of disparity is what happens in the real world (remember the instant replay). You will be asked to draw on this knowledge in the activities that follow. In order to “inform the eye,” then, we will use Heisenberg’s discovery and trust our own participation in the observation as we draw on the experience of practiced naturalists and writers.

Preparation for Going Out into the Field

The first part of your venture in this background training unit to help “inform the eye” is to emulate the naturalists who go into the field to examine plants and animals in their own habitat. The field, of course, can be any place at all; *field* is the term for the place where the object of study can be found in its natural state. A school

classroom might be the “field” for studying that species known as “second-semester junior.” For this first study, however, you will actually go out into a place where you can observe an animal or plant in its natural habitat. Interspersed with your own field study will be short statements from naturalists and poets, whose eyes are well informed. As you progress through this workshop in “informing your eye,” you will have opportunities to engage in many different ways of coming to know the object you choose to study. You will observe, draw, compare, read other people’s poems and essays, talk, reflect, and write.

You are also going to record the factors “in here” (that is, in yourself) that alter your perceptions of what is “out there.” You will need some kind of notebook and, if you follow Ann Zwinger’s suggestion, a pencil, in case of rain.

Selecting Your Subject

Select the subject for your field notes study—an animal, plant, or natural object that you can observe over a period of time. If you choose a specific kind of bird—a duck, for example—be sure that you can find a duck to observe over the next few days. Typical selections include a wide range of subjects, from specific trees, flowers, ivy, and weeds to insects, birds, tidepool inhabitants, and four-legged animals. Some students choose to focus on a completely dependable subject such as a shell or rock, while others set up telescopes to observe the moon.

In selecting your subject for observation, keep in mind the following criteria:

- its accessibility over the next few days (Don’t forget insects or trees.)
- your ability to sustain interest in your subject (Hard to predict, but try.)
- possibilities for your own reflecting, perhaps making connections between the subject you are observing and the way people behave (The spider and patience, the bee and “busy-ness,” the rose and love—these are well worn, but always open to new eyes. Better, though, is making your own connection.)

Firsthand Information: In the Field

Log Entry 3

Observation 1: Firsthand Information

For your first observation, spend about fifteen minutes actually looking at your subject. Pay attention to the details of the subject, but also be aware of your environment and of your own feelings at the time of your observation.

Record the following introductory data as part of your field notes:

Name _____

Date _____

Subject of observation _____

Environment details:

Location _____

Weather _____

Time of day _____

Length of time of observation _____

Set up your field notes as a dual-entry notebook, as illustrated below:

<i>Descriptive Notes</i> (the "out there")	<i>Reflective Notes</i> (the "in here")
Suggestions: Include all observed data such as size, movement, behavior, eating habits, color patterns. You may include a sketch or series of sketches of your subject.	Suggestions: Record how you are feeling, what memories or associations the observation triggers, how the weather or time of day affects how you see your subject. These notes may be brief or expansive.

Samples of field notes follow. Debbie Carpenter's logs (Figures 2-1 through 2-5) show how one student worked through the process described in this chapter. A professional's field notes provide yet another perspective or observation.

<p>Date: March 30, 1988</p> <p>Environment:</p> <p>Location: Front of the house, in the yard</p> <p>Weather: Warm and sunny</p> <p>Time of Day: 11:25 a.m.</p> <p>Length of Time of Observation: 13 minutes</p>	
<p><u>Descriptive Notes</u></p> <p>It is a small purple flower with five petals, which are placed in an odd way. The first three petals are placed in such a way that it resembles a three leaf clover. The other two petals are situated in between two of the original petals, overlapping each other. There are three such flowers on this one plant. In the center of the three main petals is a vibrant yellow center which radiates black and lavender sections, thus leading into a deep purple. The stem has about five sets of leaves which are placed in a circular manner, down the stem.</p>	<p><u>Reflective Notes</u></p> <p>The sun is shining and the birds are singing. The sun is casting a shadow over the plant, half on and half off. It is as if it has a choice to make - and is bordering on the edge. It reminds me of Hemingway's Macomber in that the sun, as it gets higher and higher, is casting a smaller and smaller shadow, until it is free at last from any shadow or darkness. This happened in the story - he became less and less afraid until he came to a point where he was confident in himself.</p>

Figure 2-1. Debbie Carpenter's First Log

Notice that in the following extract from *The Audubon Society Field Guide to North American Birds* (Alfred A. Knopf, 1977), the authors draw from many observations. They make inferences about reasons for robin behavior, using popular culture as a reference for our understanding and making comparisons to common knowledge, as in "fox-red" and "cup-like."

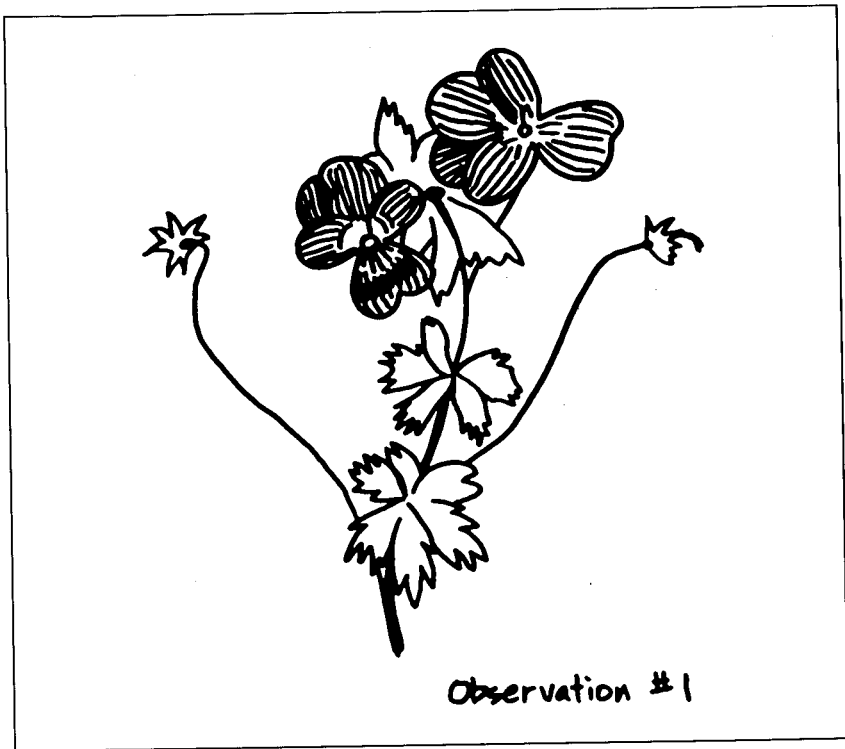


Figure 2-1. *Debbie Carpenter's First Log (continued)*

American Robin

"Robin"

Description: 9" to 11" Perhaps the best known of all North American birds. Puffed-out breast is a *fox-red or orange color*; gray-brown upperparts; throat white, head and tail blackish, paler in the female.

Voice: Many regard the rich caroling of the male, uttered from a high perch, as the true herald of spring. It consists of clear rising and falling phrases recalling the words "cheer-up," "cheerily," etc.

Habitat: Lawns and parks in suburbs; any wooded habitat. Also mountain meadows interspersed with woods.

Nesting: 3 or 4 blue eggs in garden shrubbery or boulevard trees in a cup-like nest of roots and small twigs, reinforced with mud and lined with fine material. Early in spring, when cold threatens the brood, it hides its nest low in densely needled branches of a cedar or a juniper bush. During later broods, when summer heat may prostrate an incubating female, the nest is placed high in a maple or sycamore where leafy branches evaporate moisture and cool the

surrounding air. The amount of mud in the insulating wall is also varied according to the season.

Their mainstay is earthworms, which they hunt on lawns, standing stock-still with head cocked to one side as though listening for their prey but actually discovering it by sight.

Log Entry 4

Observation 2: Firsthand Information (continued)

At least a day after your first observation, spend another ten to fifteen minutes observing the same subject. In your second observation, note especially any changes you observe in your subject. Take note, too, of changes in the environment (light, time of day, weather), in your own mood, or in associations or memories evoked by your observation of the subject. In your sketches, you might focus on some detail of the subject or catch it in a different position. In your log entry, follow the format for Observation 1. Figure 2-2 is Debbie Carpenter's second observation.

Close Observation: A Student's View of a Fish

Before going on with your own field notes, read this description of close observation from a memoir written a century ago by Samuel Scudder as he recounted his student days at Harvard studying with Louis Agassiz, a well-known professor of paleontology. Agassiz (1807–1873) required his students to observe their specimens and, when they had exhausted all that they could possibly see, to go back and observe again.

Remembering Agassiz

Samuel Scudder

It was more than fifteen years ago that I entered the laboratory of Professor Agassiz, and told him I had enrolled my name in the Scien-

	<p>Date: March 21, 1988</p> <p>Environment:</p> <p>Location: Front of the house in the yard</p> <p>Weather: Sunny</p> <p>Time of Day: 3:10 p.m.</p> <p>Length of Time of observation: 12 minutes</p> <table border="0"> <tr> <td data-bbox="223 422 542 1065"> <p><u>Descriptive Notes</u></p> <p>This is a different plant of the same species. It has the same general characteristics as the other one only this one has parts of its petals missing. Some bug might have eaten it, or my sisters might have hit it with their bikes. It has little droplets of water on the leaves (the sprinkler just went off) All of their faces are turned toward the sun.</p> </td> <td data-bbox="542 422 941 1065"> <p><u>Reflective Notes</u></p> <p>It is almost as if the plant is crying for the parts it lost. Rex reminds me of Estella in <i>Great Expectations</i>. She had been with Miss Havisham so long that her heart never had a real chance to live and love. She was missing out on that vital part of life. Another way to look at it is to think that it has weathered many storms and still remained dignified. It's like <i>Antonia</i> - she lost her teeth and her looks, yet she still retained her spirit.</p> </td> </tr> </table>	<p><u>Descriptive Notes</u></p> <p>This is a different plant of the same species. It has the same general characteristics as the other one only this one has parts of its petals missing. Some bug might have eaten it, or my sisters might have hit it with their bikes. It has little droplets of water on the leaves (the sprinkler just went off) All of their faces are turned toward the sun.</p>	<p><u>Reflective Notes</u></p> <p>It is almost as if the plant is crying for the parts it lost. Rex reminds me of Estella in <i>Great Expectations</i>. She had been with Miss Havisham so long that her heart never had a real chance to live and love. She was missing out on that vital part of life. Another way to look at it is to think that it has weathered many storms and still remained dignified. It's like <i>Antonia</i> - she lost her teeth and her looks, yet she still retained her spirit.</p>
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Figure 2-2. Debbie Carpenter's Second Log

tific School as a student of natural history. He asked me a few questions about my object in coming, my antecedents generally, the mode in which I afterwards proposed to use the knowledge I might acquire, and finally, whether I wished to study any special branch. To the latter I replied that, while I wished to be well grounded in all departments of zoology, I purposed to devote myself specially to insects.

"When do you wish to begin?" he asked.

"Now," I replied.

This seemed to please him, and with an energetic "Very well!" he reached from a shelf a huge jar of specimens in yellow alcohol. "Take this fish," he said, "and look at it; we call it a haemulon; by and by I will ask what you have seen."

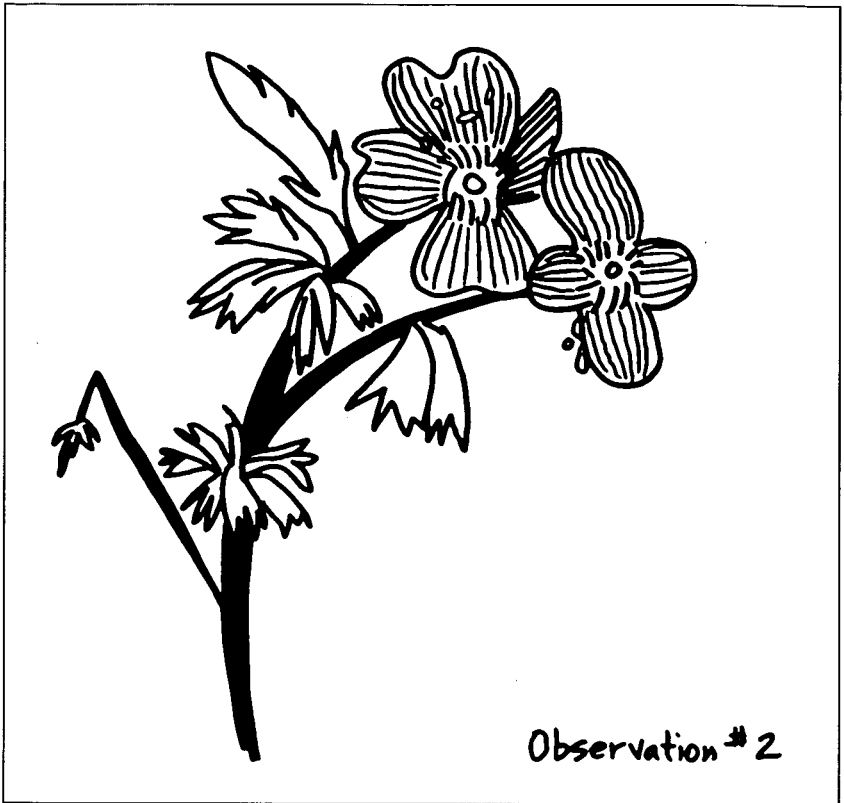


Figure 2-2. *Debbie Carpenter's Second Log (continued)*

With that he left me, but in a moment returned with explicit instructions as to the care of the object entrusted to me.

"No man is fit to be a naturalist," said he, "who does not know how to take care of specimens."

I was to keep the fish before me in a tin tray, and occasionally moisten the surface with alcohol from the jar, always taking care to replace the stopper tightly. Those were not the days of ground-glass stoppers and elegantly shaped exhibition jars; all the old students will recall the huge neckless glass bottles with their leaky, wax be-smearred corks, half eaten by insects, and begrimed with cellar dust. Entomology was a cleaner science than ichthyology, but the example of the Professor, who had unhesitatingly plunged to the bottom of the jar to produce the fish, was infectious; and though this alcohol had a "very ancient and fishlike smell," I really dared not show any aversion within these sacred precincts, and treated the alcohol as though it were pure water. Still I was conscious of a passing feel-

ing of disappointment, for gazing at a fish did not commend itself to an ardent entomologist. My friends at home, too, were annoyed when they discovered that no amount of eau-de-Cologne would drown the perfume which haunted me like a shadow.

In ten minutes I had seen all that could be seen in that fish, and started in search of the Professor—who had, however, left the Museum; and when I returned, after lingering over some of the odd animals stored in the upper apartment, my specimen was dry all over. I dashed the fluid over the fish as if to resuscitate the beast from a fainting fit, and looked with anxiety for a return of the normal sloppy appearance. This little excitement over, nothing was to be done but to return to a steadfast gaze at my mute companion. Half an hour passed—an hour—another hour; the fish began to look loathsome. I turned it over and around; looked it in the face—ghastly; from behind, beneath, above, sideways, at a three-quarters' view—just as ghastly. I was in despair; at an early hour I concluded that lunch was necessary; so, with infinite relief, the fish was carefully replaced in the jar, and for an hour I was free.

On my return, I learned that Professor Agassiz had been at the Museum, but had gone, and would not return for several hours. My fellow-students were too busy to be disturbed by continued conversation. Slowly I drew forth that hideous fish, and with a feeling of desperation again looked at it. I might not use a magnifying-glass; instruments of all kinds were interdicted. My two hands, my two eyes, and the fish: it seemed a most limited field. I pushed my finger down its throat to feel how sharp the teeth were. I began to count the scales in the different rows, until I was convinced that was nonsense. At last a happy thought struck me—I would draw the fish; and now with surprise I began to discover new features in the creature. Just then the Professor returned.

"That is right," said he; "a pencil is one of the best of eyes. I am glad to notice, too, that you keep your specimen wet, and your bottle corked."

With these encouraging words, he added:

"Well, what is it like?"

He listened attentively to my brief rehearsal of the structure of parts whose names were still unknown to me: the fringed gill-arches and moveable operculum; the pores of the head, fleshy lips and lidless eyes; the lateral line, the spinous fins and forked tail; the compressed and arched body. When I finished, he waited as if expecting more, and then, with an air of disappointment:

"You have not looked very carefully; why," he continued more earnestly, "you haven't even seen one of the most conspicuous features of the animal, which is plainly before your eyes as the fish itself; look again, look again!" and he left me to my misery.

I was piqued; I was mortified. Still more of that wretched fish! But now I set myself to my task with a will, and discovered one new thing after another, until I saw how just the Professor's criticism had been. The afternoon passed quickly; and when, toward its close, the Professor inquired:

"Do you see it yet?"

"No," I replied, "I am certain I do not, but I see how little I saw before."

"That is next best," said he, earnestly, "but I won't hear you now; put away your fish and go home; perhaps you will be ready with a better answer in the morning. I will examine you before you look at the fish."

This was disconcerting. Not only must I think of my fish all night, studying, without the object before me, what this unknown but most visible feature might be; but also, without reviewing my discoveries, I must give an exact account of them the next day. I had a bad memory; so I walked home by Charles River in a distracted state, with my two perplexities.

The cordial greeting from the Professor the next morning was reassuring; here was a man who seemed to be quite as anxious as I that I should see for myself what he saw.

"Do you perhaps mean," I asked, "that the fish has symmetrical sides with aspired organs?"

His thoroughly pleased "of course! of course!" repaid the wakeful hours of the previous night. After he had discoursed most happily and enthusiastically—as he always did—upon the importance of this point, I ventured to ask what I should do next.

"Oh, look at your fish!" he said, and left me again to my own devices. In a little more than an hour he returned, and heard my new catalogue.

"That is good, that is good!" he repeated; "but that is not all; go on"; and so for three long days he placed that fish before my eyes, forbidding me to look at anything else, or to use any artificial aid. "Look, look, look," was his repeated injunction.

This was the best entomological lesson I ever had—a lesson whose influence has extended to the details of every subsequent study; a legacy the Professor had left to me, as he has left it to so

many others, of inestimable value, which we could not buy, with which we cannot part.

A year afterward, some of us were amusing ourselves with chalking outlandish beasts on the Museum blackboard. We drew prancing starfishes; frogs in mortal combat; hydra-headed worms; stately crawfishes, standing on their tails, bearing aloft umbrellas; and grotesque fishes with gaping mouths and staring eyes. The Professor came in shortly after, and was as amused as any at our experiments. He looked at the fishes.

"Haemulons, every one of them," he said; "Mr. _____ drew them."

True; and to this day, if I attempt a fish, I can draw nothing but haemulons.

The fourth day, a second fish of the same group was placed beside the first, and I was bidden to point out the resemblances and differences between the two; another and another followed, until the entire family lay before me, and a whole legion of jars covered the table and surrounding shelves; the odor had become a pleasant perfume; and even now, the sight of an old, six-inch, worm-eaten cork brings fragrant memories.

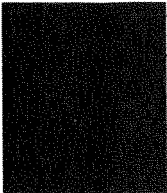
The whole group of haemulons was thus brought in review; and, whether engaged upon the dissection of the internal organs, the preparation and examination of the bony framework, or the description of the various parts, Agassiz's training in the method of observing facts and their orderly arrangement was ever accompanied by the urgent exhortation not to be content with them.

"Facts are stupid things," he would say, "until brought into connection with some general law."

At the end of eight months, it was almost with reluctance that I left these friends and turned to insects; but what I had gained by this outside experience has been of greater value than years of later investigation in my favorite groups.

Log Entry 5

There's certainly something positive to be said for Agassiz's method of teaching Scudder to become an attentive observer, but there might be some criticism, too. Take a few minutes and write your response to his method in your log. Since you have now had some



experience in drawing your own subject, include comments on Agassiz's line, "A pencil is one of the best of eyes." Remember that in your log you are recording your own ideas and feelings. Ask yourself whether you think you would be patient enough to follow Agassiz's requests; or, if you did, would the results be worth it?

Remembered Observation: Memory of a Childhood Experience

One of the aspects of knowing that is completely omitted from Agassiz's method of observing the dead fish is observing the fish alive. Patrick Mebine knows the tiger swallowtail, a butterfly, in a very different way from the way Scudder knows his preserved dead fish. Mebine wrote this poem when he was a senior in high school. The assignment was, first, to recall a close observation of some kind of animal, then to sketch the animal as remembered, and finally to write about it in such a way as to reveal its impact on the observer. Here is his poem.



Tiger Swallowtail

Patrick Mebine

It rested upon an insignificant flower,
Only its wings visible,
Floating with the wind as if in flight,
Slicing the air with its brilliant
Yellow and blackest black stripes,
Enveloping my thoughts, leaving no others.

Not wanting it to leave my view,
Eyes transfixed, hands positioned, I moved.
Cupped hands felt fluttering beauty
large as themselves.

Beating its wings against the sides
Of the captive jar,
The tiger swallowtail constantly attempted escape.
The tiny feet could not cling to glass sides,
Its wings too large to open; even if they could,

Obstruction lay ahead, refusing passage
To air on which they floated,
Air whose rhythm the wings longed to
Beat against.

Now I wait for the moment:
Will my hands form wings?
Can the lid open the passage to freedom
As it did for the tiger swallowtail
So long ago?

I stare at you, transfixed;
I want to touch your beauty,
But I can only see you
Through the glass walls.

When is a poem a fish or a butterfly? The question of how we know an animal or an object is very much in the forefront of debates among scientists, philosophers, and literary critics. Some critics, for example, think of a poem as one of Agassiz's dead fish; others see the meaning of a poem only by looking at it in relation to the poet and the poet's life, as well as in relation to the reader and the reader's experience.

Collaborating

Use the discussion questions that follow as starters for thinking about how you can know something.

- Can we really know an animal apart from its environment?
- Can we know it apart from its behavior?
- Can we know it apart from our own reactions?
- What are your ideas about close observation in the laboratory as opposed to in the field?
- What do you think Scudder's reaction would be to Mebane's behavior? To his poem? We can't know, obviously, but we can learn

something about both Scudder and Mebine by their writing. Which one would you rather talk with? Why?

- What do you think Patrick Mebine did with the swallowtail after he had captured it in a jar? What in the poem makes you think as you do?

Work in Progress

Write a draft of a poem describing the subject you've chosen, as you know it so far. Use Mebine's poem as a model for observation, but not for story line. Try to describe the intricacies of what you have observed and your reaction to your observation. Put this work in your writing folder for later consideration

Secondhand Information: The Library

Now that you have observed your subject on two separate occasions and have thought a good deal about how we see and how we know, you have a good working knowledge of your subject—enough to know that there is more to know about it than you can see from external observations. For additional details, you need to consult information that other people have obtained through extended observations or through laboratory analysis.

Log Entry 6

Secondhand Information: Library Research

Using whatever resources your library offers, look up information about your subject. You may need help from the librarian in identifying the specific kind of animal or variety of plant you have been observing. There are books, for example, that let you look up a flower by its color, a tree by the shape of its leaves. Using your dual-entry

notebook, record any data that adds to your own observations. The only criterion for your selection of data to record is whether you find it helpful in understanding your subject. For each resource you use (encyclopedia, field guide, essay, magazine) include the bibliographic data: title, author, publisher, date of publication, and page references.

Research Notes

Name of Subject of Research: _____	
Date: _____	
<p><i>Informative data</i> Include specific information about your subject, along with reference data: title, author, publisher, date of publication, and page references.</p>	<p><i>Personal response to data</i> Here you might record why a particular piece of information interested or surprised you. Should you find that the reference information disagrees with your own observations (and that may well happen), be sure to mention it.</p>

Keep all of your research notes in your writing folder along with your personal observation logs. Figure 2-3 provides an example of one such log entry.

Firsthand Research: Back in the Field

Log Entry 7

Observation 3: Firsthand Information (continued)

Follow the same procedure as for your first two observations. In your double-entry notebook, you might note anything that you see differently now that you have read *about* your subject. Figure 2-4 shows how Debbie Carpenter continued.




  	<p>Date of Notation: March 23, 1988</p> <p>Name of Subject: Johnny Jump-Up</p> <p>Bibliographic Data:</p> <ol style="list-style-type: none"> ① California Spring Wildflowers - Philip A. Munz ② Wild Edible Plants of the Western U.S. - Daniel R. Kirk ③ Wildflowers of the West - Mabel Crittenden & Dorothy Teifer ④ Wildflowers of America - H.W. Rickett <table border="1"> <thead> <tr> <th data-bbox="212 454 510 503"><u>Interesting Information</u></th> <th data-bbox="574 454 893 503"><u>Personal Response to Data</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="212 519 510 795"> <p>① The Johnny Jump-Up is common on grassy slopes below 8500 ft. from the Sonoma County to lower California. Petals have some brown on the back and brownish streaks on the face of the petal.</p> </td> <td data-bbox="574 519 893 730"> <p>The Johnny Jump-Ups that I observed did not have the brown streaks. The black lines which were on the front didn't look brown at all. The back was dark purple and lavender.</p> </td> </tr> <tr> <td data-bbox="212 812 510 1128"> <p>② The leaves and stems are good eaten as greens. It is found on dry grassy slopes at 7000 ft. in the foothills and Central Valley to the inner coast ranges to San Diego to South Oregon. They have thick fleshy roots, with tips that curve upward.</p> </td> <td data-bbox="574 812 893 1128"> <p>This interested me. I now know that if I'm ever lost, I can eat Johnny Jump-Ups. The information about the 7000 ft. conflicts with source #1's information. It is apparent that this is a hardy little plant! It lives all over the place.</p> </td> </tr> </tbody> </table>	<u>Interesting Information</u>	<u>Personal Response to Data</u>	<p>① The Johnny Jump-Up is common on grassy slopes below 8500 ft. from the Sonoma County to lower California. Petals have some brown on the back and brownish streaks on the face of the petal.</p>	<p>The Johnny Jump-Ups that I observed did not have the brown streaks. The black lines which were on the front didn't look brown at all. The back was dark purple and lavender.</p>	<p>② The leaves and stems are good eaten as greens. It is found on dry grassy slopes at 7000 ft. in the foothills and Central Valley to the inner coast ranges to San Diego to South Oregon. They have thick fleshy roots, with tips that curve upward.</p>	<p>This interested me. I now know that if I'm ever lost, I can eat Johnny Jump-Ups. The information about the 7000 ft. conflicts with source #1's information. It is apparent that this is a hardy little plant! It lives all over the place.</p>
<u>Interesting Information</u>	<u>Personal Response to Data</u>						
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<p>② The leaves and stems are good eaten as greens. It is found on dry grassy slopes at 7000 ft. in the foothills and Central Valley to the inner coast ranges to San Diego to South Oregon. They have thick fleshy roots, with tips that curve upward.</p>	<p>This interested me. I now know that if I'm ever lost, I can eat Johnny Jump-Ups. The information about the 7000 ft. conflicts with source #1's information. It is apparent that this is a hardy little plant! It lives all over the place.</p>						

Figure 2-3. Debbie Carpenter's Third Log

Secondhand Information: Other People

We learn about something from our own observations, from reading and library research, and also from talking with other people. Discuss the subject of your observations with at least two other people. As you talk with them, explore whatever knowledge, personal mem-

③ It grows on sunny spots on grassy hills. The petals are not the same size, each has an ear-like part at the base. It grows to be between 4 and 13 inches. It has very thick root-stocks and the greens were eaten by California Indians.

The ones I observed were about five inches tall. I don't think they could have supported themselves had they been any taller. I am always fascinated by what the Indians did. I wonder how many Indians died experimenting with which plants were edible and which weren't.

④ The "Viola refinesquii" varies in color, from almost white to yellowish or purple and has a large yellow "eye". Its stipules (small leaves at the base of a leaf stalk) are large and cut into narrow segments giving the base of the leaf a feathery appearance. It grows in fields and roadsides from New York to Georgia and westward to Colorado and Texas and is very abundant.

I found out that the Tommy-rump-up is part of the violet family. I hadn't known that. The leaves which are up and down the stalk are segmented and lie in a circular plane about the plant's stem.

Figure 2-3. Debbie Carpenter's Third Log (continued)

ories, and associations they are willing to share with you about your subject.

To prepare for your interview, work with a partner or small group to talk about some of the ways you can encourage people to talk to you about your subject. It would be helpful to check with the whole class to find out if anyone knows of a particular person who might

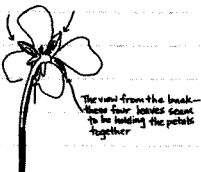
<p>Date: March 23, 1988</p> <p>Environment:</p> <p>Location: In the front yard in front of the house</p> <p>Weather: Warm yet shadowy</p> <p>Time of Day: 5:00</p> <p>Length of Time of observation: 12 minutes</p>	
<p><u>Descriptive Notes</u></p> <p>The back of the S-S-II has the end of the flower coming together and seems to be held together by those four little green leaves. The plant doesn't have any odor besides a normal plant odor. The part that resembles a three leaf clover is a darker purple and has more veins. The center is the brightest yellow I have ever seen. The leaves of this plant taste like a cross between lettuce and clover.</p>	<p><u>Reflective Notes</u></p> <p>When I read that the Indians used to eat these, I had to try it! It was pretty good! I want to be one. I was thinking of how the Indians were so brutally killed off. Sometimes I am really ashamed by my country's past. America, before the white men, was like this flower - blooming with its radiant color. Then they came, saw how beautiful it was and wanted it for themselves. As it slowly wilted, they saw it was dying and put it in water. It has never regained its original beauty and vibrance.</p>
	

Figure 2-4. Debbie Carpenter's Fourth Log

be good to interview. Remember that this interview is a very informal discussion, not necessarily with an expert, but with someone who has had some experience observing your subject. In the case of a backyard tree, for example, you might find a neighbor who knows how it came to be planted where it was. If you are observing spi-


	<p>Date: March 25, 1988</p> <p>Environment:</p> <p>Location: Front of the house, in the yard</p> <p>Weather: Chilly</p> <p>Time of Day: 6:35 p.m.</p> <p>Length of time of observation: 14 minutes</p> <p><u>Descriptive Notes</u></p> <p>It's dusk out and the colors look iridescent. There is no wind blowing and the yellow center looks like it's lighting up the rest of the flower. The heads aren't turned toward the sun.</p>	<p><u>Reflective Notes</u></p> <p>It's almost as if it wants to go to sleep. It would be neat if it could close its petals and go to sleep - but it doesn't happen, I've checked. It looks tired - the face is usually turned upwards towards the sun, but now they've turned sideways, looking towards the ground as if it was a child caught stealing cookies from a cookie jar. It reminds me of a quiet determined person who is never noticed, someone who works hard and then goes home alone, unappreciated.</p>
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Figure 2-4. Debbie Carpenter's Fourth Log (continued)

ders, you might ask a child to tell you about *Charlotte's Web*. You are looking for personal responses as well as any additional information about the history or habits of your subject.

Record your brief interviews in your double-entry log as follows:

Log Entry 8

Personal Interview Notes

Name of Subject of Research: _____	
Date: _____	
<i>Person Interviewed:</i> Brief notes about the person: for example, brother (age 11) or friend of my mother	<i>Ideas Contributed:</i> What did this person add to your knowledge or understanding of your subject? What associations or personal stories did this person tell you?

Add Log Entry 8 to your writing folder. Figure 2-5 is an example of this exercise.

Making Comparisons

One of the ways we learn to know a thing is to make comparisons between the object we are studying and something we already know about. Simple comparisons, *similes*, are so common in our everyday speech that we seldom stop to realize that we are actually comparing two things, or comparing some quality of one thing with the same quality of another. Similes usually operate on a descriptive level, comparing how one animal or object looks like or behaves like another. A negative simile points out qualities that distinguish something by separating it from something else that may share certain features.

Working either alone or with a partner, brainstorm as many possibilities for similes as you can for your object of study. Ask yourself, “What is it like?” “What is it unlike?” For example, a butterfly could be described as *like a dream* that is gone upon awakening, or *unlike butter*, which gave it its name in all ways except color.

<u>Log entry #5</u>	<u>Ideas Contributed</u>
<u>Person Interviewed</u>	
<p>Mary Ellen Scott - teacher at Chipman Alias: "Mom"</p>	<p><u>Desc:</u> Member of the violet family that is purple and yellow, or all yellow or violet and purple. There are many different violets - colors. It has a lot of blooms and if you pick off the dead ones, new ones will replace them. It has a short stem about 3 inches long.</p> <p><u>Thoughts:</u> The name is very appropriate - it looks as if they're jumping up at you, even though it grows close to the ground. It is fragile looking but in reality is very healthy. All of the little faces are turned towards the sun.</p> <p><u>Memories:</u> When she was in her flower pressing stage, these pressed the best because they retained their original color. She also remembers that her mother was the first one to tell her what they were called and bought her her first ones.</p>

Figure 2-5. Debbie Carpenter's Fifth Log

<u>Person Interviewed</u>	<u>Ideas Contributed</u>
Lianne Scott - Perry's little sister Age 9½	<u>Desc:</u> It looks like a teddy bear - the little three leaves look like a face and the other two look like ears. <u>Memories:</u> She could remember squishing them with their bikes and feeling scared that mom would find out.

Figure 2-5. Debbie Carpenter's Fifth Log (continued)

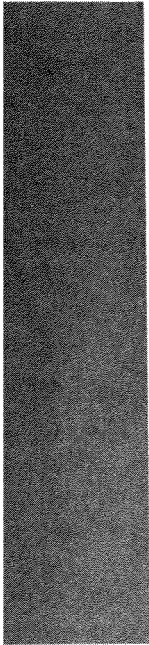
Log Entry 9

Extending Comparisons

1. Select several of your similes, the ones you think are most promising for working into your writing, and record them in the left half of the chart that is Log Entry 9. Set it up as follows:

Name of Subject of Research: _____	
Date: _____	
<i>Similes</i> <i>Explanations</i> What is your subject like? Write as many similes as you can. Explain your ideas about the most promising similes. Follow your ideas as far as they will go.	<i>Metaphors</i> <i>Extensions of Metaphoric Ideas</i> Brainstorm ideas for metaphors. Select the most promising metaphor.

2. Now move from the small comparisons, the similes, to the more extended comparisons or *metaphors*. In a metaphor, the comparison is implied; there is no expressed *like* or *as*. Although



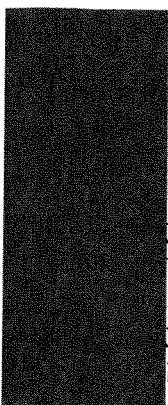
metaphors are like similes in that they are comparisons based on some similarity between two things, a metaphor issues from more complex interactions of perceptions, feelings, and thoughts than is true for most similes. A good metaphor makes us think about our subject in a new way and often stimulates reflection. Although some metaphors, like the “flowering” of a life, may have been used a great deal in poetry, writers can often think of new ways to present metaphors. While one person might focus on the dropping of petals as a metaphor for death, another might focus on the petal dropping as the beginning of seed formation and the birth of a new life.

Think of possible metaphors for your subject, based on your experience of observing and researching your subject. Brainstorm possibilities with a partner. When you have generated a few possibilities, look at your list and decide which single metaphor seems to have the most potential for developing an observational poem or essay about your subject. Add your metaphor possibilities to the right half of the chart for Log Entry 9.



Graphic

Like the professionals, you now have a great deal more information about your animal, plant, or object than you will ever use in one piece of writing. To get a picture of what you know about your subject, make a *graphic map*, organizing the information from your log entries in a meaningful way. Use your most promising extended metaphor to help you formulate a focus for your map. For one student, the study of spiders suggested the focus of a web, with observations and research data written on the lines that formed the strands of the web. Observations of a vine, for another, contained several strands, one for personal observations, one for secondhand research, one for personal associations, and one for metaphorical comparisons—all written on hanging vine leaves. Let your imagination come up with interesting ways to organize the different aspects of your knowledge. Record only what you, in retrospect, find useful as you think about connecting your observations to your chosen metaphor.



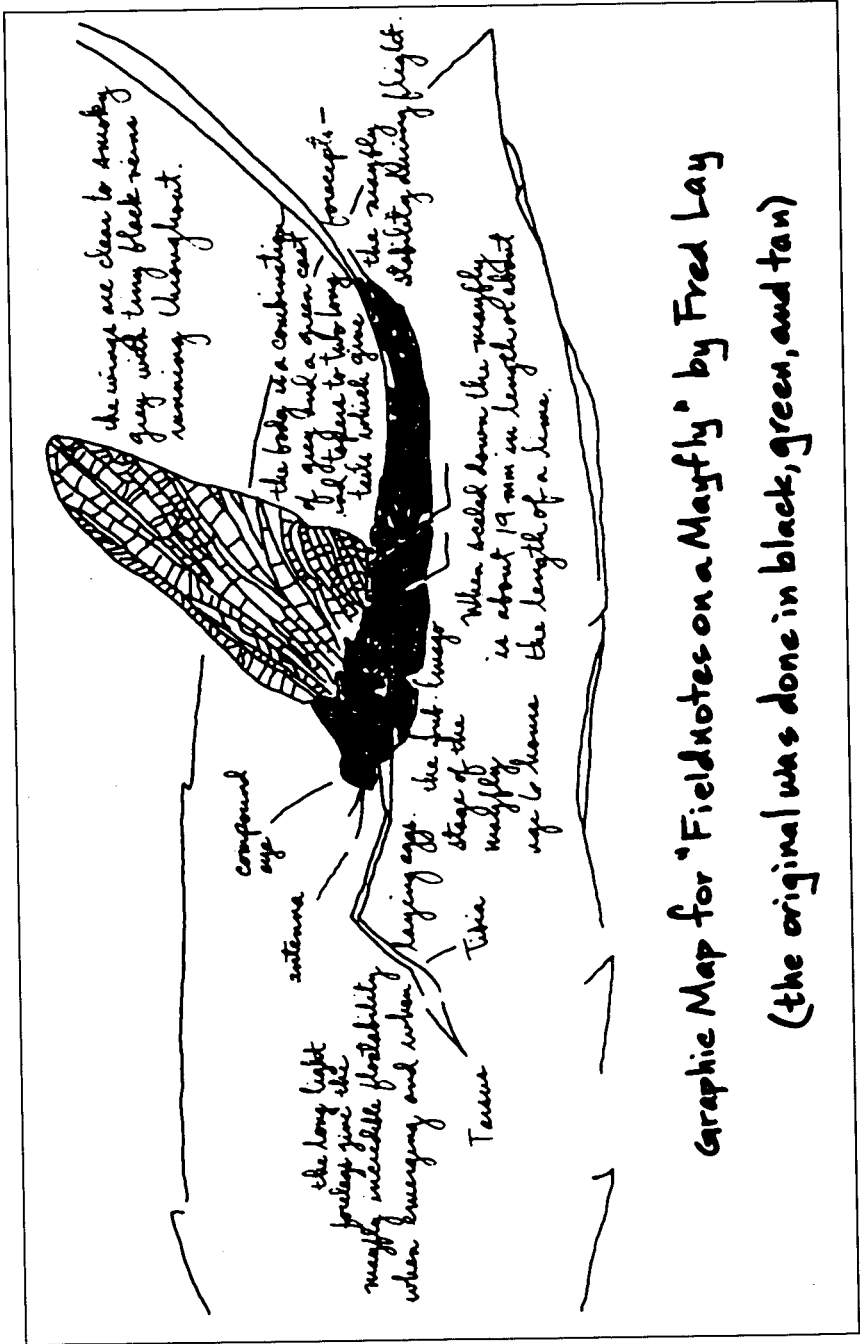
Include one or more drawings of your subject and distinguish among the various ways of knowing—firsthand information, secondhand information, metaphor, personal associations, and memories. Include information about the environment, the effect of weather or light. Mapmaking is a process of synthesizing and selecting; include only information that you find helpful in knowing your subject, and present it as clearly as possible, differentiating the various kinds of information by design, color coding, or placement. If two or three of you in the class have studied the same subject, you might want to get together and draw a group map. Figure 2-6 provides an example.

Reflecting on Field Notes

Before you write your own essay or poem, you're going to look carefully at how one writer's personal observations and secondhand knowledge led, through an extended metaphor, to reflections about life in general. Read the following short essay from the column "Talk of the Town" in *The New Yorker* (September 4, 1971). Analyzing and modeling how one writer integrated personal observations with secondhand research and metaphorical ideas will give you inside information about one writer's thought progressions.

Field Notes on a Hummingbird

These field notes have come in from a bird-watcher on Martha's Vineyard: "The hummingbird builds her nest of cinnamon ferns and spider webs, shingled with lichens to resemble a small gnarl on a pine branch. Miraculously, we've spotted one just at eye level beside the dirt road that leads to the place we've rented here. Two white eggs, smaller than lima beans, have hatched, and the mother is whirring here and there faster than ever. (What a metabolism in those intense, short-lived, beautiful little beings!) For nectar, she has jewelweed, trumpet vine, and loose-strife flowering in the area; I have been told that she provides a slurry of bugs for her young. Mostly beak at this stage, they wait for her, motionless in the nest. And yet they'll be flying themselves within a week, and the migration schedule is such that they won't be found at all by mid-September. Of course, we won't be here to look for them. The summer always passes too rapidly, and I have been thinking that a *vacation*, with its concentration of compelling impressions, *can become a disquieting metaphor* for mortality itself. When it's



Graphic Map for "Fieldnotes on a Mayfly" by Fred Lay
(the original was done in black, green, and tan)

Figure 2-6. Fred Lay's Graphic Map

half gone, if the weather has been good and there have been no accidents, you think you'll still have ample time for everything you want to do. But then, suddenly, even though you haven't stopped enjoying yourself, you have to face the fact that in a limited number of days this period of freedom will be at an end. We've taken a picture of the hummingbird at work, but her wings beat maybe eighty times a second, and I had to warn the kids that even though we use the fastest shutter speed on our camera, there is sure to be a blur."

Analyzing Structure

Using your own field and research experience, work alone or with a partner to make detailed notes on how this writer's mind moved from one kind of knowing to another. In analyzing the thought progressions of "Field Notes on a Hummingbird," distinguish the different kinds of information each sentence or part of a sentence contains. Notice the firsthand or eyewitness observations about the ferns, spider webs, and lichens (lichens are a kind of fungus/alga combination, flat, like shingles) that the hummingbird uses to build her nest. You may have to make some guesses about whether information is first- or secondhand, but make your guesses logical. We know, for example, that the wildflowers *jewelweed*, *trumpet vine*, and *loose-strife* are growing in fields on Martha's Vineyard because the hummingbird drinks the nectar from them. It is logical, then, that the writer would have seen and identified these plants. Look for examples of all of the kinds of knowing you experienced in doing your field study:

- Firsthand information
- Secondhand information—research
- Secondhand information—other people
- Comparisons
- Metaphorical leaps through personal reflection or association
- Development of metaphor

If you have a photocopy of the essay, you can make your notes right on the essay itself. If you are working from the essay in the book, set up your analysis by jotting down the first words of a sentence on the left side of your paper and your identification of what kind of knowing led to the statement on the right. A couple of lines might look like this:

“The hummingbird builds her
nest of cinnamon ferns. . . .” *Firsthand information*

“shingled with lichens to
resemble a small gnarl. . .” *Simile*

Work through the entire essay this way, section by section, charting the structural sequence of the writer’s thoughts.

Modeling the Essay

Modeling is one way of reading an essay from the inside out, from the author’s perspective. Use the structural sequence you worked out for “Field Notes on a Hummingbird” as a rough guide for an essay about the plant, animal, or object that you have observed, studied, and mapped to include in your writing folder. Remember that you will use only a fraction of what you know about your subject. Your focus is to write an essay in which you use very close observations and other ways of knowing your subject (books, people, comparisons) to reflect on some aspect of your experience. Let your favorite metaphor be the springboard from observation to reflection. Suggested steps for writing your essay follow.

1. Chart the sections of your essay

List the kinds of information or thinking the author drew on as each appears sequentially in the hummingbird essay. Beside each notation, make notes, using your graphic map, of similar kinds of information that you might use in your essay. Notice how much of the essay is an expansion of the metaphor on the ephemeral quality of the hummingbird with, first, a vacation, then, more profoundly, the transitory aspects of human life.

2. Write a first draft

When you have blocked out the sequence of ideas, write a first draft out of your own field notes. Begin with “These field notes have come in from a . . .” Finish with a description of yourself as the naturalist and the location where you made your observations.

3. Try out your essay on a reader

Exchange first drafts with one or more members of your writing response group. Help each other revise the first draft by looking closely at revisions suggested by the following guidelines:

- Block out the structure of the paper and see how it moves through the stages of the model: opening, personal observation (interrupted by an exclamation as in the original essay), second-hand information, turning point, metaphor, expanded metaphor, personal observation.
- Identify the turning point, the sentence that moves from personal observation to reflection. If it is difficult to find, you might ask the writer to identify it for you.
- Look carefully at the last sentence: Is it a personal observation? In the original the last sentence depends for its meaning on the reader's understanding of the metaphorical subject of the essay. Does this sentence carry that implicit meaning? If not, you might have some suggestions to help the writer select a single observational detail that will carry the weight of the metaphor.

A student who completed this assignment has a message for you: "The hardest part for me, when I did this, was the last line. I got the idea that the last line was really important. It seemed simple at first because it was just another firsthand observation, but when we talked about it in groups, we realized that the wings beating too fast for the camera stood for the whole metaphor of life, of how it goes by too fast for us to get a picture of it. I had trouble doing that with my essay, but my partner and I worked on it and I think I got it."

Another student said, "Tell them not to forget the quotation mark at the end."

Had you noticed that the entire essay is in quotation marks, as if it were a letter that the writer is enclosing for us?

4. Revising for publication

After discussing your trial run with a partner or writing group, revise your essay until you are satisfied with it. Your teacher may decide to have the essays attached to the graphic maps on the bulletin board or to collect the essays in a class booklet. Following are two student examples of essays written as models of the hummingbird essay. The first one is by Debbie Carpenter, who contributed the log entries you have already seen. The second one is by Michael Hendron, who wrote this version for a state writing assessment after he had completed the field notes assignment in his class.

Field Notes on the Johnny-Jump-Up

Debbie Carpenter

These field notes have come in from a meadow hopper of Alameda's famous front yards: "The Johnny-jump-up is a small five petaled purple flower whose three main petals resemble the lucky Irish's four leaf clover. Incredibly, we've spotted a bright patch of them, which, if I remember correctly was there last year. Two small petals, smaller than sunflower seeds, peek out shyly between the main group of petals and the plant's small leaves blow softly in the ever-shifting breeze. (What endurance can be seen in those awe-inspiring little flowers!) Colorwise, the petals are a rich deep purple and the bright yellow center radiates its color onto the other petals making it a mirage of violet, yellow, and black; I have been told that it flowers year after year. These perennials grow in large bunches and seem to support each other as they are so tightly packed together. Right now, these flowers are in full bloom, radiating their bright colors to people passing by. Later, as the winds blow and the rain pours, this hearty plant seems to vanish as it lacks the companionship of warm weather and fresh spring breezes. It occurs to me that the spurts of growth and individuality of these plants interacting within the network of flowers can be seen as a metaphor for man's intellectual growth as well as his ability to coexist as an individual and a contributing member of society. When a person is a member of a group, he can expand and experience new things, but only up to a certain point. When this point is reached, the individual needs to step back from the group and reflect on himself and what he has learned. Only after this period of reflection can one go back to the group, contribute to it, and flourish once again. The group lends the individual strength and support in its fight to stand up for its own identity and beliefs. As I look upon the swaying bright mass of purple, an ever-shifting tide is created—one which sways dangerously close to the ground, only to be lifted up once again by the revitalizing breezes and the continual support of the tightly packed network of Johnny-jump-ups.

Field Notes on the Turkey Vulture Observed on Las Trampas Ridge

Michael Hendron

My trek into the hills above my small town, away from all the traffic, has been worthwhile. I have just spotted two turkey vultures feeding on a dead animal, although they are too far away for me to

see what animal it once was. The turkey vulture's scientific name is *cathartes aura* or "cleanser from the upper world," which seems most fitting since they eat the carrion which might otherwise decay and pose a health threat. They are not beautiful creatures, in fact, they are downright ugly with their naked, wrinkled heads, their hooked yellow beaks, their long, sharp talons and their dark feathers. But when these birds take wing and begin to fly, a transformation occurs. Like angels, they glide above the ground—so gracefully and peacefully. Two more vultures have just glided in from places unknown. They fly with their broad wings (their wingspan is almost six feet) held in a wide V position, floating effortlessly in rising currents of air, soaring in huge, endless circles. Above me they are scanning the ground below for any sign of death with their powerful black eyes, making invisible movements which somehow control their flight. Oh, how beautiful they are! I would give anything to be able to leap into the air and join them, but wouldn't we all? As I reflect upon this great desire—to fly on feathered wings like the turkey vultures—I see it as a powerful metaphor for the great struggle of human existence itself: to be able to forget our own mundane state and be rid of our problems so that we might achieve something grand and glorious, almost spiritual. We build and fly planes and even hanggliders in an effort to break free from the ugliness of civilization, knowing that from above it takes on a new beauty. We try our best, but we are never able to reach that state of pure freedom the turkey vulture experiences. And in the end, we must always return to Earth. Our own grand desires are magnified a million times in the once-trivial lives of the turkey vultures. The sun is setting and I must leave now, but the vultures must also return home to their eggs, in some fall tree or beneath an overhanging cliff.

Seeing and Not Seeing

The eye is a complex organ, allowing images to travel to the brain in different ways. When we focus directly on something, we "see" primarily with the *cones*, cone-shaped cells in the retina that are sensitive to color and intensity. What we look at directly, we see in sharp outlines with clear delineations. When we are not focusing directly on something, however, the retina receives impressions

through different cells, the *rods*, which are sensitive to low intensities of light. We see vague shapes, less distinct outlines, muted colors. Try the following experiment to get a sense of the difference between focused and unfocused seeing.

1. Sit up in your chair, with your feet on the floor, and relax your body, without slumping. Take two or three slow, deep breaths.
2. Select an object in the front of the room to focus on. You need to be able to see it clearly, without strain, and without moving your head.
3. Gaze steadily at this object without straining your eyes. Notice all of the details you can—lines, angles, curves, colors. You are now receiving clear images on the cones in your retina.
4. As your eyes begin to tire (the technical word is *fatigue*), let them droop slightly. (Don't go to sleep!) Let the object go slightly out of focus. You may find that you become more aware of the area around the object. During this kind of low-intensity vision, the rods in the retina are picking up the images.
5. Blink your eyes and focus again directly on the object. The environment may seem to disappear as the object clears.

Wallace Stevens calls this movement between focused and unfocused vision “a seeing and unseeing in the eye.” While direct seeing—focusing on the size, shape, and color of an object or scene—lends itself to the kind of meticulous observations we have emphasized so far in this chapter, indirect “unseeing” can often reveal subtle qualities of feeling and tone. Stevens’s poem “Thirteen Ways of Looking at a Blackbird” presents just such an example. Read this poem for tone and feeling—for the unseeing. Don’t worry about understanding in the usual way.

Thirteen Ways of Looking at a Blackbird

Wallace Stevens

I

Among twenty snowy mountains,
The only moving thing
Was the eye of the blackbird.

II

I was of three minds,
Like a tree
In which there are three blackbirds.

III

The blackbird whirled in the autumn winds.
It was a small part of the pantomime.

IV

A man and a woman
Are one.
A man and a woman and a blackbird
Are one.

V

I do not know which to prefer,
The beauty of inflections
Or the beauty of innuendoes,
The blackbird whistling
Or just after.

VI

Icicles filled the long window
With barbaric glass.
The shadow of the blackbird
Crossed it, to and fro.
The mood
Traced in the shadow
An indecipherable cause.

VII

O thin men of Haddam,
Why do you imagine golden birds?
Do you not see how the blackbird
Walks around the feet
Of the women about you?

VIII

I know noble accents
And lucid, inescapable rhythms;
But I know, too,
That the blackbird is involved
In what I know.

IX

When the blackbird flew out of sight,
It marked the edge
Of one of many circles.

X

At the sight of blackbirds
Flying in a green light,
Even the bawds of euphony
Would cry out sharply.

XI

He rode over Connecticut
In a glass coach.
Once, a fear pierced him,
In that he mistook
The shadow of his equipage
For blackbirds.

XII

The river is moving.
The blackbird must be flying.

XIII

It was evening all afternoon.
It was snowing
And it was going to snow.
The blackbird sat
In the cedar-limbs.

In this poem, Stevens, who can be the most careful of direct observers, practices the art of unseeing. The title, "Thirteen Ways of Looking at a Blackbird," is deliberately misleading. Stevens looks everywhere and defines the blackbird by "unfocusing" until he has thirteen different ways of looking and seeing. By focusing on the background, a sense of the person's view of blackbirds emerges.

Work in Progress

To practice "unseeing," draft a parallel poem using the following steps:

1. Select an object that you know well and try Stevens's technique of focusing on thirteen very specific ways of looking; each in some way will illuminate or define your subject.
2. Write up each of your thirteen "ways of looking" in short stanzas of one to three sentences each.
3. Try illustrating each stanza of your poem. You can either draw separate scenes or just use a few strokes of line and color to give quick impressions of each stanza. Some students have created mobiles of poems with each stanza hanging on a separate string, while others feel that pen and ink or watercolors best convey the impressionistic sense of their poems.

Here are two students' versions of thirteen ways of looking. In the first poem Scott Harper closely models Stevens's "Thirteen Ways of Looking at a Blackbird." In the second, Rebecca Hopkinson makes up an elaborate form, alternating single lines with a very specific stanza pattern using both rhythm and rhyme. Following her poem is her explanation of process, detailing how she went about composing it.

Mirror

Scott Harper

I look into the mirror
and see a face like my own.
Which is the reflection?

A reflection in the mirror.
It is not her own.
"Who's following me?!"

The deceased's room.
A mirror covered with powder.
Why do people hurt themselves?

In darkness,
does the mirror duplicate me?
If my back is turned,
does it contain my shadow?

Self-consciousness comes
from peers, and oneself.
When looking into a mirror,
one sees inadequacy.
In isolation, if a mirror is found,
does the owner feel
the same deficiency?

The clerk watches the boy
From the idle mirror.
How can a child live
in a world with no trust?

Broken mirror on the floor.
Shattered fragments of my fortune.

The circus mirror
reflects an unrecognizable image.
Through a small imperfection,
everything changes.
A twisted reality of life.

The water reflects.
Liquid glass.
Ripples destroy an image
never seen again.

Mirror.
Spegel.
Espejo.
Miroir.
Spiegel.
Falamin.
Mirror.

Helpless. Closing in. Afraid.
The mirror reflects light in my eyes.
Needles, scalpel, mirror.
Dentist devices of torture.

On the other side of the mirror,
is there another world copying our own?
Or are we the ones copying it?

Mirror:
The magic glass of a blind man's dream.

Theatre in Thirteen Eyes

Rebecca Hopkinson

I. The house that lived a thousand years, falls in a wave of ocean tears

And as we watch in anxious fear, the actor's voice makes waters rise
And break and flood before our eyes.

II. Just as Nature envelopes all else, the stage is swallowed by voracious Nature.

III. The writer keeps a lively pen to keep our minds from out the fen
Giving birth and killing men, as actors suffer o'er their parts
To press them further 'pon our hearts.

IV. A meal combines the goods of the earth; the theatre: those of the world.

V. Their bodies armed with weaponry, their minds awhirl with strategy,

The soldiers charge the enemy. Directors form a cunning plan
To scourge the stage and spare no man.

VI. If the dark of night is coarse unsurety and the morning light a promise of quiet strength,
Theatre is both sunrise and set.

VII. To turn base metals into gold to satisfy the kingly mold
Was noble game in days of old. Actors breathe life into the air,
Make gold when dust is all is there.

VIII. The chill waters of the lake reflect what is best left untold; the theatre reflects everything.

IX. The ballerina concentrates, the breathless audience awaits
She leaps and soars, her fear abates. The actor pauses, flushing he,
And leaps into soliloquy.

X. The empty man stands alone, the lone stage stands empty

XI. Four times a year the seasons change and with them moods do rearrange

Our feelings play a varied range. The actor turns from sun to rain
To snow and air and back again.

XII. Do you watch theatre, or does the theatre watch you?

XIII. You've rowed to the end of the stream; you're nothing but wet,
it would seem.

Life, they still say, is but a dream! As Robin makes his fond
amends,

Our simple play is at its end.

Why

Rebecca Hopkinson

On the very day we were given the assignment, I wrote a poem entitled "Thirteen Variations on Theatre," a very simple, dull work whose overall quality plainly revealed that its author was very simple and dull, or surprisingly complex and exciting and merely wearing the guise of a very simple, dull person. Two days after this was composed, it began to decompose and I was once again poemless. I remained in this state until Sunday, our final draft due the next day. My mother describes this as my "usual careful planning and foresight."

At 4:30 I sat down with a list of words. Theatre as: *music, dance, science, painting, writing, a game, war, life, weather, a natural disaster, a disease*. Looking away, I pointed at one of the words, which happened to be "natural disaster." I ransacked my mind for rhyme schemes and forms, and, not being able to twist my words around any of them, created the three-line, 50-syllable stanza, which may not really be my creation, but that's hardly the point.

I tentatively wrote the first line, dredged up two rhyming words and fumbled around with lines until I had something worthy of recording. For the next two and a half hours, and three and a half hours after my quesadilla[sic]/"60 Minutes" break, I continued to write in that form, some stanzas manifesting themselves on the paper before I had due time to think, others rolling around inside my head for half an hour before I got the first line straight. After seven of these stanzas and aches in the joints of my hand, I discovered that I was tired and in no state to spend another six hours writing, so I used my method of choosing topics from the list, wrote six sentences that sounded as though they might mean something, arranged the poem into its present order, copied it, and smiled myself to sleep.

Some of the choices I made in use of punctuation are credited to T. E. Lawrence, whose epic *Seven Pillars of Wisdom* introduced me to the beauty of the colon and semicolon, and was in turn introduced to them by George Bernard Shaw. Some of the words, "fen" being one

of them, rhymed with my first line, and I supposed that it was actually a word so I looked it up and found its meaning quite useful. The rest is simply my vocabulary, knowledge, and use of words, none of which, in my opinion, are entirely deserving of such praise as they have just received. And this is not modesty: know that much.

Sometimes an image from our memory just presents itself as a poem when we least expect it—while we are riding along the freeway or sitting at home reading the newspaper. The next poem happened that way. Peter Stillman read in the paper that scientists no longer believe groups rely on leaders. In an article describing the flocks and schools of thousands of birds and fish, the reporter wrote that researchers are only beginning to understand the complexity and synchronization that enables 10,000 starlings to wheel in formation over a cornfield. The images in the article triggered an image in Peter's memory, resulting in this poem:

Outside a house
I lived in once
some starlings school across
a yellow sky
the whole of them
turning like
a single thought
a law come into being
the birds being words
in the law

It was probably a very similar sight that Joyce Spreyer recalled when she wrote her poem "Blackbirds."

Blackbirds

Joyce Spreyer

A wheel of blackbirds
turns
slicing sky.

The formation
dissolves:
birds light
on the naked crossbeams
of a half-built house.

I stop—
remembering
this place: the old oak,
branches black with birds;
fragile
dun-colored nests that clung
to clumps of grass, riding
the wind.

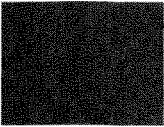
Once I watched a single bird,
wings aflame,
drive the others, one by one,
out of the oak
beyond invisible fences
strung with song.

The oak is gone now,
the earth scraped
clean. Skeleton limbs
are black with birds.

Peter Stillman's starlings turned like "a single thought," while Joyce Spreyer's "wheel of blackbirds / turns / slicing sky." John Updike referred to such a mass of birds forming a single thought as "a scarf of birds." The next time you see a great multitude of birds, look and ask yourself the question the scientists ask: What impulse drives these birds to act in unison? It may be that the scientist/poet who sees them as some variation of "a scarf," "a single thought," or "a wheel" will write another poem about blackbirds. The same scientist/poet may well come upon the metaphor that leads to scientific understanding of this as yet mysterious phenomenon.

Log Entry 10

For the next few days, keep your log handy as you walk or ride to school, read your history or science homework, watch television, or read the paper. Notice when something you see or read triggers an image from your memory—something you probably have never focused on but carried around with you buried somewhere among the billions of neurons in your brain. Jot the image down. Then, when



you have time, try extending the image, as Peter Stillman did with the image of the school of starlings, letting it turn into a thought, a “law” formed of birds/words.

Building Your Course Portfolio

As the last project of this chapter, you will add to your portfolio the finished field notes essay and a selection of other writing that grew out of your observations and reflections. It should represent your best work and become an evaluation of your work over the course of this chapter. You may want to review the introduction to the course portfolio in the first chapter of this book.

Revising and Editing

Using your log and works in progress from your writing folder, look at all the possibilities you have generated during your work in this chapter. Some pieces may well be finished already; other promising pieces may at present be notations in your log. Since the portfolio represents your best work, the writing you want to share with others, your goal now is to select those pieces that you want to work on. You may want to include some of your log entries as well as the poems, memory writings, stories, or essays that you began. Get together with the other members of your writing group so that you can help evaluate each other's work. Preparing the portfolio may involve some extended revising and editing; in this process, use the help of your writing group.

Reflecting

Create a new section in your portfolio labeled Chapter 2. Then, when you've made all of your selections—reading, writing, and graphic—arrange the pieces in an order that suits you and prepare a table of contents. Write an introductory essay reflecting on what you've chosen to place in the portfolio and why. This essay should convey to the readers of your portfolio—other members of your class, your teacher, perhaps friends and members of your family—your best thinking and writing. Since this chapter was concerned with helping you develop your powers of vision, we hope that the portfolio will reveal your sensitivity and skills as a careful observer.