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MOSAIC

A Reading Skills Book

II

Brenda Wegmann
Miki Prijic Knezevic
Marilyn Bernstein



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RANDOM HOUSE NEW YORK

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CHAPTER 1

LANGUAGE AND LEARNING 1

Selection One:
Native Americans, Jamake Highwater 2
Selection Two:
In France You Must Pass *"le bac"* . . .
or Leave the Elite, William Echikson 10
Selection Three:
Think on These Things (Selections), Krishnamurti 19

CHAPTER 2

DANGER AND DARING **25**

Selection One:
Adventurers of the Eighties 26
Selection Two:
A High Dive, L. P. Hartley 32
Selection Three:
The World We Lost, Farley Mowat 40

www.IELTS4U.blogfa.com

CHAPTER 3

MAN AND WOMAN 49

Selection One:
For Better or Worse, Arranged Marriages
Still Thrive in Japan, Urban C. Lehner 50

Selection Two:
The Sexes: Anatomy of a Difference, Signe Hammer 57

Selection Three:
I Want a Wife, Judy Syfers 67

Selection Four:
Oh, When I Was in Love with You, A. E. Housman 72

CHAPTER 4

MYSTERIES PAST AND PRESENT 75

Selection One:
Against All Odds, Richard Blodgctt **76**

Selection Two:
The Lady or the Tiger?, Frank R. Stockton 84

Selection Three:
It All Started with Dragon Bones,
Raymond Chang and Margaret Scrogin Chang 93

www.IELTS4U.blogfa.com

CHAPTER 5

TRANSITIONS 101

Selection One:
Madness and Method, Gail Shcchy 102

Selection Two:
Conversations in Malaysia, V. S- Naipaul 108

Selection Three:
The Me Decade, Tom Wolfe 115

Selection Four:
Human Waves, Leon F. Bouvier 118

CHAPTER 6

THE MIND 129

Selection One:
A Memory for All Seasonings, Stephen Singular 130
Selection Two:
Under the Skull, Nigel Calder 141
Selection Three:
The Tell-Tale Heart, Edgar Allan Poe 150
Timed Reading:
Are Computers Alive?, Geoff Simons 159

CHAPTER 7

WORKING 163

Selection One:
The Quality of Work in America,
David W. Rasmussen and Charles T. Haworth 164
Selection Two:
Employment Application Form 175
Selection Three:
A Lifetime of Learning to Manage Effectively,
Ralph Z. Sorenson 182

www.IELTS4U.blogfa.com

CHAPTER 8

ETHICAL QUESTIONS 191

Selection One:
Doctor's Dilemma: Treat or Let Die?, Abigail Trafford 192
Selection Two:
Memorial Day at Arlington: "Our Only Son,"
James T. Wooten 202
Selection Three:
You Be the Judge, John A. Ritter 207
Timed Reading:
Extinction, Paul and Anne Ehrlich 214

CHAPTER 9

THE ARTS 219

Selection One:
The Man Who Was an Orchestra, Nat Hentoff 220

Selection Two:
To Paint Is to Live: Georgia O'Keeffe, 1887-, M. Prijic 227

Selection Three:
Chicano Poetry: The Voice of a Culture, Deana Fernandez 233

CHAPTER 10

ENERGY AND MATTER 243

Selection One:
Sowing the Seeds of Super Plants, Sana Siwolop 244

Selection Two:
Water Shortage Is Global Threat 252

Selection Three:
Tidal Power, Kevin Finneran 258

Timed Reading:
The First Three Minutes, Steven Weinberg 266

www.IELTS4U.blogfa.com

CHAPTER 11

MEDICINE *zn*

Selection One:
New Tools for Medical Diagnosis, Jack Fincher 272

Selection Two:
Cancer Therapy, Amy Azen 280

Selection Three:
Best of Both Worlds, Barbara Gullahorn-Holecck 281

Selection Four:
The Scientist-Philosophers, Desmond Stewart 287

Timed Reading:
Cyclosporine: The Breakthrough Drug, Sharan Begley 294

CHAPTER 12

THE FUTURE 297

Selection One:
Encounters with the Future,
Marvin Cetron and Thomas O'Toole 298

Selection Two:
Omni Future Almanac 304

Selection Three:
Arcosanti: A City in the Image of Man, Jared Rutter 311

Selection Four:
Men Are Different, Alan Bloch 316

Timed Reading:
The Affectionate Machine, Neil Frude 319

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PREFACE

MOSAIC: THE PROGRAM

Mosaic consists of eight texts plus two instructor's manuals for in-college or college-bound nonnative English students. *Mosaic I* is for intermediate to high-intermediate students, while *Mosaic II* is for high-intermediate to low-advanced students. Within each level, I and II, the books are carefully coordinated by theme, vocabulary, grammar structure, and, where possible, language functions. A chapter in one book corresponds to and reinforces material taught in the same chapter of the other three books at that level for a truly integrated, four-skills approach.

Each level, I and II, consists of four books plus an instructor's manual. In addition to .A *Reading Skills Book,* they include:

- *A Content-Based Grammar I, II:* Each grammar chapter relates to a specific theme, so the exercises focus on contexts and ideas. There is a wide variety of comunicative, functional activities.
- *A Content-Based Writing Book I, II:* These books provide students with short readings on the chapter themes and include many prewriting, revision, and vocabulary-building exercises. The books focus on the writing process, particularly on techniques for gathering ideas, such as "brainstorming" and "freewriting," and on using feedback to rewrite.
- *A Listening-Speaking Skills Book I, II;* These books teach study skills and language functions through active listening activities based on lectures on chapter themes and sample conversations. A variety of speaking activities to reinforce language functions is also included. A cassette program with instructor's key accompanies each text.
- *Instructor's Manual I, II:* These manuals provide instructions and guidelines for use of the books separately or in any combination to form a program. For each of the core books, there is a separate section with teaching tips and other suggestions. The instructor's manuals also include sample tests.

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Rationale

The main purpose of the Mosaic II reader is to polish and perfect the English skills of the intermediate student that will enable him or her to deal effectively with sophisticated reading materials of both a scientific and humanistic nature. In other words, it aims to bring the student from a basic level of comprehension of the English language to the higher competence necessary for tackling more difficult work, such as that of the college classroom. While the orientation is primarily academic, the book is also helpful for students who simply wish to read English with a deeper understanding. When used in conjunction with the other *Mosaic* components (grammar, writing book, and listening/speaking book), it provides continuous reinforcement of vocabulary, grammar structures, and thematic ideas through reading.

The *Mosaic II* reader differs from the *Mosaic I* reader in several ways. *Mosaic II* emphasizes the advanced skills of interpretation, inference, critical analysis, evaluation, and application; it presents but gives less weight to more basic comprehension skills like skimming, scanning, and guessing meaning from context. It includes more work with charts, tables, and graphs; more discussion of style and tone; more technical and literary terminology, and longer, more varied, and more difficult selections. In general. *Mosaic II* covers the reading skills for the high-intermediate/ advanced level as recommended by the guidelines of numerous universities throughout the country. The second half of *Mosaic II* contains a number of special exercises that focus on the acquisition and practice of study skills, such as underlining, glossing, outlining, and study mapping.

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Like *Mosaic I,* the *Mosaic II* reader is designed to guide the student in the development of a conscious, reflective attitude toward reading, to teach him or her to anticipate the context, to evaluate the difficulty and decide on the level of understanding desired, to distinguish between different types of selections and different purposes for reading and avoid wasting time in a useless mechanical thoroughness. For this reason, particular types of timed readings are included in the second half of the book, even though speed reading for its own sake is not generally encouraged at this level.

The reading selections were drawn from a variety of sources: scientific, literary, textbook, trade book, periodical. They were chosen to be relevant and interesting to a multicultural readership and to present in a challenging way representative customs, personalities, values, and ways of thinking of Americans and Canadians.

Chapter Organization

Every chapter begins with a brief introduction to the chapter theme. This can be used as a starting point to set the stage for later discussion and to give both teacher and students an idea of the class' knowledge and prejudices on the subject. The introduction is followed by two or more reading selections, each one preceded by one or two prereading exercises and followed by comprehension and skill-building exercises. These are usually accompanied by a "Talking It Over" section and occasionally by activities, such as group problem solving, discussions that require expressing reactions or applying what has been read to new situations, composition or library research assignments. These latter features are optional and are included primarily to give the book greater flexibility for those programs that do not include the other *Mosaic II* components. The first five chapters contain section called "Stories Behind Words," which focus on particular aspects of vocabulary: word origins, nuances, the relationship between word choice and cultural attitudes, and the current sensitivity to what is perceived as sexist language. There are also exercises that deal with ways of coping with technical terms, slang, idioms, and some differences between American, British, and Canadian English. Chapters 6 to 12 include a graduated series of exercises aimed at developing study skills.

A quick glance through the book will show you that there is no set sequence of exercises repeated chapter after chapter. The types of exercises vary according to the difficulties particular to each selection and to the skills being emphasized. This variety lessens the chance that the student will relapse into a mechanical approach of nonreflective reading. Previously presented skills are reinforced throughout, however, often by using different styles of exercises to review the same skill.

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The principal aim of the prereading exercises is to condition students to stop and think before plunging into a reading. Some of them concentrate on finding clues that can help a reader to anticipate the style, contents, or organization; others work at helping students to determine the level of understanding needed for more difficult, abstract material; others reinforce the important skills of guessing the meaning of words from context and coping with technical terms, idioms, slang, abbreviations, and archaic words. (The prereading exercises in the first chapter are not representative, since they take the form of brief notes to lay a groundwork for developing certain reading skills.)

In the first chapters, the skill-building exercises that follow each selection focus on reviewing basic skills such as skimming, scanning, and vocabulary analysis. Later chapters emphasize more ad-

vanced skills while reviewing basic ones. Among the advanced skills presented are the following: making and supporting inferences, separating fact from opinion, identifying and evaluating points of view, applying what has been read, summarizing and paraphrasing, reading critically, finding support for or against ideas and opinions, comparing interpretations, and reading charts, tables and graphs. These exercises at times practice and reinforce a skill that has been introduced in a prereading exercise. Optional timed readings also appear in the second half of the book along with comprehension quizzes that offer practice in reading for a set purpose and under a time constraint.

Teaching Suggestions

The prereading exercises may be used in different ways depending on the level of the students. At first a teacher will probably do them orally with the class as a means of introducing each selection and ascertaining class level. These exercises, especially the ones using direct quotations from the selection, can act as a bridge helping students over some of the difficult sections of the article. If, after a few weeks, the class seems to have little problem with the readings, however, these exercises can be assigned for homework and corrected quickly at the beginning of the class.

A good way of adding spontaneity to the completion of the exercises following the selections is to occasionally reserve some challenging ones for group work, especially if there are no group activities included in the lesson. The class may be divided into small groups and given ten or fifteen minutes to do the exercise, with one of the group members reporting results to the class afterwards. In any event it is a good idea at times to assign only some of the exercises to be done with the reading as homework. Then, if time permits, the others can be worked out in class, adding an element of the unexpected. When an exercise aimed at reviewing a skill is used in this way, one of the more extroverted students might be asked to play the role of teacher (perhaps after having been warned in advance). This is a sure way of gaining class attention, since everyone wants to see if the new "teacher" will make a mistake, and it also serves to challenge a confident, highly motivated student who might otherwise begin to lose interest.

Answers to certain puzzles and problem-solving exercises as well as to the "You Be the Judge" article will be found in the *Mosaic II* instructor's manual.

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B.W.
M. P. K.
M. B.

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CHAPTER 1
LANGUAGE AND LEARNING



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CHAPTER I

Not all American and Canadian citizens grow up speaking English. Some, like the author of the first selection in this chapter, must learn it when they arrive at school. He describes his first encounters with English, the language that finally helped him to overcome his feelings of being an outsider to the dominant culture. The second selection examines what has been called the "national obsession" of France, the famous (or infamous) *bac*, an exam that signifies success or doom for the academic careers of many young people. This is followed by a discussion of the general process of choosing students for universities and a quick look at some facts and figures related to the ten largest universities in the world. The third and last selection presents the ideas of a well-known thinker from India about an important element that he feels is lacking in modern Western education.

SELECTION ONE Jamake Highwater

NATIVE AMERICANS

English is the official language of the United States and one of the two official languages of Canada (French is the other), but many people born in these countries do not grow up speaking it. For them, English is a second language that they learn at a later time. In some cases this is because their parents are immigrants or because they grow up in an ethnic neighborhood where Spanish, Chinese, or another language is spoken by almost everyone. For a small percentage it is because their ancestors were the original natives of this continent, the Indians who were here before the arrival of the European settlers in the sixteenth century. Is this situation unique in North America? Or can you think of other parts of the world in which many people learn the official language of their country as a second language? Do people like this have a harder time succeeding in society? Does this situation make a society weaker or stronger?

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The author of the following selection, Jamake Highwater, is a Native American Indian and a well-known author who writes in English. He speaks of the terrible shock that certain English words caused him when he first learned them at school. As you read, try to understand Highwater's attitudes toward the two languages and the two cultures that have formed him.

Prereading Exercise: Guessing the Meaning of New Words from Context

Part A

Try to guess the meanings of unfamiliar words as you read. Skimming a selection first (reading very quickly for main ideas) helps a great deal. Other ways of understanding a new word are breaking it apart into smaller words, prefixes, and suffixes, and finding a synonym or explanation near the word. Practice these skills by writing your own definitions for the italicized words in the following sentences taken from the selection. Use the hints to help you.

1. "We are born into a cultural *preconception* that we call reality and that we never question." *(Hint:* Do you know the meaning of the prefix *pre-* and the word *concept?)*

   preconception:

2. "We essentially know the world in terms of that cultural package or preconception, and we are so unaware of it that the most liberal of us go through life with a kind of *ethnocentricity." (Hint:* The word *ethnic* means "belonging to a particular culture or group." What do you think *centr-* means?)

   ethnocentricity:

3. "I grew up in a place that was called a *wilderness,* but I could never understand how that amazing ecological park could be called *'wilderness,'* something wild that needs to be harnessed." *(Hint:* What part of the sentence explains the meaning of *wilderness?)*

   *w i l d e r n e s s:*_____

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4. "Nature is some sort of foe, some sort of *adversary* in the dominant culture's mentality." *(Hint:* Because of the repetition of the words *some sort of,* you can see that there is another word that is a synonym very close in meaning to *adversary.* What word is this?)

   *adversary:*_____

PartB

If you cannot break a word apart or find a nearby synonym or explanation, you simply have to guess a likely meaning to fit the context. Choose what you think is the best word to substitute for each italicized word in the following sentences from the selection.

1. "The bird had a very particular *significance* to me because I desperately wanted to be able to fly too."

   a. beauty b. meaning c. appearance d. name

2. "When I was ten years old, my life changed very *drastically.* I found myself adopted forcefully and against my parents' will."

   a. slowly b. happily c. easily d. violently

3. ", . . They were considered *inadequate* parents because they could not make enough money to support me."

   a. unintelligent b. wealthy
   c. not suitable d. not interesting

4. ". . . I was even more confused when I found out that the meaning of the verb "to duck" came from the bird and not *vice versa."*

   a. the other way around b. from something else
   c. with many meanings d. written in a different way

5. ". . . We are so unaware of it that the most liberal of us go through life with a kind of ethnocentricity that automatically *rules out* all other ways of seeing the world."

   a. eliminates b. emphasizes c. includes d. improves

6. "… I never could understand how that amazing ecological park could be called "wilderness," something wild that needs to be *harnessed."*

   a. changed b. set free c. controlled d. appreciated

7. "I grew up in a culture that considers us *literally* a part of the entire process that is called nature, to such an extent that when Black Elk called himself the brother of the bear, he was quite serious."

   a. in an imaginative way b. in reality
   c. intellectually d. poetically

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8. "The earth is such an important symbol to most primal people that when we use European languages we tend to capitalize the *E* in much the same way that the word God is capitalized by people of the dominant culture. You can imagine my *distress* when I was ten years old to find out that synonyms for the word earth—dirt and soil—were used to describe uncleanliness on the one hand and *obscenity on* the other."

   distress: a. fear b. joy c. suffering d. laughter

   obscenity:
   a. correct speech and manners
   b. offensive language and actions
   c. religious customs
   d. objects considered beautiful

9. "I could not possibly understand how something that could be dirty could have any kind of negative *connotations."*
   a. sounds connected to a word
   b. ideas associated with a word
   c. ways of spelling
   d. ways of writing

Native Americans

When I was about five years old, I used to watch a bird in the skies of southern Alberta from the Blackfeet Blood Reserve in northern Montana where I was born. I loved this bird; I would watch him for hours. He would glide effortlessly in that gigantic sky, or he would come down and light on the water and float there very majestically. Sometimes when I watched him he would creep into the grasses and waddle around not very gracefully. We called him *meksikatsi,* which in the Blackfeet language means "pink-colored feet"; *meksikatsi* and I became very good friends.

The bird had a very particular significance to me because I desperately wanted to be able to fly too. I felt very much as if I was the kind of person who had been born into a world where flight was impossible, and most of the things that I dreamed about or read about



Blackfoot Indians.

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would not be possible for me but would be possible only for other people.

When I was ten years old, my life changed drastically. I found myself adopted forcefully and against my parents' will; they were considered inadequate parents because they could not make enough money to support me, so I found myself in that terrible position that 60 percent of Native Americans find themselves in: living in a city that they do not understand at all, not in another culture but between two cultures.

A teacher of the English language told me that *meksikatsi* was not called *meksikatsi,* even though that is what my people had called that bird for thousands of years. *Meksikatsi,* he said, was really "duck." I was very disappointed with English. I could not understand it. First of all, the bird didn't look like "duck," and when it made a noise it didn't sound like "duck," and I was even more confused when 1 found out that the meaning of the verb "to duck" came from the bird and not vice versa.

This was the beginning of a very complex lesson for me that doesn't just happen to black, Chicano, Jewish, and Indian children but to all children. We are born into a cultural preconception that we call reality and that we never question. We essentially know the world in terms of that cultural package or preconception, and we are so unaware of it that the most liberal of us go through life with a kind of ethnocentricity that automatically rules out all other ways of seeing the world.

As I came to understand English better, I understood that it made a great deal of sense, but I never forgot that *meksikatsi* made a different kind of sense. I realized that languages are not just different words for the same things but totally different concepts, totally different ways of experiencing and looking at the world.

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As artists have always known, reality depends entirely on how you see things. I grew up in a place that was called a wilderness, but I could never understand how that amazing ecological park could be called "wilderness," something wild that needs to be harnessed. Nature is some sort of foe, some sort of adversary in the dominant culture's mentality. We are not part of nature in this society; we are created above it, outside of it, and feel that we must dominate and change it before we pan be .comfortable and safe within it. I grew up in a culture that/considers us literally a part of the entire process that is called nature, to such an extent that when Black Elk called himself the brother of the bear, he was quite serious. In other words, Indians did not need Darwin to find out that they were part of nature.

I saw my first wilderness, as I recall, one August day when I got off a Greyhound bus in a city called New York. Now that struck me as being fairly wild and pretty much out of hand. But I did not

understand how the term could be applied to the place where I was from.

Gradually, through the help of some very unusual teachers, I was able to find my way into two cultures rather than remain helplessly between two cultures. The earth Is such an important symbol to most primal people that when we use European languages we tend to capitalize the *E* in much the same way that the word *God* is capitalized by people of the dominant culture. You can imagine my distress when I was ten years old to find out that synonyms for the word *earth—dirt* and *so/7*—were used to describe uncleanliness on the one hand and obscenity on the other. I could not possibly understand how something that could be dirty could have any kind of negative connotations. It would be like saying that the person is godly, so don't go near him, and I could not grasp how these ideas made their way into the English language.

Jamake Highwater

Recalling Information

Fill in the blanks of this summary with key words from the selection.

An Indian Boy Meets the English Language

When Jamake Highwater was ten years old, he had to move from the _____ to a _____. At school a teacher told him that the *meksikatsi* he loved was really called a _____[3]. He had grown up in a culture that considered people as a part of _____[4]. He thought that he saw his first "wilderness" when he went to _____ — — — [5] . At first he felt he was between two cultures, but he became part of both of them with the help of some unusual _____ [6]. He finally got over his shock at finding out that in English synonyms for the word _____7 had negative_____ [8]: They were used to describe _____ 9 on the one hand and._____10 on the other.

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Talking It Over

1. Why did the duck have a special significance for Jamake Highwater when he was very young?
2. What drastic change occurred when he was ten years old? Why did he describe himself then as "not in another culture but between two cultures"?
3. Can you give an example of ethnocentricity that you have seen? Do you think that some people are more ethnocentric than others? Why?
4. Why didn't the author like the word *duck?* What are some English words that have surprised or displeased you? Explain.
5. According to Highwater, what difference is there between Native American Indians and the dominant American culture with regard to nature?
6. Do you know who Charles Darwin is? (If not, how can you find out?) Why does the author say that the Indians did not need him?
7. Why would it bother the author that in English obscene words and jokes are often referred to as "dirty" words and jokes? They are also sometimes called "off-color." In some cultures, obscene jokes are referred to as "green stories." Is there any color associated with them in your culture? How are they referred to?
8. Was the author's attitude negative or positive toward English when he first started to learn it? Why? What part of the selection tells us that his attitude changed later? Why do you think that it changed?

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Finding Verbs with Precise Meanings

It is obvious that Jamake Highwater has mastered his second language well. Reread his description of the *meksikatsi* bird in the first paragraph and find the verbs that he used instead of the following more ordinary ones. Notice how the ideas listed in parentheses are included in the meaning of these verbs and do not need to be expressed.

1. The bird would *fly* in the sky (without moving his wings):

2. Then he would come down and *land* on the water (gently and without making a splash):_____

3. Afterward the bird would *come* (slowly and carefully) into the grasses:_____
4. There he would *walk around* (swaying from side to side) not very gracefully:_____

Stories Behind Words: Expressions Associated with Animals

Highwater speaks of his disappointment when he learned that the verb "to duck" came from the animal and not vice versa. Actually, many English verbs and adjectives (and even some nouns used with special meanings) do come from the names of animals. Usually some well-known characteristic of the animal provides the basis for the association. For example, people sometimes say they had "a *whale* of a good time." Since a whale is very big, the word *whale* intensifies the idea and means a *very* good time. Animals are also used in expressions such as "slow as a turtle" and "hungry as a bear." However, animals are often perceived differently by different cultures, so the English expression "clumsy as an elephant" surprises people from India. They know elephants quite well and claim that they are among the most graceful of all animals. This caused some embarrassment for the Indian gentleman who once told an American lady that she "walked like an elephant." He couldn't understand why she got angry! Read the following sentences and guess the meanings of the italicized words. Try to explain what quality and animal are associated with each one.

1. He *wolfed* down his dinner with his eye on the clock.

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2. The people *craned* their necks to see the famous actor.

3. She worked at the task with *dogged* determination.

4. A sparkling river *snaked* through the lush green valley below.

5. The teacher got angry because the students were *horsing* around.

6. That professor has an *elephantine* memory.

7. The new boy was a *bully* who liked to scare the other children.

8. She *fished* around in her purse until she found her glasses.

9. The general *cowed* the rebel soldiers with his fiery speech.

10. After winning the Nobel Prize, the scientist was *lionized* by the crowd of reporters.

Can you think of any other such phrases? Can you give examples of words from the language of your culture that are associated with animals?

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SELECTION TWO

William Echikson

IN FRANCE YOU MUST PASS "IE *BAC* " . . . OR LEAVE THE ELITE

You can usually read a selection much more easily if you have a general idea of what it is about. Selection Two is a newspaper article about a phenomenon in France called *"le bac."*

Prereading Exercise 1: Anticipating the Reading

1. What idea do you get about the selection from the title and photographs?

2. If you do not know what *"le bad"* is, read the first three paragraphs. Then write a definition.

3. Think about the most difficult exam you have ever taken. Why was it important for you?

4. How did you feel before taking it? Afterward?

5. Do you think it is a good or bad idea for students to take exams like this?

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Prereading Exercise 2: Identifying a Bias or Slant

Everybody knows that newspapers contain facts. Of course, they also contain a good deal of opinion and interpretation. Almost every article is written with a certain *bias,* or *slant,* either favorable or unfavorable toward the subject it presents. This is determined by the journalist's *point of view,* or attitude. Sometimes this is stated directly. For example, an article about a new law might say: "This law will have a bad effect on the economy," Other times the bias is produced by the selection of details: The article describes only the negative effects and includes quotations from people who are not in favor of the law. Take two minutes to skim the following article to find out its *bias.* (One way of skimming is to read the first and last paragraphs and the first sentence of

each of the other paragraphs. Because the opening and closing sections of an article are the parts that are best remembered, writers generally put their key ideas or opinions there.)

1. Is the article biased for or against *"le bac"?*

2. How do you know?

3. Does the writer state his point of view directly or indirectly?

In France You Must Pass "le *Bac*"... or Leave the Elite

Trembling, Tanya Riahi waits outside Lycee Gabriel Faure for the exam to begin. Since April, the eighteen-year-old Tanya has been reviewing, and for the next eight hours, she will pour out all her acquired knowledge writing essays on subjects like "Why defend the weak?" and "Is it reasonable to love?"

The ordeal, which 270,000 other high school seniors here are now experiencing, is one of the most sacred and demanding of French institutions, the *baccaiaureat. "Le bac,"* as it is called, is a national obsession. The French word for cramming is *bachotage,* and the exam divides France into two camps, *bacheliers* and *non-bacheliers.*

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Passing the exam assures entrance to almost any university. But unless followed up by a degree or specialized diploma, the *bac* does not assure any job. Still, failure leaves a stigma for life, a second-class citizenship socially as well as educationally.

Traditionally, the *bac* marked the end of a tough high school education stressing the humanities. Until reforms in 1965, even science students were forced to study nine hours of philosophy a week.

Charles de Gaulle's technocratic, scientific vision of the country changed the priorities for the *bac.* The most prestigious of the different subject combinations for the exam used to be "option A," emphasizing literature and philosophy.

But today, "option C," with its heavy doses of math, science, and economics, has become the pride of the elite. It can lead to the scientific or administrative *grandes ecoles,* similar to elite Ameri-



Students at Le Sorbonne taking the *"le bac"*.



Students checking *"le bac"* test jury results.

can graduate schools, and a career as an engineer or high-level ministry official.

In addition, a technical baccalaureat was introduced under the C option in order to make up for a shortage of middle-grade technicians. Nonacademic children are steered into technical high schools where vocational training leading to the new practical exam replaced the emphasis on theory of the traditional *bac.*

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The institution of this technical *bac,* along with the growth in academic high schools, has led to a boom in the *bachelier* elite. In the past twenty years, the number of eighteen-year-olds receiving the *bac* has increased by three and a half times, according to the ministry of education. In 1960, only 11 percent of all French eighteen-year-olds passed the exam. Last year the figure was 28 percent, or 242,531 students.

"When I passed the *bac* in 1939, all the students were from the upper classes," explained Jean-Jacques Gelier, a rector at the prestigious Lycee Condorcet. "Today the situation still favors the child from a wealthy family, but there is more ot a mix."

Mr. Gelier approves of this democratization, but like many teachers he fears it has led to lower standards and incorrect values. He dislikes

the trend toward science and the socialist plan to end the grading distinction of "very good" and "good."

"We used to be the only country to create a special class of philosophers," he said. "If you don't know Montaigne, Voltaire, and the others thoroughly, you were lost. Today the *bac* has become easier, more imprecise."

Apart from the technical *bac,* however, the exam remains a rigorous, brain-searching exercise, much more difficult than the equivalent English A-level exam or American achievement tests. In written sections held last week, students were subjected to three days of intensive, multi-hour tests in math, natural science, history, literature, and, of course, philosophy.

"It's grueling physically," Tanya said. "I've been working morning, noon, and night for weeks now, and now these three days. I'm exhausted."

She is also nervous. If she does not pass—like one-third of the candidates—she will have to repeat her entire year at school and take the exam again next spring. And she will be humiliated in front of her peers.

But even if she passes, she says the *bac* is "worthless" because it only assures her a place in an overcrowded and not very good university system. To gain admittance to the *grande ecoie* of her choice, she **will** have to pass another, more competitive, exam—*le concours*—next year.

So much pressure is useless, she says: "I don't feel the *bac* crowns my high school education."

William Echikson
Special to the *Christian Science Monitor*

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Scanning for Specific Information

By skimming an article you can find out the main ideas and the point of view. Another reading technique is called scanning. This is used to find out specific information. To scan, move your eyes quickly over the article until you come to the particular piece of information that you want. If you remember that it is discussed in the middle or toward the end of the article, start your search there. Do not be distracted by other items. Concentrate just on what you are looking for and then stop and read that part very carefully. Scan for the following pieces of information and write the answers in the blanks provided. Try to do this exercise in three to four minutes.

1. the percentage of candidates who do not pass the *bac:*
2. the usual age of students taking this exam:_____
3. the difference between option A and option C;

4. the meaning of the French word *bachotage:*

5. how many days it takes to write the tests:

Talking It Over

1. How does the *bac* compare to exams you have taken?
2. Which subject combinations used to carry the most prestige in France? Which subjects are the most prestigious today? Why do you think that this change has occurred?
3. What happens to the students who pass the new technical *bac?*
4. Do more or fewer French young people pass the *bac* today in comparison with twenty years ago? In your opinion, is this change good or bad? Why?
5. Does passing the *bac* assure a young person of a job? Why do students get so nervous about this exam?
6. Unlike the French system, the American process of selection to universities is not based on one test. Although the procedure varies, entrance is usually based on several less extensive tests and sometimes on the student's educational record and case history. Do you think most countries are more similar to France or to North America in their process of university selection? What are the advantages of each of these methods of selection? What are the disadvantages? Which do you prefer?

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Word Detective

Using the following clues, play detective and find the words from the article that correspond to the descriptions. Line numbers are given to help you.

Example:

(Lines 5-10) a word beginning with the letter *o* means "a difficult or trying experience": ordeal

1. (Lines 1-5) a two-word verb meaning "to cause to flow in a continuous stream":_____
2. (Lines 10-14) a word beginning with a consonant blend (two consonants sounded together) that means "a bad mark on a person's r e p u t a t i o n " : _ _ _ _ _____
3. (Lines 19-22) a word that rhymes with *minorities* and means "orders of importance":_____
4. (Lines 19-22) an adjective that begins with *p* and means "honored or esteemed":_____
5. (Lines 23-25) an adjective here (but used as a noun in the title) that means "the best and most carefully selected (from a group)":_____
6. (Lines 48-51) a word that begins with the letter *i* and means "vague, not e x a c t " : _____
7. (Lines 52-54) an adjective that rhymes with *vigorous* and means the opposite of the word you just found for Item 6:

8. (Lines 58-60) a word beginning with a consonant blend and meaning "very severe and tiring":_____
9. (Lines 60-64) the past participle of a verb meaning "shamed, embarrassed": used as an adjective to describe how a student who fails feels in front of her peers:

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Interpreting a Table or Chart

As a class or in small groups, look over the table entitled Largest Universities and answer the questions that follow it, when possible. A few of the questions cannot be answered with the data given on the table; you should mark NA after these for "not applicable." When working with a table such as this one, follow these steps:

1. Note what pieces of information are given and where.
2. Read each question carefully until you understand exactly what is being asked for.
3. Locate the section of the table that gives this information and scan it until you find the information.
4. Write it down.

LARGEST UNIVERSITIES*

Rank	University	Location	Students (Thousands)	Teachers	Date Founded
1	State U. of New York	Albany, New York, U.S.A.	350 (total)	25,500 (total)	1844
	Albany campus	Albany, New York,	15	1,514	1844
	Campuses at/near Buffalo	Buffalo, New York, U.S.A.	51	3,607	1846
2	City U. of New York	New York, New York, U.S.A.	251	18,121	1817
3	Universite de Paris	Paris, Region Parisienne, France	233		1200
4	University of Calcutta	Calcutta, West Bengal, India	227		1817
5	University of California	Berkeley, California, U.S.A.	182 (total)	12,500 (total)	1855
	Berkeley campus	Berkeley, California U.S.A.	35	2,429	1873
	Los Angeles campus	Los Angeles, California U.S.A.	60	3,134	1881
6	Universidad de Buenos Aires	Buenos Aires, Distrito Federal, Argentina	174	9,101	1821
7	University of Madras	Madras, Tamil Nadu, India	152		1794
8	University of Wisconsin	Madison, Wisconsin, U.S.A.	143 (total)	9,202 (total)	1849
	Madison campus	Madison, Wisconsin	39	3,103	1849
9	Universita degli Studi di Roma	Rome, Lazio, Italy	122	6,806	1303
10	Universidad Nacional de Mexico	Mexico, Distrito Federal, Mexico	120	15,964	1551

*From Victor Showers, *World Facts and Figures*, John Wiiey & Sons, 1979, New York, p. 294.

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Questions

1. Which of the ten largest universities in the world is the oldest?

2. Where is the oldest university on the North American continent?



Richelieu's Chapel,
University of Paris.

3. What university has the largest number of students?

4. What Asian university has the largest number of students?

5. Which of the European universities has the most teachers?

6. Does the largest university in Italy have more or fewer students per teacher than the largest university in Mexico?

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7. In what country does it seem common for very large universities to have their students study at several different locations, or campuses?

8. Where is the largest Latin American university?

SELECTION THREE Krishnamurti

THINK ON THESE THINGS (SELECTIONS)

Is education synonymous with schooling? Of course not. What other sources of learning make up your education? Which do you consider the most important? A noted thinker and writer from India, Krishnamurti, believes that our educational system neglects one of the primary goals of any education: the development of self-knowledge and understanding. He thinks that without this type of knowledge, a person cannot learn how to love, one of the most important abilities in life.

Prereading Exercise: Anticipating the Reading

In the blank below, write what you think a person must do in order to achieve self-knowledge.

Read the following selections from Krishnamurti's book *Think on These Things* to find out if he agrees with you. Read only for the main ideas. Then take the true/false quiz that follows to see how much you have comprehended.

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Think on These Things

Krishnamurti.



Questioner: Sir, why do we want to have a companion?

Krishnamurti: A girl asks why we want a companion. Why does one want a companion? Can you live alone in this world without a husband or a wife, without children, without friends? Most people cannot live alone; therefore they need companions. It requires enormous intelligence to be alone; and you *must* be alone to find God, truth. It is nice to have a companion, a husband or a wife, and also to have babies; but you see, we get lost in all that, we get lost in the family, in the job, in the dull monotonous routine of a decaying existence. We get used to it, and then the thought of living alone becomes dreadful, something to be afraid of. Most of us have put all our faith in one thing, all our eggs in one basket, and our lives

have no richness apart from our companions, apart from our families and our jobs. But if there is richness in one's life—not the richness of money or knowledge, which anyone can acquire, but that richness which is the movement of reality with no beginning and no ending-then companionship is a secondary matter.

But, you see, you are not educated to be alone. Do you ever go out for a walk by yourself? It is very important to go out alone, to sit under a tree—**not** with a book, not with a companion, but by yourself—and observe the falling of a leaf, hear the lapping of the water, the fisherman's song, watch the flight of a bird, and of your own thoughts as they chase each other across the space of your mind. If you are able to, be alone and watch these things, then you will discover extraordinary riches which no government can tax, no human agency can corrupt, and which can never be destroyed.

Questioner: When I love a person and he gets angry, why is his anger so intense?

Krishnamuiti: First of all, do you love anybody? Do you know what it is to love? It is to give completely your mind, your heart, your whole being and not ask a thing in return, not put out a begging bowl to receive love. Do you understand? When there is that kind of love, is there anger? And why do we get angry when we love somebody with the ordinary, so-called love? It is because we are not getting something we expect from that person, is it not? I love my wife or husband, my son or daughter, but the moment they do something "wrong" I get angry. Why?

Why does the father get angry with his son or daughter? Because he wants the child to be or do something, to fit into a certain pattern, and the child rebels. Parents try to fulfill, to immortalize, themselves through their property, through their children, and, when the child does something of which they disapprove, they get violently angry. They have an ideal of what the child should be, and through that ideal they are fulfilling themselves; and they get angry when the child does not fit into the pattern which is their fulfillment.

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Have you noticed how angry you sometimes get with a friend of yours? It is the same process going on. You are expecting something from him, and when that expectation is not fulfilled you are disappointed—which means, really, that inwardly, psychologically, you are depending on that person. So whereverthere is psychological dependence, there must be frustration; and frustration inevitably breeds anger, bitterness, jealousy, and various other forms of conflict. That is why it is very important, especially while you are young, to love something with your whole being—a tree, an animal, your teacher, your parent—for then you will find out for yourself what it is to be without conflict, without fear.

But you see, the educator is generally concerned about himself, he is caught up in his personal worries about his family, his money, his position. He has no love in his heart, and this is one of the difficulties in education. *You* may have love in your heart, because to love is a natural thing when one is young; but it is soon destroyed by the parents, by the educator, by the social environment. To maintain that innocence, that love which is the perfume of life, is extraordinarily arduous; it requires a great deal of intelligence, insight.

Krishnamurti
Think on These Things

Recalling Information

Write T (true) or F (false) in front of the following statements about Krishnamurti's ideas. Correct the false statements to make them true.

1. Most people find it easy to live alone.
2. You must have a companion, babies, and a job in order to find God, truth.
3. The best richness in life is not that of money or of knowledge.
4. You can find riches by sitting under a tree alone without a book.
5. When there is real love, there is always anger.
6. We get angry with someone when we do not get what we expect from them.
7. Parents try to fulfill themselves through their children.
8. Frustration, jealousy, and other forms of conflict come from psychological independence.
9. Educators are often too preoccupied with their own personal worries to teach well.
10. Young people do not know how to love; it is only natural to love when you are old.

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Paraphrasing Ideas

Show that you have grasped the following ideas of Krishnamurti by restating them in your own words. Try to express each idea as clearly and concisely as possible.

1. "Most of us have put all our faith in one thing, all our eggs in one basket, and our lives have no richness apart from our companions, apart from our families and our jobs."

2. "Do you know what it is to love? It is to give completely your mind, your heart, your whole being and not ask a thing in return, not put out a begging bowl to receive love."

3. "Parents try to fulfill, to immortalize, themselves through their property, through their children, and, when the child does something of which they disapprove, they get violently angry."

Finding Sense in Sound

Certain words sound like what they mean. For example: The bells *ring* at night. The dish *crashed* to the floor. The door *banged* shut.

1. What verb in the second paragraph of Krishnamurti's interview refers to the sound of water hitting land? (This word echoes its meaning in its sound.)

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2. Often words that sound like what they mean are verbs, but Krishnamurti uses an adjective in the first paragraph that also imitates its sense in its sound: "the dull, *monotonous* routine of a decaying existence." Do you know what this word means? Can you explain how its form imitates its meaning?

3. What other words can you think of that sound like what they mean?

Famous Quotations on Education

SELECTION THREE

Which of the following quotations relates most directly to your own personal ideas about education? Why?

"Knowledge is power."—Francis Bacon, 1561-1626

"Education is a thing of which only the few are capable. Teach as you will, only a small percentage will profit by your most zealous energy."—George Gissing, 1857-1903

"We do not know what education could do for us, because we have never tried it."—Robert Maynard Hutchins, 1899—

"'Tis Education forms the common mind:
Just as the twig is bent the tree's inclined."
-Alexander Pope, 1688-1744

"There are two ways of spreading light: to be the candle or the mirror that reflects it."-Edith Wharton, 1862-1937

"Experience is the best teacher."—traditional proverb

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CHAPTER 2
DANGER AND DARING



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Why take risks? Why face danger and even death when it is possible simply to stay at home in safety and comfort? Throughout history there have been many who dared: explorers, mountain climbers, travelers, soldiers, religious leaders. Some have done it for fame or fortune; some for sport or curiosity. The first selection focuses on some present-day adventurers who have become famous for their daring. The second is a short story that examines some different attitudes toward risk taking. The third selection is a true account of a Canadian naturalist and writer who went to live among wild animals and found that the experience led to an important discovery—about himself.

SELECTION ONE

ADVENTURERS OF THE EIGHTIES

Helen Keller once wrote that a life without risk is not worth living. She had good reason to know. Blind and deaf from an early age, she became a renowned writer who later traveled and gave speeches in various parts of the world. Many people share her sentiments. In fact, today, more than ever, people attempt feats that are difficult to achieve. Consider marathon races, weight lifting, and hang-gliding. Additionally, many people pursue professional goals that insure competition and with it the possibility of failure. Why do you think so many of us are willing to attempt these feats? What character traits are necessary for people to take these risks?

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In the space below, write one of the major risks you have taken in recent years. What happened?

What did you learn from this experience?

Prereading **Exercise:** Formulating **Questions About a Reading in Advance**

The following selection is an informative essay based on recent items in the news. Before beginning to read, you should try to get a general idea of what the selection is about and imagine key questions about the topic. Then you will be able to read more efficiently, skipping over difficult sections unless they relate directly to the central topic or the key questions.

Look at the title and illustrations. What is the article about?

Take one minute to skim the entire selection. Then write three important questions about the topic that you think will be answered in the reading.

Now compare your questions as a class. Which ones were asked by the most students? Which ones relate to several parts of the article or to the article as a whole instead of to just one part? Decide on the questions you think are the most important and focus on these as you read.

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Adventurers of the Eighties

• May 1984

British explorer David Hempleman-Adams became the tirst person to complete a solo walk to the magnetic North Pole. Hempleman-Adams arrived at his destination after a grueling 250-mile walk across the arctic icecap, dragging a plastic sledge loaded with supplies behind him.

The magnetic North Pole is on ice-covered Bathurst Island in Canada's Northwest Territories, roughly a thousand miles from the geographic North Pole.

Two U.S. explorers, Dr. Frederick Albert Cook in 1908, and Commodore Robert Peary in 1909, claimed to be the first to reach



Brooke Knapp departing on her world record trip.

the geographic North Pole by sledge. But the Guinness *Book of World Records* says neither claim can be verified.

According to Guinness, the first person to reach the geographic North Pole on foot was Japanese mountaineer Naomi Uemura, who reached his destination after a 57-day dogsled trek in 1978. It is believed that Uemura, 43, died in February 1984, while on his way down 20,300-foot Mount McKinley after scaling the Alaskan peak alone.

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- **February 1984**

Pilot Brooke Knapp set a world speed record for all types of aircraft after circling the globe in 45 hours, 32 minutes, and 53 seconds.

The flight netted nearly $500,000 for the United Nations Children's Fund.

Mrs. Knapp, president of an executive charter and aircraft-management service in Los Angeles, broke the around-the-world record of 46 hours and 50 seconds set in May 1976 by a Pan American 747 and the record set for her class of aircraft, 47 hours, 38 minutes, 17 seconds, set in 1982.

The flight broke 41 records for city-to-city distances. That gave Mrs. Knapp a lifetime total of 103 records, surpassing Jacqueline Cochran's record of 65, making her the holder of more aviation speed records than anyone in the world.

• June 1983

Sally Ride was part of the crew of the second mission of the space shuttle Challenger and became the first American woman astronaut (Valentina Tereskova of the USSR was the first woman in space in 1963). Ride, who has a Ph.D. in laser physics, was the flight engineer for the mission. Her primary duties on the flight were assisting fellow astronauts in the liftoff and reentry phases, managing some of the experiments, and working with the Canada arm, the 50-foot craneiike device made in Canada that lifts payloads to and from the cargo bay. During the flight, she and fellow astronaut John Fabian launched two communications satellites into orbit using the arm.

Playing down the fact that she's a woman and emphasizing the fact that she's a qualified scientist, Ride remembers how when she saw NASA's ad for astronauts in the Stanford University paper, she immediately answered it. When she read the qualifications, she said, "I'm one of those people."

• August 1980

Reinhold Messner, first solo climber of Mount Everest, has paid a price for his fame as the world's strongest expedition climber. Messner has never used oxygen on a climb in his life. As a consequence, he says, his memory has been dulled by long periods of oxygen deprivation. There have been other prices he's paid for his adventures. His brother Gunther died in an avalanche while climbing with him on Nanga Parbat in the Himalayas. Messner has lost several toes and parts of three fingers to frostbite. And he admits that it was not worth it. "If somebody had told me, 'On the next expedition you will lose your toes,'[1] I wouldn't have gone. But you don't know what will happen before it happens. It's like asking, 'Is your life worth your death?'"

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Recalling Information

Write T (true) or F (false) in front of the following statements about the article. Correct false statements to make them true.

I. There is a difference between the magnetic North Pole and the geographic North Pole.

2. Nowadays explorers always travel in large expeditions, with many helpers.

3. All the difficult spots to get to on this planet were reached long ago.
4. Sometimes it is not known for sure who was the first person to reach an important destination.
5. Being an explorer is no longer a dangerous occupation.
6. The pilot who in 1984 set a world speed record for flying around the world is a woman.
7. In private life, this person is a schoolteacher.
8. As of 1984, this pilot holds more aviation speed records than anyone else in the world.
9. Sally Ride was the first woman to go up in space.
10. The American space shuttle has a special arm made in Canada.
11. Ride got the job as an astronaut because her father is head of NASA.
12. It is impossible to climb Mount Everest without using oxygen tanks.
13. Reinhold Messner, the strongest expedition climber in the world, lost his brother during a climb.
14. Messner himself has never suffered any injury from climbing.

Comparing and Evaluating Answers

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Write answers to the questions you wrote for the prereading exercise. Then, as a class or in small groups, compare your answers. Do they use specific information from the reading? Are they clear and concise? Are they too concise? Choose one or two good answers to each question and read them aloud or write them on the board.

Making Inferences About Character Traits

Inferences are conclusions we draw from facts. For example, the first item in the true/false exercise on page 29 is an inference. You are not told directly whether the magnetic and the geographic North Poles of the earth are the same or different. However, from the first three paragraphs of the article, you can infer the answer.

The article discusses several modern-day adventurers. It does not say what traits (qualities) of character they have, but it does give you information about what they have done. Look at the following list of character traits. Do you know what all of them mean? Which of the people discussed do you think have some of them? Tell which traits you think they have and from what information you have inferred this.

persistence	laziness	courage	arrogance
self-confidence	ambition	frankness	intelligence

Talking It Over

1. Which of the adventures mentioned in the article do you think sounded the most exciting or dangerous or both?
2. Would you like to do some dangerous but adventurous deed some day? Why or why not? If so, give an example.
3. The most famous quotation about mountain climbing is from Sir Edmund Hillary, one of the first two men *to* reach the summit of Everest, the highest mountain in the world. When asked why he climbed it, Sir Edmund replied, "Because it was there." What do you infer about Hillary from this quotation?

Using the Encyclopedia to Prepare a Class Report

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Choose a person who has performed an important act of danger and daring and prepare a class report, answering the following questions:

1. What dangerous act did he or she perform?
2. Why was it important?
3. When did it happen?
4. How old was he or she at the time?
5. Why do you think he or she did it? For fame? For fortune? For knowledge? For religious or political convictions?

The easiest way to find out this information is probably to go to an encyclopedia, look up the person's name, and scan the article about him or her until you find what you want. Don't copy the phrases word for word from the encyclopedia. Instead, put the answers into your own words. Here are some suggestions for your research:

Gonzalo Pizarro
Martin Luther King, Jr.
Leif Ericson
Mata Hari
Louis Riel
Mahatma Gandhi
Amelia Earhart
Cleopatra
Houdini
Kociuszko

SELECTION TWO

L. P. Hartley

A HIGH DIVE

The following story is fiction, which means that it did not really happen but was invented by the author. From looking at the title and illustrations, what dangerous or daring action do you think the story will relate? In other words, what do you think the *plot* of the story will be? (The term *plot,* when referring to stories, means the chain of events that makes up the action or main story line.) Traditionally, the *plot* of a piece of fiction follows four steps:

1. **Conflict.** The story begins with some problem or conflict. (If everything were going fine, there would be no movement, no real story to tell.)
2. **Complication.** Something happens to change and increase—to complicate—the problem.
3. **Climax.** Toward the end, the story reaches a climax, or turning point, a high point of interest or excitement that will determine how everything turns out.
4. **Resolution.** Soon after the climax, the conflict is resolved—either by being solved, for better or worse, or by being accepted or seen in a different way—and the story ends. Sometimes there is a happy ending and sometimes a sad one, depending on the author's view of reality and the point he or she wants to make. Often the French term *denouement* is used in English instead of the word *resolution.*

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Typical conflicts in fictional stories involve a struggle between a character and nature (a mountain to climb, a jungle to cross), between the main character and other characters (a detective against a criminal, a hero against evildoers), between a character and a social or economic situation, or between a character and himself (a person who fights his or her own fear, ambition, ignorance, and so on). Sometimes there is more than one conflict

in the same story. Take a guess about the following story. What type **of conflict(s)** do you think will occur in it?

Prereading Exercise: Thinking Ahead and Predicting the Action

As you read, try to think ahead of the story. Don't worry about the words you don't understand. Simply follow the main steps of the plot and pick up clues from the context to help you predict what is going to happen next. The story will be interrupted at a few points and you will be asked some questions to guide you.

A High Dive

The circus manager was worried. Attendances had been falling off and such people as did come—children they were, mostly—sat about listlessly, munching sweets or sucking ices, sometimes talking to each other without so much as glancing at the show. . . . What did people want? Something that was, in his opinion, sillier and more pointless than the old jokes; not a bull's-eye on the target of humor, but an outer or even a near miss—something that brought in the element of futility and that could be laughed at as well as with; an unintentional joke against the joker.

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The clowns were quick enough with their patter but it just didn't go down; there was too much sense in their nonsense for an up-to-date audience, too much articulateness. They would do better to talk gibberish perhaps. Now they must change their style, and find out what really did make people laugh, if people could be made to; but he, the manager, was over fifty and never good himself at making jokes, even the old-fashioned kind. What was this word that everyone was using—"sophisticated"? The audiences were too sophisticated, even the children were: They seemed to have seen and heard all this before, even when they were too young to have seen and heard it.

"What shall we do?" he asked his wife. They were standing under the Big Top, which had just been put up, and wondering how many of the empty seats would still be empty when they gave their first performance.

"I don't see what we can do about the comic side," she said. "It may come right by itself. Fashions change, all sorts of old things have returned to favor, like old-time dances. But there's something we could do."

"What's that?"

"Put on an act that's dangerous, really dangerous. Audiences are never bored by that. I know you don't like it, and no more do I, but when we had the Wall of Death—"

Her husband's big chest muscles twitched under his thin shirt.

Prediction What is the conflict that begins the story? What possible solution does one of the characters offer? How can you tell that the other one doesn't like it? What do you think the "Wall of Death" is? Will the man and woman probably agree or disagree as they talk about it?

"You know what happened then."

"Yes, but it wasn't our fault; we were in the clear."

He shook his head.

"Those things upset everyone. I know the public came after it happened—they came in shaols.* They came to see the place where someone had been killed. But our people got the needle and didn't give a good performance for I don't know how long. If you're proposing another Wall of Death I wouldn't stand for it—besides, where will you find a man to do it?—especially with a lion on his bike, which is the great attraction."

"But other turns are dangerous too, as well as dangerous looking. It's being dangerous that is the draw."

"Then what do you suggest?"

Before she had time to answer a man came up to them.

"I hope I don't butt in," he said, "but there's a man outside who wants to speak to you."

"What about?"

"I think he's looking for a job."

"Bring him in," said the manager.

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Prediction What do you think is meant by the word *draw* in this context? What has happened to complicate the plot? What do you imagine the new character will propose?

"shoals: large groups, throngs, droves.

The man appeared, led by his escort, who then went away. He was a tall, sandy-haired fellow with tawny leonine eyes and a straggling moustache. It wasn't easy to tell his age—he might have been about thirty-five. He pulled off his old brown corduroy cap and waited.

"I hear you want to take a job with us," the manager said, while his wife tried to size up the newcomer. "We're pretty full up, you know. We don't take on strangers as a rule. Have you any references?"

"No, sir."

"Then I'm afraid we can't help you. But just for form's sake, what can you do?"

As if measuring its height the man cast up his eyes to the point where one of the two poles of the Big Top was embedded in the canvas.

"I can dive sixty feet into a tank eight feet long by four feet wide by four feet deep." The manager stared at him.

"Can you now?" he said. "If so, you're the very man we want. Are you prepared to let us see you do it?"

"Yes," the man said.

"And would you do it with petrol burning on the water?"

"Yes."

"But have we got a tank?" the manager's wife asked.

"There's the old Mermaid's tank. It's just the thing. Get somebody to fetch it."

While the tank was being brought the stranger looked about him.

"Thinking better of it?" said the manager.

"No, sir," the man replied. "I was thinking I should want some bathing trunks."

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"We can soon fix you up with those," the manager said. "I'll show you where to change."

Leaving the stranger somewhere out of sight, he came back to his wife.

"Do you think we ought to let him do it?" she asked.

"Well, it's his funeral. You wanted us to have a dangerous act, and now we've got it."

"Yes, I know, but . . ." The rest was drowned by the rattle of the trolley bringing in the tank—a hollow, double cube like a sarcophagus. Mermaids in low relief sported on its leaden flanks. Grunting and muttering to each other the men slid it into position, a few feet from the pole. Then a length of hosepipe was fastened to a faucet and soon they heard the sound of water swishing and gurgling in the tank.

"He's a long time changing," said the manager's wife.

"Perhaps he's looking for a place to hide his money," laughed her husband, and added, "I think we'll give the petrol a miss."

Prediction In what way do the manager and his wife seem to have changed their points of view? Why do you think this happened? What words or actions make you think that the stranger is not afraid? That he is poor? What do you predict will be the climax? Do you think it will bring success or tragedy? Might it be a solution to the problem that began this story?

At length the man emerged from behind a screen and slowly walked toward them. How tall he was, lanky and muscular. The hair on his body stuck out as if it had been combed. Hands on hips he stood beside them, his skin pimpled by gooseflesh. A fit of yawning overtook him.

"How do I get up?" he asked.

The manager was surprised, and pointed to the ladder. "Unless you'd rather climb up, or be hauled up! You'll find a platform just below the top, to give you a foothold."

He had started to go up the chromium-plated ladder when the manager's wife called after him: "Are you still sure you want to do it?"

"Quite sure, madam."

He was too tall to stand upright on the platform; the awning brushed his head. Crouching and swaying forty feet above them he swung his arms as though to test the air's resistance. Then he pitched forward into space, unseen by the manager's wife, who looked the other way until she heard a splash and saw a thin sheet of bright water shooting up.

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The man was standing breast-high in the tank. He swung himself over the edge and crossed the ring toward them, his body dripping, his wet feet caked with sawdust, his tawny eyes a little bloodshot.

"Bravo!" said the manager, taking his shiny hand. "It's a first-rate act, that, and will put money in our pockets. What do you want for it, fifteen quid a week?"

The man shook his head. The water trickled onto his shoulders, oozed from his borrowed bathing suit and made runnels* down his sinewy thighs. A fine figure of a man: the women would like him.

"Well, twenty then." Still the man shook his head.

"Let's make it twenty-five. That's the most we give anyone."

**runnel:* *a* small stream, brook, rivulet.

Except for the slow shaking of his head the man might not have heard. The circus-manager and his wife exchanged a rapid glance.

Prediction Were you right about the climax? Why do you think that the man is not responding? Do you predict that he will become a member of the circus or not? Why? How do you think the story will end?

"Look here," he said. "Taking into account the draw your act is likely to be, we're going to make you a special offer—thirty pounds a week. All right?"

Had the man understood? He put his finger in his mouth and went on shaking his head slowly, more to himself than at them, and seemingly unconscious of the bargain that was being held out to him. When he still didn't answer, the knot of tension broke, and the manager said, in his ordinary, brisk voice, "Then I'm afraid we can't do business. But just a matter of interest, tell us why you turned down our excellent offer."

The man drew a long breath and breaking his long silence said, "It's the first time I done it and I didn't like it."

With that he turned on his heel and walked off unsteadily in the direction of the dressing room.

The circus-manager and his wife stared at each other.

"It was the first time he'd done it," she muttered. "The first time." Not knowing what to say to him, whether to praise, blame, scold or sympathize, they waited for him to come back, but he didn't come.

"I'll go and see if he's all right," the circus-manager said. But in two minutes he was back again. "He's not there," he said. "He must have slipped out the other way, the crack-brained fellow."

L. P. Hartley

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Talking It Over

1. Were most of your predictions about the action correct? Did any part of the story surprise you?
2. By the way the younger man speaks, you can tell that he is not very well educated. What grammar mistake does he make toward the end of the story that shows you this?
3. Will the diver return? Explain your answer.
4. Why do you think the circus manager kept on making higher offers to the diver? What lesson does this teach us about

bargaining? Do you think it is usually appropriate to bargain for a salary or not? On which of the following occasions do you think it would be appropriate to bargain in North American society?

- purchasing food at the supermarket
- buying a new or used car
- arranging to sublet an apartment
- ordering dinner at a restaurant
- buying clothes at a department store
- buying second-hand furniture (or a used bicycle) that was advertised in the newspaper or on a bulletin board

Understanding the Theme

Besides characters, plot, and setting, a story also has a *theme:* the general idea or main point of the story. An author combines the characters, plot, and setting in a particular way to show something. To find the theme of a story, you can ask yourself: Does the story express a particular opinion or belief? Perhaps it makes some statement about the meaning of courage or the true definition of love.

The preceding story deals with the need for making money and for taking risks and the danger that this sometimes involves for human life. But what exactly does it say about these subjects? Which of the following statements do you think expresses the theme of the story best? If you do not like any of them, write your own statement of the theme in the blanks provided.

1. No amount of money is worth the risk of losing a human life.
2. Only the person who takes a risk can judge how much it is worth.
3. It takes courage as well as skill to confront danger successfully.
4. _____

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Word Detective

Follow the clues to find the words and phrases in the article.

1. a hyphenated word in the first paragraph that refers to a part of an animal and means "an exact hit right in the center":_____

2. an adjective used twice in the second paragraph; it begins with the letter s and means the opposite of simple or naive:

3. a two-word phrase, used in the third paragraph and after, that means the large tent used for circuses:

4. a noun used to describe the tank that is brought in toward the middle of the story; it begins with *s* and means "a coffin (box which holds a dead body for burial) used in ancient times":

5. an *-ing* word that begins with *c* and is used to describe the way the diver stood at the top of the platform under the tent because he was too tall to stand up straight:

6. a verb used in the second-to-last paragraph that means "to share the feelings (of someone)":

Some Slang Used for Referring to Money

You can tell that this story takes place in Great Britain because the circus manager makes offers in pounds rather than in dollars. What slang word does he use to refer to pounds when he makes his first offer?

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Do you know the meaning of the slang words in the following sentences? They refer to money in Canada and in the United States.

1. You say the price is ten *bucks.* Why, that's outrageous!
2. I wouldn't give you *two bits* for that! Well . . . OK, for *six bits,* I'll take it.
3. Can you trust me until tomorrow? I don't have any *bread* on me now.
4. Let's go to a restaurant that accepts *plastic money.*

SELECTION THREE

Farley Mowat

THE WORLD WE LOST

Do you ever have nightmares? What is your secret fear? Poisonous snakes? Earthquakes? Water? Fire? Everyone is afraid of something, and wild animals appear high on the list of horrors for many people. Farley Mowat, the world-famous Canadian writer and adventurer, shared this fear even though he accepted a job that meant living alone in the far north for many months in direct contact with packs of wolves. The Wildlife Service of the Canadian government hired him to investigate claims that hordes of bloodthirsty wolves were killing the arctic caribou (large animals of the deer family). Much to his surprise, Mowat discovered that the wolves were not savage killers, but cautious and predictable animals that usually tried to stay out of people's way. He gave names to the wolves he studied (Angeline, George, and so forth), got to know them, and even became fond of them.

Later he wrote a book called *Never Cry Wolf* about his experiences. It became a best-seller and was made into a popular movie that has changed many people's ideas about wolves, although it has not done much to stop the massive extermination campaigns against wolves in certain parts of Canada and the United States. The following selection is the last chapter of his book. It tells of an incident that seemed to be very dangerous and that led the author to an important discovery, not about the wolves but about himself. What do you think the title might mean? See if your idea of it changes as you read the story.

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Prerecding **Exercise:**
Guessing the Meaning of New Words from Context

Read the following excerpts from the selection and choose the best definition for each italicized word. Use the hints in parentheses to aid you.

1. "In order to round out my study of wolf family life, I needed to know what the *den* was like inside—how deep it was, the diameter of the passage, the presence (if any) of a nest at the end of the *burrow* and such related information." The *den* is the place where the wolves go to:

   a. hunt b. sleep c. die

   A *burrow* is:

   a. a pile of sticks and mud

b. a young wolf or dog
c. a hole dug by an animal

2. "The *Norseman* came over at about fifty feet. As it roared past, the plane waggled its wings gaily in salute, then lifted to skim the crest of the wolf *esker,* sending a blast of sand down the slope with its propeller wash." A *Norseman* is a type of:

a. animal b. wind c. plane

{Hint: The word *esker* is not well known even to English speakers, but the reader can use clues from the context: the word *crest,* your knowledge of where the man is going, what happens when the propeller gets near the esker.) An *esker* is:

a. a ridge of sand b. a small river c. a kind of fruit tree

3. "My mouth and eyes were soon full of sand and I was beginning to suffer from *claustrophobia,* for the tunnel was just big enough to admit me." *(Hint: Phobia* is a term used in psychology to refer to a deep, irrational fear. If 3'ou remember that the word *for* means "because" when it starts a secondary clause, you will understand what fear is referred to by this word.) *Claustrophobia* is the unreasonable fear of:

a. high, open places
b. small, enclosed places
c. wild animals

4. "Despite my close *familiarity* with the wolf family, this was the kind of situation where irrational but deeply ingrained *prejudices* completely overmaster reason and experience." In this context, *familiarity* means:

a. similarity b. hatred c. acquaintance

(Hint: If you break up the word *prejudice,* you get the prefix *pre-* meaning "before," and the root *jud,* which also appears in words such as *judge* and *judgment.) Prejudices* means:

a. strong and warm emotions
b. opinions formed with no basis in fact
c. conclusions drawn from observation and action

5. "It seemed *inevitable* that the wolves would attack me, for even a *gopher* will make a fierce defense when he is cornered in his den." *(Hint:* The word *even* is your best clue to the meaning of both the italicized words.) *Inevitable* means:

a. certain b. highly unlikely c. possible

A *gopher* is an animal that is:

a. large and dangerous
b. small and defenseless
c. similar to a wolf

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6. "I was *appalled* at the realization of how easily I had forgotten, and how readily I had denied, all that the summer *sojourn* with the wolves had taught me about them . . . and about myself." *Appalled* means:

   a. pleased b. shocked c. relieved

   Sojourn means:

   a. reading b. weather c. stay

The World We Lost

In order to round out my study of wolf family life, I needed to know what the den was like inside—how deep it was, the diameter of the passage, the presence (if any) of a nest at the end of the burrow, and such related information. For obvious reasons I had not been able to make the investigation while the den was occupied, and since that time I had been too busy with other work to get around to it. Now, with time running out, I was in a hurry. 30

I trotted across country toward the den and I was within half a mile of it when there was a thunderous roar behind me. It was so loud and unexpected that I involuntarily flung myself down on the moss. The Norseman came over at about fifty feet. As it roared past, the plane waggled its wings gaily in salute, then lifted to skim the crest of the wolf esker, sending a blast of sand down the slope with its propeller wash. I picked myself up and quieted my thumping heart,

Gray wolves in the Yukon.

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thinking black thoughts about the humorist in the now rapidly vanishing aircraft.

The den ridge was, as I had expected (and as the Norseman would have made quite certain in any case), wolfless. Reaching the entrance to the burrow I shed my heavy trousers, tunic, and sweater, and taking a flashlight (whose batteries were very nearly dead) and measuring tape from my pack, I began the difficult task of wiggling down the entrance tunnel.

The flashlight was so dim it cast only an orange glow—barely sufficient to enable me to read the marks on the measuring tape. I squirmed onward, descending at a forty-five-degree angle, for about eight feet. My mouth and eyes were soon full of sand and I was beginning to suffer from claustrophobia, for the tunnel was just big enough to admit me.

At the eight-foot mark the tunnel took a sharp upward bend and swung to the left. I pointed the torch in the new direction and pressed the switch.

Four green lights in the murk ahead reflected back the dim torch beam.

In this case green was not my signal to advance. I froze where I was, while my startled brain tried to digest the information that at least two wolves were with me in the den.

Despite my close familiarity with the wolf family, this was the kind of situation where irrational but deeply ingrained prejudices completely overmaster reason and experience. To be honest, I was so frightened that paralysis gripped me. I had no weapon of any sort, and in my awkward posture I could barely have gotten one hand free with which to ward off an attack. It seemed inevitable that the wolves *would* attack me, for even a gopher will make a fierce defense when he is cornered in his den.

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The wolves did not even growl.

Save for the two faintly glowing pairs of eyes, they might not have been there at all.

The paralysis began to ease and though it was a cold day, sweat broke out all over my body. In a fit of blind bravado, I shoved the torch forward as far as my arm would reach.

It gave just sufficient light for me to recognize Angeline and one of the pups. They were scrunched hard against the back wall of the den; and they were as motionless as death.

The shock was wearing off by this time, and the instinct for self-preservation was regaining command. As quickly as I could I began wiggling back up the slanting tunnel, tense with the expectation that at any instant the wolves would charge. But by the time I reached

the entrance and had scrambled well clear of it, I had still not heard nor seen the slightest sign of movement from the wolves.

I sat down on a stone and shakily lit a cigarette, becoming aware as I did so that I was no longer frightened. Instead an irrational rage possessed me. If I had had my rifle I believe I might have reacted in brute fury and tried to kill both wolves.

The cigarette burned down, and a wind began to blow out of the somber northern skies. I began to shiver again; this time from cold instead of rage. My anger was passing and I was limp in the aftermath. Mine had been the fury of resentment born of fear: resentment against the beasts who had engendered naked terror in me and who, by so doing, had intolerably affronted my human ego.

I was appalled at the realization of how easily I had forgotten, and how readily I had denied, all that the summer sojourn with the wolves had taught me about them . . . and about myself. I thought of Angeline and her pup cowering at the bottom of the den where they had taken refuge from the thundering apparition of the aircraft, and I was shamed.

Somewhere to the eastward a wolf howled; lightly, questioningly. I knew the voice, for I had heard it many times before. It was George, sounding the wasteland for an echo from the missing members of his family. But for me it was a voice which spoke of the lost world which once was ours before we chose the alien role; a world which I had glimpsed and almost entered, . . . only to be excluded, at the end, by my own self.

Farley Mowat
Never Cry Wolf

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Filling in a Summary of the Plot

Fill in the blanks with appropriate words to complete the following summary of Farley Mowat's true story. For some blanks, several different words could be correct.

The World We Lost: A Summary

In the far north, the Canadian _____ i was doing a study on_____2 and decided to go inside the_____ 3 . On his way there he was_____4 by a low-flying

_____ 5 He took a _____to be able to see and a _____.____ ____7 to make measurements and entered. As he went down the tight _____8 , he began to suffer from _____9 . Suddenly he saw ahead four green_____10 , and he knew that two_____11 were there with him. He felt very_____12 and could not _____13 . Then he quickly_____14 the burrow. Afterward, he no longer felt frightened; instead he felt_____15 that he had wanted to 16 the wolves. Later he realized how easily he had_____17 all that his study of the wolves had taught him, and he was_____18 . That day he made an important discovery not about wolves but about_____19 .

Understanding the Author's Purpose

Mowat's story is nonfiction, but it still has the same narrative elements that make up fiction stories: characters, setting, plot, and theme. What happened was true, but the author chose out of many true events certain ones to tell for a particular reason, to show a certain general idea (theme). Describe briefly in your own words the narrative elements of this story.

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Setting:

Characters:

Plot:

What is the basic conflict?

What is the climax of the action?

Theme: (Think of the discovery the author makes at the end. Think of the title and how it relates to this discovery.)

Talking It Over

1. Would you be afraid to study wild animals the way Mowat did or not? Would you be able to spend a summer completely alone, away from all human company? What character traits (qualities) must a person have to do these things?
2. Farley Mowat writes in a personal, down-to-earth style. He is not afraid to tell about his faults and his feelings. In your opinion, what does this indicate about his character?
3. At a dramatic point in his story, Mowat interjects a bit of humor. He says, "In this case green was not my signal to advance." What does he mean by this? The technique of using humor at a very serious moment is called *comic relief.* What do you think the purpose of this is?
4. How can you tell that Mowat has gotten to know the wolves as individuals and that he feels affection for them?
5. Have you ever seen wolves? Do you know of places other than Canada where they live?
6. In your opinion, should wolves be exterminated or not? Why?

Solving Problems in Groups: Thinking Your Way Out of Danger

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Many times the only way to get out of a dangerous spot is with your brain. Read over the following imaginary situations; then work together in small groups and try to figure out how you would escape from each of them. (If you give up, you can askl your teacher, who just might know the answer.)

Situation A: The Windowless Prison

While participating in a revolution against an unjust tyrant, you are caught and thrown into a prison cell that has a dirt floor, thick stone walls, and no windows. There is only a skylight, very high above, to provide light and air. To prevent escape, there are no tables or chairs, only a very small mattress on the floor. Just before you are locked in, a comrade whispers to you that it is possible to escape through the skylight by digging a hole in the floor. How can you do this?

Situation B: The Cave of the Two Robots

Having entered a time machine, you have been whisked one thousand years into the future to find yourself at the mercy of a superior civilization. These creatures of the future choose to amuse themselves by playing games with you. They set you in a cave that has two doors at the end of it: One leads back to the lime machine that would transport you safely home, and the other leads to a pit filled with horrible monsters. There are also two robots. They know the secret of the doors. One always tells the truth and one always lies, and you do not know which is which. According to the rules of their game, you are allowed to ask one question to one of these robots. What question should you ask? How can you know which door to choose?

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CHAPTER 3
MAN AND WOMAN



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The eternal "battle of the sexes" continues to be a popular topic just as it has been down through the ages. This chapter begins with a discussion of how technology and tradition blend to aid romance in today's Japan. An analysis of the differences between men and women follows, comparing the two sexes with regard to sports, health, aggression, crime, child care, and brain structure, and drawing conclusions that may surprise you. The third selection is an essay written by a feminist with a good sense of humor. She expresses a number of serious opinions about marriage in an ironic and lighthearted style. The chapter then finishes with one man's view, written in poetry, of the transforming power of love.

SELECTION ONE

Urban C. Lehner

FOR BETTER OR WORSE, ARRANGED MARRIAGES STILL THRIVE IN JAPAN

What is the best way to find a husband or a wife? Should you let your family select a mate for you or should you date many people and try to "fall in love"? Many cultures have the tradition of arranged marriages. These are brought about by "matchmakers" who find and introduce possible candidates to a young person at the family's request and for a fee. What do you think of this practice? Judging by the title of the selection, do you think this tradition is popular in Japan? What does the first phrase of the title tell you about the author's point of view? In the article you will find out what the Japanese mean by being "wet" or "dry" when making a decision and how modern technology is aiding romance. Read for main ideas and see if you change some of your opinions about the best way to select a mate.

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Prereading Exercise: Distinguishing the General from the Specific

The following article is from the *Walt Street Journal,* a newspaper best known for its business and financial news. This, however, is a feature article, one that deals with a topic of general human interest. Like many feature articles, it alternates between *general* statements (large, broad ideas) and *specific* information (small points, details, statistics, particular cases, and examples that

illustrate or support the general statements). Take two minutes to skim the selection. Then answer the following questions about its overall organization:

1. Does the article begin with the general or the specific? Why do you think it begins in this way?

2. At what point does it change?

3. How docs it end?

4. How could you briefly describe its organization?

For Better or Worse.
Arranged Marriages Still Thrive in Japan

"He was a banker," Toshiko says of the first young man her parents set her up with. "He was *so-o-o-o-o* boring."

The second was an architect. He tried to impress her with his knowledge of the historic hotel where they had coffee. "He was wrong on almost every point," she sniffs.

The third, for some reason, "asked me a lot of questions about the French revolution."

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Seven more followed. She turned them all down. Just twenty-six, and seeing on the sly a boyfriend from the wrong side of the tracks, Toshiko was in no hurry to get married, With her Yale diploma, her colloquial English, and her very modern outlook on life, this rich family's daughter from Tokyo could almost pass for a rich family's daughter from Greenwich, Connecticut.

But Tokyo isn't Greenwich. Like most unmarried women here, Toshiko (it's not her real name; her parents read this newspaper) still lives with her mother and father. And like most parents here, they think that by the time a young woman reaches her mid-twenties she ought to be married. About a year ago, they began to pressure her to go through *omiai,* the ceremonial first meeting in the traditional Japanese arranged marriage.

Meet and Look

"It was such a drag to get up in the morning, because I knew at breakfast we would have another fight about this," Toshiko says. "I did my first *omiai* so I could have some peace at home."

These days lots of young Japanese do *omiai,* literally, "meet and look." Many of them, unlike Toshiko, do so willingly. In today's prosperous and increasingly conservative Japan, the traditional *omiai kekkon,* or arranged marriage, is thriving.

But there is a difference. In the original *omiai,* the young Japanese couldn't reject the partner chosen by his parents and their *nakodo,* or middleman. After World War II, many Japanese abandoned the arranged marriage as part of their rush to adopt the more democratic ways of their American conquerors. The Western *ren'ai kekkon,* or love marriage, came into vogue; Japanese began picking their own mates by dating and falling in love.

But the Western way was often found wanting in an important respect: It didn't necessarily produce a partner of the right economic, social, and educational qualifications. "Today's young people are quite calculating," says Chieko Akiyama, a social commentator.

No Strings

What seems to be happening now is a repetition of a familiar process in the country's history, the "Japanization" of an adopted foreign practice. The Western ideal of marrying for love is accommodated in a new *omiai* in which both parties are free to reject the match. *"Omiai* is evolving into a sort of stylized introduction," Mrs. Akiyama says.

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Many young Japanese now date in their early twenties, but with no thought of marriage. When they reach the age when society decrees they should wed—in the middle twenties for women, the late twenties for men—they increasingly turn to *omiai.* Some studies suggest that as many as 40 percent of marriages each year are *omiai kekkon.* It's hard to be sure, say those who study the matter, because many Japanese couples, when polled, describe their marriage as a love match even if it was arranged.

These days, doing *omiai* often means going to a computer matching service rather than to a *nakodo.* The *nakodo* of tradition was an old woman who knew all the kids in the neighborhood and went around trying to pair them off by speaking to parents; a successful match would bring her a wedding invitation and a gift of money. But Japanese today find it's less awkward to reject a proposed partner if the *nakodo* is a computer.

Japan has about five hundred computer matching services. Some big companies, including Mitsubishi, run one for their employees. At atypical commercial service, an applicant pays $80 to $125 to have his or her personal data stored in the computer for two years and $200 or so more if a marriage results. The stored information includes some obvious items, like education and hobbies, and some not-so-obvious ones, like whether a person is the oldest child. (First sons, and to some extent first daughters, face an obligation of caring for elderly parents.)

The customer also tells the computer service what he or she has in mind. "The men are all looking for good-looking women, and the women are all looking for men who can support them well," says a counselor at one service.

Whether generated by computer or *nakodo,* the introduction follows a ritual course. The couple, who have already seen each other's data and picture, arrive at a coffee shop or computer-service meeting room accompanied by their parents and the *nakodo* or a representative of the service. After a few minutes of pleasantries, the two are left to themselves. A recent comedy movie had such a couple heading directly to one of Japan's "love hotels," which offer rooms by the hour; but ordinarily it takes love a good bit longer to flower, if it does at all.

And there still are those Japanese who consider love and marriage to be quite separate things. Here, in brief, are how three arranged marriages of the past twenty-five years unfolded,

The Asamis

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Munehiro Asami was a twenty-eight-year-old office worker at a machine-parts company. "I had a friend from childhood whose mother was very pushy," he says. "One day she stomped into my room and took a picture of me out of my picture album. She also left an *omiai* picture of a lady. I was to meet this girl and I didn't want to go."

Neither did the woman. She was Reiko Ohtsuka, a twenty-three-year-old part-time office worker. She recalls how she "half jokingly" agreed to the meeting, then asked if it was too late to change her mind. It was.

But all was for the best, apparently. Mr. Asami warmly remembers the ritual as "like being introduced to acute girl by your friend." Miss Ohtsuka discovered that her worries about what to talk about were unfounded. "We dated for four months," she says, "fell in love, and got married."



Japanese marriage ceremony.

The Watanabes

In 1972 he was five years out of Tokyo University, Japan's Harvard. He was working for a big Tokyo bank. And, reflecting his heavy work schedule and a certain Japanese shyness, he had never had a date.

Mr. Watanabe—he doesn't want to be identified further—always intended to marry through *omiai.* "It's a good system," he says, because the partners don't waste time on someone who doesn't meet their specifications. It's also realistic, he adds: "In love marriages, the two look only at each other's good points: We calculate the bad as well."

Mr. Watanabe was looking for a wife who, first and foremost, "would get along well with my father." To that end, he asked for someone from his home prefecture of Yamanashi. He also wanted a wife who wouldn't have to support her parents. Being himself a second son, he could qualify for a woman who was also looking for a mate free of parental obligations.

Thus, after an introduction through his uncle, did Mr. Watanabe marry a second daughter from his home town in early 1973. They now have two children. "Everyone wants to get married through love, but not everyone can," Mr. Watanabe says.

The Japanese like to think they are "wet" (emotional) compared with "dry" (rational) Westerners. But Mr. Watanabe thinks that "when it comes to marriage, we Japanese are dry."

The Azumas

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Kikuko Azuma, who found her husband through *omiai* twenty-five years ago, says the custom is still "the shortest, most convenient way." She is recommending it to her twenty-two-year-old daughter.

Mrs. Azuma was only twenty and just out of junior college when she wed. But she was eager to study in the United States and by coincidence was introduced to a twenty-seven-year-old trading-company executive about to be transferred to New York. He was from a well-to-do family, and Mrs. Azuma recalls being chauffeured to the *omiai* at an expensive Western restaurant. "I admired his social status," she says.

Then too, her own parents were having marital difficulties, and she feared that if they divorced she would seem a less desirable catch in a future *omiai.* So she had to move quickly, even though "at twenty I hadn't given much thought to getting married."

Did she love him? "Love and marriage are different," Mrs. Azuma replies firmly. "I think after you get married, love eventually emerges."



Traditional Japanese bride.

Does her husband of twenty-five years agree? "I don't know," she says. "I don't really know him very well."

There is one other om/a/success story to report. It is about Toshiko, the young sophisticate who opened this article. After coolly dismissing ten young men sent her way, she was intrigued by Number 11, a physician who had worked in Africa. A friend says he was the first guy Toshiko had met whom she found "intellectually compatible" and who, more importantly, wasn't intimidated by her.

Toshiko herself isn't available for comment. She is in Fiji making wedding preparations.

Urban C. Lehner
Wall Street Journal

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Recalling Information

Choose the best way of finishing each statement, based on what you have just read.

1. The literal translation of the Japanese word *omiai* is:
   a. ceremonial introduction
   b. meet and look
   c. computer wedding
2. After World War II, a new practice that came into fashion in Japan was:
   a. divorce b. arranged marriage c. love marriage

3. In order to use the new commercial services for *omiai,* a person must:
   a. pay money
   b. belong to a noble family
   c. go to a "love hotel"
4. Many Japanese do not want to marry:
   a. an oldest child b. a youngest child c. a middle child
5. The reason that this position in the family makes the person a less desirable marriage partner is that he or she:
   a. is usually very spoiled and arrogant
   b. does not inherit any money or property
   c. has to take care of his or her parents when they are older
6. In comparison with the time right after World War II, the practice of arranged marriages in Japan now seems to be:
   a. decreasing b. increasing c. about the same

Finding Support for General Ideas

Find specific facts, statistics, and examples from the article to support the following general ideas.

1. "In today's prosperous and increasingly conservative Japan, the traditional *omiai kekkon,* or arranged marriage, is thriving."

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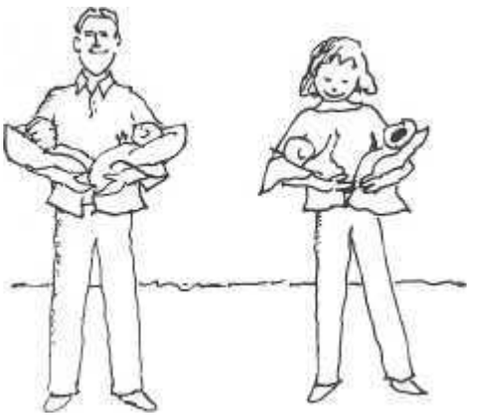
2. "What seems to be happening now is a repetition of a familiar process in the country's history, the 'Japanization' of an adopted foreign practice."

3. "The Japanese like to think they are 'wet' (emotional) compared with 'dry' (rational) Westerners. But Mr. Watanabe thinks that 'when it comes to marriage, we Japanese are dry.'"

Talking It Over

1. According to the article, at what age is a woman expected to marry in Japan? A man? Is it the same in your culture? What do you think is the ideal age to marry? Why?
2. What are some of the advantages of arranged marriages? What are some of the disadvantages?
3. Do you think that arranged marriages are more or less likely to end in divorce? Why?
4. Did reading the article give you any new information? Did it change your views on how to select a marriage partner? Explain.





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SELECTION TWO Signe Hammer

THE SEXES: ANATOMY OF A DIFFERENCE

Are men stronger than women?

Are they better at sports?_____

Do women shoot guns as well as men?

Will a woman ever win an important marathon race (twenty-six miles)?_____

Which of the sexes commits more violent crimes?_____

Which one is more susceptible to disease?_____

Canmentakecareofbabiesaswellaswomen?_____

Can women be good engineers?_____

These are *controversial* questions, questions that cause a good deal of discussion because people tend to have differing opinions and strong emotions concerning them. Take a moment to think about them and write yes or no in the blank following each one. After you read the following article on sexual differences, look back at these questions to see if any of your views has changed. The article, taken from *Health Magazine,* is written in the form of commonly asked questions about male-female differences, with answers provided by the author, a popular writer on health and science topics.

Prereading Exercise: Coping with Technical Terms

With a long article like this one, which uses a number of technical terms, your best strategy is to skim it, skipping over any words you don't understand. Then read it a second time and pay more attention to some of the terms—the ones that are used several times or that seem important for understanding the main ideas. Often you can figure these out from the context. Practice this skill with the following words taken from the reading.

1. *Sex hormones.* This is obviously an important term since it occurs many times and in many different parts of the article. It occurs first in Line 56. No definition is given, but you can tell from the context that it refers to substances or chemicals in the body, and you are told what they do. Look at Lines 56-60 and complete the following definition.

   sex hormones: substances that _____

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2. *Testosterone.* This term is also used many times and appears first in Line 52. If you skip over it during the first reading, you will find that it is defined for you in Line 65. Look there now and write a definition.

   testosterone:

3. *Feedback.* This word is used only twice, but it is important for the understanding of a key idea: the relationship between testosterone and aggression. Like the words *program* and *programming, feedback* comes from the field of electronics but is now used in a broader way in general language. Read Lines

67-78 carefully; then write the best definition you can. (This may be hard, but it isn't impossible even if you know nothing about electronics.)

*feedback:*_____

Estrogen. This term appears first in Line 111, where its definition can be guessed from the context. If you have understood terms 1 and *2,* this should be easy.

estrogen: _____

5. *Autism, hyper activity, stuttering, dyslexia, aphasia.* All of these terms appear in one sentence in Lines 93-95, where two of them are denned. Why do you think the author did this when writing for an English-speaking audience? Why isn't it necessary to know all these terms in order to understand the basic point of the sentence? Scan the paragraph for the two definitions and write them below. Then write a general description that refers to all of them.

   1:_____

   2 : ._____

   general description;

6. *Chromosome, genes, immune system.* These three terms come from biology, and probably either you know all three or you don't know any of them. You need to understand them in order to grasp the idea presented in Lines 101-106, so this might be a time to go to the dictionary. If you look up the first term, you may be able to guess the others from a careful reading of the last sentence of the paragraph.

   chromosome:

   gene:

   immune system:

7. *Visual, spatial.* These two terms are first used together in hyphenated form in the second-to-the-last paragraph; they modify the word *abilities.* They are used in the last paragraph in ways that hint at their meaning, but the best clues are right in the first three letters of each word.

   visual and spatial abilities: abilities to_____.

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CHAPTER 3

The Sexes: Anatomy of a Difference

How much do we really know about the differences between the sexes? Can we separate nature (biology) from nurture (social training and expectations)? Though there are no definite conclusions, science *has* come up with some fascinating new answers to these and other age-old questions about *"la difference. "*

Can a woman match—or beat—a man in any sport?

If you're a woman and you want to challenge a man to a test of strength, your best bet would be either a contest to see who can do the most sit-ups, or leg wrestling (which works just like arm wrestling except that you lie on your back, hook ankles, and try to pull the other person over). Pound for pound, a woman can be as strong in the abdominal and leg muscles as a man because her relatively larger pelvis has plenty of room for muscle attachments. A woman's pelvis also gives her more leverage in leg wrestling.

Women's joints are more flexible and less tightly hinged than men's, so women get thrown about more in figure skating and ballet by men, whose upper-body strength is useful in lifting, holding, and throwing them. And in sports where strength is not a factor—skydiving, parachuting, sharpshooting—men and women perform and compete equally. Olympic rifle shooting has no separate categories for men and women; in fact, a woman, Margaret Murdoch, won the silver medal for rifle shooting in 1976.

If women have such strong legs, how come the fastest runners are still men?

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In endurance events like running and long-distance swimming, women actually do very well. Grete Waitz beat 11,705 men in the 1982 New York City Marathon; only 124 men managed to beat her. In long-distance swimming, a woman's body fat becomes an advantage, providing both buoyancy and insulation against the cold. Women have traditionally done better than men in English Channel swimming, for instance.

To serve his greater muscle mass, a man has a larger heart and lungs, more oxygen-carrying hemoglobin in his blood, and a larger stroke volume. Muscles depend on oxygen to work; the more oxygen you can get to them, the more energy you have. And a man's cardiovascular system more than fills his oxygen needs.

Training increases stroke volume and cuts down body fat; Grete Waitz's levels in both, not to mention her pelvic width, are undoubtedly

much closer to runner Alberto Salazar's than to mine. Nevertheless, in 1982 Salazar beat Waitz in the marathon by seventeen minutes, fifty-four seconds. The oxygen factor is probably the greatest male advantage, but the difference between men's and women's times has been getting smaller, and some experts think that the best women will one day equal the best men in events like marathons.

OK, so the physical differences between men and women balance out. But are woman as aggressive as men? Why is it usually men who commit violent crimes?

In everything from dreams and fantasies to play and crime, males of all ages seem to be more aggressive than females. The difference is one of the few that has been generally accepted by experts, but nobody really knows exactly how aggression works. There is a clear correlation between male aggression and high testosterone levels; by far the majority of violent crimes, for instance, are committed by young men, whose testosterone levels are much higher than those of older men.

Sex hormones program our bodies to develop as male or female, and many researchers now think that hormones program our brains as well. For instance, the same part of the brain that regulates the production of sex hormones also regulates the basic patterns of *some* of our behavior in courtship and sex, aggression and nurturing—behavior, in short, in which men and women act very differently.

The problem is that it isn't always clear which comes first, testosterone or the aggression. For example, it's been found that after a competition, a wrestler will have more testosterone in his blood-stream if he has won than if he has lost. Male hormone levels rise during a fight, as they do during sex, but are they responsible for starting the fight in the first place?

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What seems most likely is that there is a continuous feedback loop among hormones, the environment, and social programming, just as there's feedback between body and brain. Male violence against women, for instance, is fairly common in many societies. A man is more likely to respond to jealousy by blaming his partner, getting angry, and using violence, but a woman is more likely to blame herself. The man's reaction could be connected to the fact that testosterone levels rise with desire, so the hormonal trigger for violence is ready to pull if other elements such as jealousy, frustration, or rejection are present. But not every man beats his wife; ultimately it's the man, not the hormones, who's responsible.

Today, from the office to the tennis court, we expect women to be more aggressive than we did twenty years ago; not surprisingly,

women have also been committing more—and more violent—crimes, although still far fewer than men.

Why do women live longer than men?

No one really knows. The difference is in the genes, and one suggestion has been that there was originally no evolutionary reason for men to live past the age when they are useful as hunters, while women, the social center of the group, remained useful for child care, housekeeping, and food gathering even after their own childbearing years were over.

Men are much more vulnerable than women in a number of ways. Boy babies inherit more birth defects and suffer more birth traumas. In childhood, boys have more accidents, and they are far more likely than girls to suffer from autism, hyperactivity, stuttering, dyslexia (difficulty in reading), or aphasia (the loss of the ability to use words as symbols). In young adulthood they are particularly prone to violent deaths, and in middle age they are more likely to develop digestive disorders and kidney disease. They remain more vulnerable to viral infections of all kinds, and if they *do* avoid all the risks and make it to old age, they generally still die sooner than their female peers.

What makes men so vulnerable? Boys may owe their susceptibility to diseases to the fact that they have only one X chromosome. The other, the Y, determines their sex and is the most basic difference between men and women. It contains genes which program for the production of testosterone and the other hormones which produce the male body. The X chromosome includes genes that control the immune system; women, with two Xs, have a "backup" set of genes and, it may be, greater protection.

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Is there a maternal instinct that makes it more natural for a woman to mother than a man? Can men take care of babies?

Unlike testosterone and male aggression, there is no clear correlation between estrogen and the desire or ability to be a good mother. In fact, experiments on primates suggest that mothering is very much a learned activity. Monkeys and chimpanzees raised in isolation aren't very good at it.

Women are certainly physiologically designed and hormonally prepared to bear and nurse infants. They go through complex monthly hormonal cycles which prepare their bodies for conception. During pregnancy their estrogen levels rise dramatically, then drop just before birth. Other hormones, *prolactin* and *oxytocin,* start milk production and release it in response to an infant's cry.

But adoptive mothers, who don't go through all these changes, still do a very good job of mothering, while some biological mothers

don't. And fathers who care for their babies and children report high levels of "maternal" feelings. All this suggests that maternal feelings in both sexes develop through closeness and caretaking rather than through biological programming.

How come most of the engineers and computer experts are men?

Women are, on the whole, more verbal than men. They are good at languages and verbal reasoning, while men tend to excel at tasks demanding visual-spatial abilities, In fact, along with aggression, these are the most commonly accepted differences between the sexes.

Words are tools for communicating with other people, especially information about people. They are mainly social tools. Visual and spatial abilities are good for imagining and manipulating objects and forcommunicating information about them. Are these talents programmed into the brain? In some of the newest and most controversial research in neurophysiology, it has been suggested that when it comes to the brain, males are specialists while women are generalists.

But no one knows what, if anything, this means in terms of the abilities of the two sexes. Engineering is both visual and spatial, and it's true that there are relatively few women engineers. But women become just as skilled as men at shooting a rifle or driving a car, tasks that involve visual-spatial skills. They also do equally well at programming a computer, which is neither visual nor spatial. Women do, however, seem less likely to fall in love with the objects themselves. We all know men for whom machines seem to be extensions of their identity. A woman is more likely to see her car, rifle, or computer as simply a tool—useful, but not in itself fascinating.

Signe Hammer
HealthMagazine

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Reading Critically: Detecting a Bias

When writing about controversial questions, some authors try to be objective: to present information supporting both sides of the question without favoring either side. Most authors, however, have a *bias,* and in order to read critically you should learn to detect the bias. This means first determining which side of the question the author favors. The traditional viewpoint regarding the differences between men and women is that men are superior to women. It is also possible to have the opposite viewpoint—that women are superior to men—or that there is no important difference between the

sexes. Answer the following questions about the bias of the author of the preceding article.

1. In your opinion, what is the author's bias?

2. In which of the following ways does she show this bias?

   _____direct statement of her beliefs

   _____her manner of phrasing some of the questions

   _____ the choice of topics to discuss

   _____the omission of facts and details not favorable to her point of view

   _____some other way (Explain: _____ _____

3. Give at least two examples of how this bias is shown:

4. What is your own personal bias regarding this question, or do you feel you are completely objective?

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Separating Fact from Opinion

The difference between fact and opinion is not always clear, but some general rules can help you distinguish between them:

1. General statements (which could be verified in an encyclopedia or other reference book) about past or present events are usually facts; statements about the future are usually opinions, since the future by its nature is uncertain.
2. Statements that include the modals *may*, *might*, or *could*, or qualifiers such as *perhaps*, *maybe*, *possibly*, or *probably* are opinions.'
3. Statements based on evidence (research, case studies, experiments, questionnaires) need to be evaluated. If they are based on only one person's research, they should be considered opinions. If they are based on a great deal of research and if most experts agree, then they can be considered facts.

4. If the statement concerns a controversial question, it helps to know the author's bias. Statements that favor the opposite viewpoint are probably facts, since the author would not mention them unless he or she *had* to. Statements that favor his or her bias must be looked at very carefully and might well be opinions.

Tell whether each of the following statements based on the article is fact (F) or opinion (O). You might need to look at its context since the statements are not presented exactly as they appear in the text, so the line numbers are given.

1. ___A woman won the silver medal for rifle shooting in 1976. (Lines 20-21)

2. ___In endurance events such as running and long-distance swimming, women do very well. (Lines 25-26)

3. _ Men have greater muscle mass and larger hearts and lungs than women. (Lines 32-36)

4. ___The best women runners will one day equal the best men runners in events such as the marathon. (Lines 43-44)

5. ___Males are more aggressive than females. (Lines 48-54)

6. ___Sex hormones program our bodies to develop as male or female. (Lines 56-58)

7. ___Men's violent actions against women are related to the fact that testosterone levels rise with desire. (Lines 70-78)

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8. ___Men commit more violent crimes than women. (Lines 79f82)

9. ___On the average, women live longer than men because in the past old women were more useful to the social group than old men. (Lines 84-89)

10. __In general, men are more vulnerable to birth defects, disease, and accidents than women. (Lines 90-100)

11. _ Boys are more susceptible to disease than girls because they have only one X chromosome. (Lines 100-107)

12. __ Mothering is an activity that is learned, not inborn. (Lines 110-126)

13. ____Women are more verbal than men, while men are

better than women at visual-spatial activities. (Lines 128-131)

14. There are very few women engineers. (Lines 141-142)

15. Women are just as good as men at driving a car. (Lines 142-144)

Talking It Over

Discuss the following questions as a class or in small groups.

1. Are there some opinions expressed in the article that you do not agree with? Explain.
2. In your opinion, are men and women treated equally in society? Should they be?
3. Look back at the questions given before the article. Which ones would you answer differently now? Why?

Stories Behind Words: Mothering, Fathering, and the New "Ms."

Many people today feel that historically women have not been treated as well as men in many cultures. In the Western world, as recently as a hundred years ago, they were not allowed to vote in elections and were excluded from most professions. The attitude of favoring one sex over another (in this case, favoring the male) is called *sexism,* which is thought by many to be present in the very language we speak. For example, the verb *to mother,* used in the latter part of the article, generally means "to care for, protect" (for example, "That teacher *mothers* all her students"); whereas the verb *to father* usually means simply "to engender or originate" (for example, "He *fathered* three sons"). Here the idea that women, not men, should take care of children is locked into our everyday speech.

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Feminists (people who fight for the rights of women) claim that there are examples of sexism in the vocabulary and even in the grammar of the English language. A common example is the use of the word *man* or *mankind* to refer to the whole human species: *"Man* is the only tool-using animal. . . . The achievements of *mankind* after the agricultural era began. . . ." Certain critics of the feminists have argued that this usage doesn't really matter because everyone knows that the words *man* and *mankind* also refer to women. Feminists, however, generally believe that this manner of speaking has created the idea that men have been the active participants in history—working, building, exploring,

inventing—while women have sat quietly on the sidelines, helping them. Some people favor language reform and think that the words *people* or *humanity* should be used in these contexts. Others say, "Well, let's be honest! Men *have* been the active ones throughout history."

Similarly, now that women are present at professional and political meetings, certain terms, such as *Mr. Chairman,* have been called into question. What if the "chairman" is female? *Madame Chairman* and *chairperson* are now sometimes used, though certain groups still keep *Mr. Chairman* even when speaking to a woman.

Another bone of contention has beeen the use of the titles that indicate the civil state (married or single) of a woman—*Miss* or Mr?.—while all men, regardless of civil state, are referred to as *Mr.* In order to equalize the situation, some women now use the title *Ms.* in front of their names.

Is sexism peculiar to the English language, or do such problems arise now in other languages because of the increasingly active role of women? Does any other language have an equivalent of *Ms.?* Should it? Are these important questions or simply petty complaints? What word would you use to refer to a woman leader at a meeting? To the human species if you were writing a history book? One way or another, such questions as these need to be answered.

SELECTION THREE

Judy Syfers

I WANT A WIFE

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What qualities are needed to be a perfect wife? Do our modern views on this subject differ greatly from those of our grandparents? The following selection talks about what a wife should be. Written by a contemporary American writer, this humorous essay has become quite popular, chiefly because of the author's clever use of *irony,* which is discussed in the following exercise. Pay attention to the author's style, or way of writing, and see if you can understand what makes it humorous and enjoyable to read.

Prereading Exercise: Identifying an Ironic Tone

Everyone knows that a person's tone of voice can influence us a great deal. The sentence "Will you open the window?" can be said

in a soft, pleasing way or with a harsh, demanding tone that makes us angry. We also speak of the *tone* of an essay, speech, or article. It might be formal or informal, serious or humorous, angry or playful. The important thing is that it is appropriate to the author's subject, audience, and purpose. For what kind of topic and audience do you think that an angry tone would be appropriate and effective? When would it be inappropriate? What about a formal tone?

The following essay is written in an *ironic tone.* This means that the author says something very different from (at times, even opposite to) what she means. *Irony* is a very common device, even in everyday conversation, and it usually has a humorous effect. For example, when it rains on the day of a school picnic, someone might say *ironically,* "What lovely weather!"

Take two minutes to skim the following essay for the main idea and the tone. Then answer the following questions.

1. At what point do you first notice that the tone seems ironic?

2. What are some statements that seem to express something different from what the author really means?

I Want a Wife

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I belong to that classification of people known as wives. I am a Wife. And, not altogether incidentally, I am a mother.

Not too long ago a male friend of mine appeared on the scene fresh from a recent divorce. He had one child, who is, of course, with his ex-wife. He is obviously looking for another wife. As I thought about him while I was ironing one evening, it suddenly occurred to me that I, too, would like to have a wife. Why do I want a wife?

I would like to go back to school so that I can become economically independent, support myself, and, if need be, support those dependent upon me. I want a wife who will work and send me to school. And while I am going to school I want a wife to take care of my children. I want a wife to keep track of the children's doctor and dentist appointments. And to keep track of mine, too. I want a wife to make sure my children eat properly and are kept clean. I want a wife who



will wash the children's clothes and keep them mended. I want a wife who is a good nurturant attendant to my children, who arranges for their schooling, makes sure that they have an adequate social life with their peers, takes them to the park, the zoo, etc. I want a wife who takes care of the childreh when they are sick, a wife who arranges to be around when the children need special care, because, of course, I cannot miss classes at school. My wife must arrange to lose time at work and not lose the job. It may mean, a small cut in my wife's income from time to time, but I guess I can tolerate that. Needless to say, my wife will arrange and pay for the care of the children while my wife is working.

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I want a wife who will take care of my physical needs. I want a wife who will keep my house clean. A wife who will pick up after me. I want a wife who will keep my clothes clean, ironed, mended, replaced when need be, and who will see to it that my personal things are kept in their proper place so that I can find what I need the minute I need it. I want a wife who cooks the meals, a wife who is a *good* cook. I want a wife who will plan the menus, do the necessary grocery shopping, prepare the meals, serve them pleasantly, and then do the cleaning up while I do my studying. I want a wife who will care for me when I am sick and sympathize with my pain and loss of time from school. I want a wife to go along when our family takes a vacation so that someone can continue to care for me and my children when I need a rest and change of scene.

I want a wife who will not bother me with rambling complaints about a wife's duties. But I want a wife who will listen to me when I feel the need to explain a rather difficult point I have come across in my course of studies. And I want a wife who will type my papers for me when I have written them.

I want a wife who will take care of the details of my social life. When my wife and I are invited out by my friends, I want a wife who will take care of the babysitting arrangements. When I meet people at school that I like and want to entertain, I want a wife who will have the house clean, will prepare a special meal, serve it to me and my friends, and not interrupt when I talk about the things that interest me and my friends. I want a wife who will have arranged that the children are fed and ready for bed before my guests arrive so that the children do not bother us. I want a wife who takes care of the needs of my guests so that they feel comfortable, who makes sure that they have an ashtray, that they are passed the hors d'oeuvres, that they are offered a second helping of the food, that their wine glasses are replenished when necessary, that their coffee is served to them as they like it. And I want a wife who knows that sometimes I need a night out by myself.

If, by chance, I find another person more suitable as a wife than the wife I already have, I want the liberty to replace my present wife with another one. Naturally, 1 will expect a fresh, new life: My wife will take the children and be solely responsible for them so that I am left free.

When I am through with school and have a job, I want my wife to quit working and remain at home so that my wife can more fully and completely take care of a wife's duties.

My God, who *wouldn't* want a wife?

Judy Syfers

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Recalling Information

Put a + in front of the actions and attitudes that, according to the essay, are part of being a wife. Put a 0 in front of those that, according to the essay, would *not* be part of being a wife.

1. work and earn money so that her husband can go to school
2. keep track of doctor's and dentist's appointments for her husband and children

3. lose time at her job if necessary so that she can care for the children when they are sick

hire someone to clean the house, iron, and mend clothes so that she can do well in her professional work

5. share with her husband the responsibility for cooking good meals

6. take a vacation from time to time so that she can get away from child care and have a change of scene

7. listen to her husband when he wants to talk and keep quiet about the problems that are bothering her

entertain her husband's friends and make sure that the children do not bother them

9. have a night out by herself from time to time

10. allow her husband to leave and marry another woman if he wants to

11. quit working and forget about her career when her husband gets a job and wants her to stay home

Recognizing the "Real" Point of View

As a class or in small groups, discuss the following questions.

1. What do you think is the *real* point of view of the author on the role of a wife? On a wife's attitude toward her career? On housework and child care? On entertaining friends? On getting a divorce?
2. If the author does not really believe that a wife should be the way she describes one in the essay, why does she describe her that way? Why doesn't she say directly what she means?

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Talking It Over

1. What do you think is the ideal arrangement for a couple when both work outside the home? Which household duties can be shared? Are certain chores the responsibility of the male? Of the female?
2. Are married people happier than single people?

3. Do you notice any differences between North American marriages and marriages in your culture?
4. What do you think of the "women's liberation" movement? Is there such a movement in your culture?

SELECTION FOUR A. E. Housman

OH. WHEN I WAS IN LOVE WITH YOU

The English poet Alfred Edward Housman (1859-1936) expresses an opinion on love and its power to transform us in the following lyrical poem. (A lyrical poem is a short poem that expresses emotion.) Like many English poems, this one uses rhyme, the use of the same sounds at the end of the last words in certain lines (examples: *you Igrew, brave ! behave).* Read it aloud to enjoy the rhyme and rhythm and take care to pronounce the word *again* in the second stanza in the British (not American) way so that it will rhyme correctly.

Oh, When I Was in Love with You

Oh, when I was in love with you,
Then I was clean and brave,
And miles around the wonder grew
How well I did behave.

And now the fancy passes by,
And nothing will remain,
And rrriies around they'll say that I
Am quite myself again.

A. E. Housrnan

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Talking It Over

1. In your opinion, what point of view does the poet have on love?
2. Do you think that love can transform a person? How? Is such a transformation permanent or temporary? Why?

3. Is there a regular pattern of rhyme in the poem? Why do you think the poet used rhyme? What effect does it have on a reader?
4. How would you describe the tone of the poem? Do you think a woman would use this tone when talking about love? Why or why not?

A Popular Saying

A man chases a woman until she catches him.

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CHAPTER 4
MYSTERIES PAST AND PRESENT



Great Buddha, Leshan, China.

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CHAPTER 4

What is the force that determines human destiny? Is it luck, divine providence, or simply "blind" chance? The first selection discusses what mathematicians who deal with probability theory think about this question in relation to those mysterious combinations of events called coincidences. After this, one of the classic puzzle stories of the English language focuses on a different sort of mystery: the complex motivations of the human heart. The final selection examines how the legendary figure of the dragon helped modern Chinese scholars to unravel an important mystery of their past.

SELECTION ONE

Richard Blodgett

AGAINST ALL ODDS

The dictionary defines a coincidence as "an accidental and remarkable occurrence of events in a way that suggests that one caused the other." By their very nature, coincidences seem rather mysterious. What causes them? Are they controlled by providence, fate, or destiny? Are some of them caused by ESP (extrasensory perception, the power of sending messages by thought)? Or do these events simply happen by chance? The following article tells us what mathematicians say about coincidences and also offers some less conventional explanations.

Prereading Exercise: Anticipating the Reading

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Have you ever experienced what seemed to be an amazing coincidence? Perhaps you were thinking of a friend that you had not seen in ten years and just at that moment the phone rang—and it was a call from that same person! Or perhaps you were traveling in a foreign country and entered a cafe, only to find out through conversation that the owner is a relative of your former teacher!

In the space below, describe the most amazing coincidence that you know of from your own personal experience or from that of a friend.

_____

_____

_____

Can you think of any rational way to explain this coincidence? Compare your story with those of your classmates. As a class, decide which coincidence seems the most "mysterious." Then see if the following article makes it seem less mysterious.

Against All Odds

Just how coincidental is a coincidence? Scientists still don't know.

Several years ago, a Connecticut businessman named George D. Bryson was traveling by train from St. Louis to New York when he decided to make an unscheduled stop in Louisville, since he was in no hurry and had never seen that city. At the Louisville train station, he asked for the name of the leading hotel and, accordingly, went to the Brown, where he was assigned room 307. After registering, he stepped over to the mail desk and inquired, just for fun, whether there was any mail waiting for him. The clerk handed over a letter addressed to "Mr. George D. Bryson, room 307."

By coincidence, it turned out the previous resident of the room had been another George D. Bryson, from Montreal, and the letter was for him.

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"Well, against the odds, here we are—Fran, her ex, me, my ex, Dick, my ex's new, Phil, Fran's ex's new, Pearl, Fran's ex's ex, David, Fran's ex's ex's new. CHEERS!"

An equally strange event happened to a Chester, Pennsylvania, man named John McCafferty, who was arrested in June 1949 as a vagrant. McCafferty insisted the police were wrong, claiming he had a home—at 714 McElvane Street. Tell it to the judge, the police said. McCafferty duly came before magistrate R. Robinson Lowry, who asked him, "Where did you get that address?"

"It's just an address," McCafferty replied.

"I'll say it is," responded the judge. "That's where I live. Ninety days."

Similarly fascinating coincidences have intrigued scientists and nonscientists alike for many years. They come in all sizes and degrees of significance, and have been attributed to everything from chance, fate, acts of God, and ESP to simple mathematics and the hidden order of the universe.

For the mathematician, coincidences aren't mysterious at all and can be explained by known laws of statistical probability. Such laws provide a way to estimate the chance that any event might occur, from the odds of a certain order of finish in a horse race to the likelihood that the second and third U.S. presidents (John Adams and Thomas Jefferson) would die on the same day—and that the day would be July 4, 1826, the fiftieth anniversary of the signing of the Declaration of Independence. ("No language can exaggerate it—no reason account for it," mused a Washington, D.C., magazine at the time.)

Suppose, for example, you were at a party with twenty-two strangers and, while talking with one, discovered that you have the same birthday. A remarkable coincidence? Hardly. The odds are better than fifty-fifty that among a group of twenty-three people chosen at random at least two will have identical birthdays.

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In his book *Lady Luck,Ahe* late Warren Weaver—who also related the George D. BrysoryStory—recalled mentioning these odds at a dinner meeting of high-ranking military officers. Many of the officers found it hard to believe. Noticing that there were twenty-two people at the table, one proposed a test. In turn, each person stated his birthday: There was no duplication. Then the waitress spoke up. "Excuse me," she said, "but I'm the twenty-third person in the room and my birthday is May 17, just like the general's over there."

Much more astounding is the so-palled small-world paradox. We all have experienced the effects of this phenomenon, which can involve the most improbable-seeming chance encounters. While vacationing in Nepal, for instance, you might meet Joe Green from Dubuque who, it turns out, is married to the younger sister of your good friend Gertrude from Los Angeles. "Small world, isn't it?" you

exclaim. Actually, sociologist Ithiel de Sola Pool of MIT has demonstrated that the chances are ninety-nine in a hundred that any randomly selected American adult can be linked to any other randomly selected American adult by only two intermediates. Thus, if Smith and Jones are two persons in the United States picked at random, the chances are almost certain that Smith will know someone who knows someone who knows Jones. This finding is based on the assumption that the "average" American knows about a thousand people well enough to recognize them on the street and greet them by name, But Pool has also shown that two hermits can be linked by seven intermediates at most, merely by assuming that each hermit knows one storekeeper (even hermits have to buy food).

The point, the mathematicians seem to be saying, is that even if the laws of probability show an event to be statistically *improbable,* that does not make it *impossible.* There's always that small chance.

Even if probability theory does account for unlikely coincidences, it does nothing to decrease the profound sense of wonder experienced by someone involved in such events. Moreover, certain coincidences depend on so many peculiar variables that the chances of their occurring cannot be calculated.

Some coincidences have given rise to original theories on the part of scientists who believe that probability can't explain everything. The pioneer in this field was Carl Jung, who was fascinated by the subject and who collected examples of rare coincidences all his life. Jung claimed in a 1952 essay that coincidences occur much more frequently than probability theories would predict, and that many coincidences must therefore be the work of an unknown force seeking to impose universal order,

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Jung acknowledged that his theory might seem wildly illogical. But he suggested that the fault may lie with our concept of logic rather than with the theory.

Another theory about coincidences comes from research in crystallography. British plant physiologist Rupert Sheldrake has proposed a new hypothesis about the mystery of why compounds that are at first difficult to crystallize somehow become easier to crystallize in laboratories all over the world after the first successful crystallization is accomplished. The usual explanation is that very small pieces of the first crystals are carried from laboratory to laboratory on the hair and clothing of scientists, serving as "seeds" that start the crystallization process in the new laboratory. Not so, says Sheldrake. He believes that crystals—and, indeed, all objects-transmit invisible forces that create what he calls morphogenetic fields, comparable to radio transmissions. The field created by the

first crystal, in his view, serves as a code or pattern that influences the form and character of all later crystals of that type. Sheldrake suggests that people are no exception to this scheme. If true, each of us may transmit a field through which we unknowingly communicate knowledge and information to others, present and future, worldwide.

Of course, it's a long leap from such theories to real proof that coincidences are more than random occurrences. Still, they offer stimulus for the belief that there are, indeed, "more things in heaven and earth, Horatio, than are dreamt of in your philosophy." And as the scientific debate goes on, so the coincidences continue to occur, providing puzzles to delight everyone.

Richard Blodgett

Recalling Information

Choose the best way of finishing each statement, based on what you have just read.

1. When George D. Bryson went to the mail desk of a Louisville hotel he had entered at random, he received:
   a. a letter from his wife
   b. a letter for a different George D. Bryson
   c. nothing at all
2. When a Pennsylvania man named McCafferty invented a false address in court, it turned out to be the address of:
   a. the judge b. his brother c. the mayor of the city
3. The amazing coincidence involving the second and third presidents of the United States is that they both:
   a. had the same name
   b. died on the same day
   c. signed the American Declaration of Independence
4. In general, mathematicians believe that coincidences can be explained by:
   a. the will of God
   b. mysterious unknown forces
   c. the laws of statistics
5. The odds that at a party of twenty-three strangers, two of them will have the same birthday are about;
   a. 1 in 365 b. 1 in 100 c. 1 in 2

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6. The fact that Mr. Smith from California and Mr. Jones from New York meet on a trip and discover that Smith's doctor is a friend of Jones' aunt is:
   a. an amazing coincidence
   b. quite improbable
   c. not surprising
7. A pioneer in the field of explaining coincidences in nonmathematical ways was:
   a. William Shakespeare
   b. Carl Jung
   c. Ithiel de Sola Pool
8. The hypothesis that Sheldrake proposed to explain a mystery among crystallographers is that:
   a. tiny pieces of crystals are carried from laboratory to laboratory
   b. the laws of probability increase once a crystallization has been successful
   c. crystals and all objects transmit forces that create invisible fields

Understanding Abbreviations

The abbreviation ESP is used in the article. Do you remember what it means? (If not, refer to the introduction.) Do you know the following abbreviations or can you guess them from context?

1. Someone tells you he has seen a mysterious UFO.

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2. In Canada, robbers and other evildoers run when they hear that the RCMP are coming.

3. You are asked to hand in an assignment ASAP.

4. A friend invites you to a party but tells you it is BYO.

Notice that when you pronounce abbreviations you say each letter separately. In contrast, *acronyms*, such as *radar*, *scuba*, or *laser*, are made from abbreviations but are pronounced as words. Do you know what these acronyms mean and what their letters stand for?

Talking It Over

1. Do you believe in ESP? Why or why not?
2. In your opinion, are most coincidences caused simply by chance, by fate, or by divine providence? Explain.
3. Do you think that Sheldrake's theory is a real possibility or just a crazy idea? Why?
4. The last paragraph contains a quotation from one of Shakespeare's most famous plays, *Hamlet.* Even if you do not know the play, what can you tell from the context of the paragraph about the meaning of the quotation?
5. The famous French biologist Louis Pasteur once said, "Chance favors the prepared mind." What do you think he meant by that?

Reading Critically: Applying What You've Read

In 1963 the world was stunned when the president of the United States, John Fitzgerald Kennedy, was killed by an assassin's bullet. Later, many people pointed out what seemed to be mysterious similarities between his death and that of a former American president, Abraham Lincoln. Is there really some strange force of circumstance that unites the two men? After reading the article on coincidences, you probably have a better idea about which combinations of events can really be considered improbable. Read the following description of these "astonishing parallels." Decide which ones you consider to be really astonishing and which ones you think are simply ordinary coincidences and explain why.

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Lincoln and Kennedy

Two of the most tragic and dramatic deaths in American history, the assassinations of Presidents Abraham Lincoln and John Fitzgerald Kennedy, involve the following astonishing parallels:

1. Lincoln was elected president in 1860. Exactly one hundred years later, in 1960, Kennedy was elected president.
2. Both men were deeply involved in civil rights for blacks.
3. Both men were assassinated on a Friday, in the presence of their wives.
4. Each wife had lost a son while living at the White House.
5. Both men were killed by a bullet that entered the head from behind.



The dollar bill in the illustration, issued in Dallas only two weeks before JFK was killed there, is now known as the Kennedy assassination bill. Since Dallas is the location of the eleventh of the twelve Federal Reserve Bank districts, the bill bears the letter *K*. the eleventh letter of the alphabet, and number 11 appears in each corner. The serial number begins with *K* and ends with *A*, standing for Kennedy Assassination. Eleven also stands for November, the eleventh month of the year; two 11s equal 22, the date of the tragedy. And the series number is 1963, the year the assassination occurred.

6. Lincoln was killed in Ford's Theater. Kennedy met his death while riding in a Lincoln convertible made by the Ford Motor Company.
7. Both men were succeeded by vice-presidents named Johnson who were southern Democrats and former senators.
8. Andrew Johnson (Lincoln's vice-president) was born in 1808. Lyndon Johnson was born in 1908, exactly one hundred years later.
9. The first name of Lincoln's private secretary was John; the last name of Kennedy's private secretary was Lincoln.
10. John Wilkes Booth (Lincoln's assassin) was born in 1839 (according to some sources). Lee Harvey Oswald (Kennedy's assassin) was born in 1939, one hundred years later.
11. Both assassins were Southerners who held extremist views.
12. Both assassins were murdered before they could be brought to trial.
13. Booth shot Lincoln in a theater and fled to a barn. Oswald shot Kennedy from a warehouse and fled to a theater.
14. The names Lincoln and Kennedy each have seven letters.

Your opinion: _____.

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SELECTION TWO

Frank R. Stockton

THE LADY OR THE TIGER

The following story, written by the American writer Frank Stockton (1834-1902), has been considered a classic "brainteaser" ever since it first appeared. Perhaps this is because it builds up to an intensely dramatic moment, a moment during which a single act will decide between life and death, between the most exquisite pleasure and the most horrifying pain. The story is presented as it was originally written, with no adaptation. The vocabulary is difficult, so you should *not* try to understand every word. Read for the main story line only.

Prereading Exercise 1: Skimming

Since this story has a surprise ending, you will probably enjoy it more if you don't skim the whole selection in advance. Just look at the title and skim the first half; then answer the following questions about the three key narrative elements of *setting, character,* and *plot.*

1. What do you find out about the *setting* (the where and when) from the first paragraph?

2. Which of the *characters* is presented first?

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Since the tone is playful and ironic, you might have to read over the first three paragraphs several times to understand the description of this character. Do you think he is kind or cruel? Humble or arrogant? What other qualities does he have?

3. It is obvious that in this story the setting and characterization is given first and the *plot* (action) comes later. By skimming over the first part and looking at the title, what can you guess about the plot?

Prereading Exercise 2: Understanding Words and Phrases by Breaking Them Down

One skill that can help you guess the meanings of words better is breaking the words down into smaller parts. Practice this skill by writing definitions for the italicized words from the following sentences taken from the reading. Use the hints and the context to help you.

1. "In the very olden time, there lived a *semibarbaric* king, who was a man of exuberant fancy and of an authority so irresistible that, at his will, he turned his varied fancies into facts." (Line 1) *{Hint:* What does the prefix *semi-* mean? If you know that *barbarous* and *barbaric* mean "not civilized, wild, rough," you should be able to combine these to get the meaning.)

   *semibarbaric:*_____

2. "He was greatly given to *self-communing,* and when he and himself agreed upon anything, the thing was done." (Line 4) *(Hint:* Maybe you don't know *communing,* but what common word does it look like at the beginning?)

   self-communing: _____

3. "This vast amphitheater, with its encircling galleries, . . . was an agent of poetic justice in which crime was punished, or virtue rewarded, by the decrees of an *impartial* and *incorruptible* chance." (Lines 15-16) *(Hint:* Both words begin with prefixes that mean the same thing; both have smaller words—*partial* or *part* and *corrupt* in them.)

   *impartial:*_____

   incorruptible:

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4. "He was subject to no guidance or influence but that of the *aforementioned* impartial and incorruptible chance." (Lines 28-30)

   *aforementioned:*_____

5. "The moment that the case of the criminal was thus decided, . . . great wails went up from the hired mourners posted on the outer rim of the arena, and the vast audience, with bowed heads and *downcast* hearts, wended slowly their *homeward* way, mourning greatly." (Lines 33-38)

   downcast: _____

   *homeward:*_____

6. "As is usual in such cases, she was the *apple of his eye* and was loved by him above all humanity." (Lines 75-76) *(Hint:* Here it is a phrase, not a word, you must break into smaller parts. When you do that, the phrase doesn't make any literal sense, but can you guess the meaning from the latter part of the sentence?)

   apple of his eye: _____

7. "In *afteryears* such things became *commonplace* enough, but then they were, in no slight degree, novel and startling." (Lines 90-91)

   *afteryears:*_____

   commonplace:

The Lady or the Tiger?

In the very olden time, there lived a semibarbaric king, who was a man of exuberant fancy and of an authority so irresistible that, at his will, he turned his varied fancies into facts. He was greatly given to self-communing, and when he and himself agreed upon anything, the thing was done. When everything moved smoothly, his nature was bland and genial; but whenever there was a little hitch, he was blander and more genial still, for nothing pleased him so much as to make the crooked straight, and crush down uneven places.

Among his borrowed notions was that of the public arena, in which, by exhibitions of manly and beastly valor, the minds of his subjects were refined and cultured.

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But even here the exuberant and barbaric fancy asserted itself. This vast amphitheater, with its encircling galleries, its mysterious vault, and its unseen passages, was an agent of poetic justice in which crime was punished, or virtue rewarded, by the decrees of an impartial and incorruptible chance.

When a subject was accused of a crime of sufficient importance to interest the king, public notice was given that on an appointed day the fate of the accused person would be decided in the king's arena.

When all the people have assembled in the galleries, and the king, surrounded by his court, sat high up on his throne of royal state on one side of the arena, he gave a signal, a door beneath him opened, and the accused subject stepped out into the amphitheater. Directly opposite him, on the other side of the enclosed space, were two doors, exactly alike and side by side. It was the duty and the privilege of

the person on trial to walk directly to these doors and open one of them. He could open either door he pleased. He was subject to no guidance or influence but that of the aforementioned impartial and incorruptible chance. If he opened the one, there came out of it a hungry tiger, the fiercest and most cruel that could be procured, which immediately sprang upon him and tore him to pieces as a punishment for his guilt. The moment that the case of the criminal was thus decided, doleful iron bells were clanged, great wails went up from the hired mourners posted on the outer rim of the arena, and the vast audience, with bowed heads and downcast hearts, wended slowly their homeward way, mourning greatly that one so young and fair, or so old and respected, should have merited so dire a fate.

But if the accused person opened the other door, there came forth from it a lady, the most suitable to his years and station that His Majesty could select among his fair subjects; and to this lady he was immediately married, as a reward of his innocence. It mattered not that he might already possess a wife and family, or that his affections might be engaged upon an object of his own selection. The king allowed no such arrangements to interfere with his great scheme of punishment and reward. The exercises, as in the other instance, took place immediately, and in the arena. Another door opened beneath the king, and a priest, followed by a band of choristers, and dancing maidens blowing joyous airs on golden horns, advanced to where the pair stood side by side, and the wedding was promptly and cheerily solemnized. Then the gay brass bells rang forth their merry peals, and the people shouted glad hurrahs, and the innocent man, preceded by children strewing flowers on his path, led his bride to his home.

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This was the king's semibarbaric method of administering justice, its perfect fairness is obvious. The criminal could not know out of which door would come the lady. He opened either he pleased, without having the slightest ideas whether, in the next instant, he was to be devoured or married. On some occasions the tiger came out of one door, and on some, out of the other. The decisions were not only fair—they were positively decisive. The accused person was instantly punished if he found himself guilty, and if innocent, he was rewarded on the spot, whether he liked it or not. There was no escape from the judgments of the king's arena.

The institution was a very popular one. When the people gathered together on one of the great trial days, they never knew whether they were to witness a bloody slaughter or a hilarious wedding. This element of uncertainty lent an interest to the occasion which it could not otherwise have attained. Thus the masses were entertained and

pleased, and the thinking part of the community could bring no charge of unfairness against this plan; for did not the accused person have the whole matter in his own hands?

The semibarbaric king had a daughter as blooming as his most rosy fancies, and with a soul as fervent and imperious as his own. As is usual in such cases, she was the apple of his eye and was loved by him above all humanity. Among his courtiers was a young man of that fineness of blood and lowness of station common to the heroes of romance who love royal maidens. This royal maiden was well satisfied with her lover, for he was handsome and brave to a degree unsurpassed in all this kingdom, and she loved him with an ardor that had enough of barbarism in it to make it exceedingly warm and strong. This love affair moved on happily for many months, until one day, the king happened to discover its existence. He did not hesitate nor waver in regard to his duty. The youth was immediately cast into prison, and a day was appointed for his trial in the king's arena. This, of course, was an especially important occasion, and His Majesty, as well as all the people, was greatly interested in the workings and development of this trial. Never before had such a case occurred—never before had a subject dared to love the daughter of a king. In afteryears such things became commonplace enough, but then they were, in no slight degree, novel and startling.

The tiger cages of the kingdom were searched for the most savage and relentless beasts, from which the fiercest monster might be selected for the arena, and the ranks of maiden youth and beauty throughout the land were carefully surveyed by competent judges, in order that the young man might have a fitting bride in case fate did not determine for him a different destiny. Of course, everybody knew that the deed with which the accused was charged had been done. He had loved the princess, and neither he, she, nor anyone else thought of denying the fact. But the king would not think of allowing any fact of this kind to interfere with the workings of the court of judgment, in which he took such great delight and satisfaction. No matter how the affair turned out, the youth would be disposed of, and the king would take pleasure in watching the course of events which would determine whether or not the young man had done wrong in allowing himself to love the princess.

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The appointed day arrived. From far and near the people gathered and thronged the great galleries of the arena, while crowds, unable to gain admittance, massed themselves against its outside walls. The king and his court were in their places, opposite the twin doors—those fateful portals, so terrible in their similarity!

All was ready. The signal was given. A door beneath the royal party opened, and the lover of the princess walked into the arena. Tall,

beautiful, fair, his appearance was greeted with a low hum of admiration and anxiety. Half the audience had not known so grand a youth had lived among them. No wonder the princess loved him! What a terrible thing for him to be there!

As the youth advanced into the arena, he turned, as the custom was, to bow to the king. But he did not think at all of that royal personage; his eyes were fixed upon the princess, who sat to the right of her father. Had it not been for the barbarism in her nature, it is probable that lady would not have been there. But her intense and fervid soul would not allow her to be absent on an occasion in which she was so terribly interested. From the moment that the decree had gone forth that her lover should decide his fate in the king's arena, she had thought of nothing, night or day, but this great event and the various subjects connected with it. Possessed of more power, influence, and force of character than anyone who had ever before been interested in such a case, she had done what no other person had done—she had possessed herself of the secret of the doors. She knew in which of the two rooms behind those doors stood the cage of the tiger, with its open front, and in which waited the lady. Through these thick doors, heavily curtained with skins on the inside, it was impossible that any noise or suggestion should come from within to the person who should approach to raise the latch of one of them. But gold and the power of a woman's will had brought the secret to the princess.

Not only did she know in which room stood the lady, ready to emerge, all blushing and radiant, should her door be opened, but she knew who the lady was. It was one of the fairest and loveliest of the damsels of the court who had been selected as the reward if the accused youth should be proved innocent of the crime of aspiring to one so far above him; and the princess hated her. Often had she seen, or imagined that she had seen, this fair creature throwing glances of admiration upon the person of her lover, and sometimes she thought these glances were perceived and even returned. Now and then she had seen them talking together. It was but for a moment or two, but much can be said in a brief space. It may have been on most unimportant topics, but how could she know that? The girl was lovely, but she had dared to raise her eyes to the loved one of the princess, and, with all the intensity of the savage blood transmitted to her through long lines of wholly barbaric ancestors, she hated the woman who blushed and trembled behind that silent door.

When her lover turned and looked at her, and his eye met hers as she sat there paler and whiter than anyone in the vast ocean of anxious faces about her, he saw, by that power of quick perception

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which is given to those whose souls are one, that she knew behind which door crouched the tiger, and behind which stood the lady. He had expected her to know it. He understood her nature, and his soul was assured that she would never rest until she had made plain to herself this thing, hidden to all other lookers-on, even to the king. The only hope for the youth in which there was any element of certainty was based upon the success of the princess in discovering this mystery, and the moment he looked upon her he saw she had succeeded.

Then it was that his quick and anxious glance asked the question, "Which?" It was as plain to her as if he shouted it from where he stood. There was not an instant to be lost. The question was asked in a flash; it must be answered in another.

Her right arm lay on the cushioned parapet before her. She raised her hand, and made a slight, quick movement toward the right. No one but her lover saw her. Every eye but his was fixed on the man in the arena.

He turned, and with a firm and rapid step he walked across the empty space. Every heart stopped beating, every breath was held, every eye was fixed immovably upon that man. Without the slightest hesitation, he went to the door on the right and opened it.

Now, the point of the story is this: Did the tiger come out of that door, or did the lady?

The more we reflect upon this question, the harder it is to answer. It involves a study of the human heart which leads us through roundabout pathways of passion, out of which it is difficult to find our way. Think of it, fair reader, not as if the decision of the question depended upon yourself, but upon that hot-blooded, semibarbaric princess, her soul at a white heat beneath the combined fires of despair and jealousy. She had lost him, but who should have him?

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How often, in her waking hours and in her dreams, had she started in wild horror and covered her face with her hands as she thought of her lover opening the door on the other side of which waited the cruel fangs of the tiger!

But how much oftener had she seen him at the other door! How in her grievous reveries had she gnashed her teeth and torn her hair when she saw his start of rapturous delight as he opened the door of the lady! How her soul had burned in agony when she had seen him rush to meet that woman, with her flushing cheek and sparkling eye of triumph; when she had seen him lead her forth, his whole frame kindled with the joy of recovered life; when she had heard the glad shoutsfrom the multitude, and the wild ringing of the happy bells; when she had seen the priest, with his joyous followers, advance to the

couple, and make them man and wife before her very eyes; and when she had seen them walk away together upon their path of flowers, followed by the tremendous shouts of the hilarious multitude, in which her one despairing shriek was lost and drowned!

Would it not be better for him to die at once, and go to wait for her in the blessed regions of semibarbaric futurity?

And yet, that awful tiger, those shrieks, that blood!

Her decision had been indicated in an instant, but it had been made after days and nights of anguished deliberation. She had known she woufd be asked, she had decided what she would answer, and without the slightest hesitation, she had moved her hand to the right.

The question of her decision is one not to be lightly considered, and it is not for me to presume to set up myself as the one person able to answer it. So I leave it with all of you: Which came out of the opened door—the lady or the tiger?

Frank Stockton

Talking It Over

1. What do you think of the king's method of administering justice? The author states that by it the minds of the people were "refined and cultured" and that "its perfect fairness is obvious." Does he really mean this or is he being ironic? Explain.
2. In your opinion, are there some advantages to living in a kingdom like the one described? Do you think that most of the king's subjects probably lead fairly happy lives or not? Why?
3. Do any leaders in the world today have characters and governments similar to this king's? Explain.
4. How would you describe the character of the princess? Is she like her father or not?

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Identifying Support for Hypotheses

What do you think was behind the door—the lady or the tiger? Why? Some parts of the story (certain words, phrases) support one hypothesis and some support the other.

Check either "lady" or "tiger" for each of the following statements to show which hypothesis it supports. Be prepared to explain your choice. (If you think a statement supports neither or both, put a 0 in front of each or check both.)

1. "The semibarbaric king had a daughter as blooming as his most rosy fancies, *and with a soul as fervent and imperious as his own."*

lady tiger

2. "This royal maiden *was well satisfied with her lover,* for he was handsome and brave to a degree unsurpassed in all this kingdom, and *she loved him with an ardor that had enough of barbarism in it to make it exceedingly warm and strong."*

lady tiger

3. "It was one of the *fairest and loveliest* of damsels of the court who had been selected as the reward of the accused youth, . . . *and the princess hated her."*

ladv tiger

4. *"Often had she seen,* or imagined that she had seen, *this fair creature throwing glances of admiration upon the person of her lover, and sometimes* she thought *these glances were perceived and even returned."*

lady tiger

5. "When her lover turned and looked at her, and his eye met hers as she sat there *paler and whiter* than anyone in the vast ocean of anxious faces …"

lady tiger

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6. *"He understood her nature, and his soul was assured that she would never rest until she had made plain to herself this thing, hidden to all other lookers-on. . . ."*

lady tiger

7. *"Without the slightest hesitation,* he went to the door on the right and opened it."

lady tiger

8. "But *how much oftener* had she seen him at the other door! How in her grievous reveries had she *gnashed her teeth and torn her hair when she saw his start of rapturous delight* as he opened the door of the lady!"

lady tiger

Formulating a Line of Argument: The Lady or the Tiger?

Discuss the central question of the story in small groups and try to reach a unanimous decision (one agreed on by everybody) about whether the princess chose the lady or the tiger. Use some of the above quotations or find others of your own to support your position. After twenty minutes, one member of each group should report the decision to the class and present the main argument(s) or reason(s) for the choice. If the decision was not unanimous, the statistics should also be presented (for example: tiger: 3 to 2, or lady: 4 to 1). After the reports from all the groups, determine which way the class as a whole answered the question.

SELECTION THREE

Raymond Chang and
Margaret Scrogin Chang

IT ALL STARTED WITH DRAGON BONES

Does anybody believe in dragons? We think of them as mythical, fire-breathing beasts that exist only on the pages of storybooks. But even though they don't really exist, can they affect us? Can they influence our knowledge and our history? The above title suggests that something important began with the bones of these legendary reptiles. Without even reading the article, how can you tell that this important event relates to Chinese culture? Read to find out how myths can influence history.

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Prereading Exercise: Reading to Answer Specific Questions

Although the article contains many words you might not know, you should be able to understand the main ideas if you simply keep going. Skim the article to find out which sections relate to the following key questions. Then read to find out the answers.

1. Why did Chinese scholars at the beginning of the twentieth century start to have many doubts about their ancient traditions of history and language?

   Section:

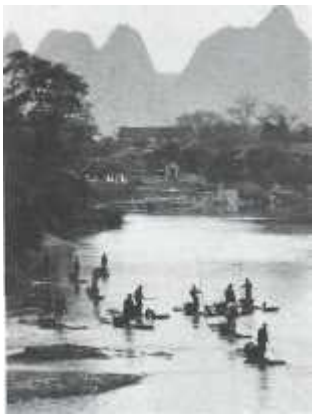
2. What importance did dragons have in Chinese cultural and religious traditions?

   Section:_____

3. How did the mood of self-doubt among scholars combine with the interest in "dragon bones" to produce objective evidence of the ancient origins of the Chinese language?

   Section:_____

It All Started with Dragon Bones



The beginning of the twentieth century was a low point in Chinese history. Drought, famine, and disease troubled the common people. Opium addiction spread, and the government was powerless to stop it, for British guns protected the drug importers. Because of economic dominance, China was forced to bow before the superior weaponry and technology of countries it had once considered inferior.

Even worse, a cultural tradition three thousand years old was falling apart beneath the impact of Western scientific thought, further demoralizing Chinese intellectuals. Chinese writers published articles claiming that their own people were inherently incapable of operating foreign machines, let alone inventing new ones. A mood of self-doubt, of dissatisfaction with old wisdom, extended into every branch of study.

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Pushed by Occidental standards for scientific proof, Chinese historians studied their ancient records with increased skepticism. Were the stirring histories of the earliest dynasties Yin and Chou only legends? Were there enough hard facts to prove that Confucius really lived? Some Western scholars even cast doubt on the foundation stone of Chinese culture, its written language, by suggesting that Chinese characters had been imported from the Middle East in ages long past.

Then something happened to restore confidence in ancient tradition. A small coincidence struck a spark that would later become a light brilliant enough to illuminate the dim reaches of Chinese history. Here, then, is the story of this coincidence.

The farmers around the village of Hsiao T'un in northern Hunan Province sometimes earned extra money from a most unusual crop: pieces of bone turned up by the plow or by heavy rain. It was well known then that a dragon sheds its bones as a snake sheds its skin.



"Dragon bones.

Dragons have always played a starring role in Chinese folklore, religion, and philosophy.

To the common mind, dragons are generally good creatures (unlike the Western dragon, which is pictured as an evil monster in league with the devil) associated with rain, rivers, and mists, and with the emperor. Taoism, a native Chinese religion, later developed a complex mythology featuring the dragon as a mystical force of cosmic power who appears for a moment to fill man with awe, then disappears into the mist. The Buddhist sect called Ch'an in China and better known in the West by its Japanese name, Zen, elevates the dragon to a philosophical symbol for the flash of Truth that comes to enlighten the thinker. Traditional healers believed that ground-up dragon bones could cure women's diseases, dysentery, and malaria, as well as a number of other maladies.

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The farmers of Hsiao T'un could not be sure the bones they found came from dragons. Some had strange symbols scratched on them. Crosses and straight and curved lines could be deciphered, and even sketchy pictures. Might dragon bones carry these marks? Probably not. But the pharmacies in Peking wanted dragon bones, and the farmers needed money, so they scraped off the peculiar markings and sent the bones to Peking.

Fortunately, one farmer did not scrape well, and a piece of marked bone was sold by a Peking pharmacist to a scholar who was ill. Imagine the sick man's astonishment when he recognized, on an object he was about to grind up for medicinal broth, a written message from China's mythical past!

The year was 1899. Tantalized by the mysterious "dragon bone" hieroglyphics, a small group of Chinese scholars collected quantities

of inscribed bones from the fields around Hsiao T'un. Five years passed before enough symbols could be deciphered to reveal the true nature of the "dragon bones."

They were a record of a people who called themselves Shang, and ruled lands in the area some four thousand years ago. Here was objective proof for the existence of a dynasty called "Yin" (about 1766-1122 B.C.) by its Chou conquerors, part of a heroic epoch of Chinese history, described until then only in semilegendary histories.

The objects embedded in the fields of Hsiao T'un came not from dragons but from turtles and cattle. Shang kings sought to iearn the future through their diviners, who inscribed royal questions on a carefully scraped and polished bone. The inscribed oracle shells and bones were partially drilled in prescribed patterns. Heat was applied, and the course of the resulting cracks, determined by ancestral spirits, indicated answers to their questions.

Shang oracle bones provide intriguing glimpses of life in China four thousand years ago. Kings then yearned to know the results of military campaigns and hunting expeditions. They asked spirits to forecast the weather, the sex of unborn children, the outcome of diseases bothering the royal family. Yet Shang oracle bones raise more questions than they answer. Like a tiny flashlight played over a dark room filled with unknown objects, they give us a fragmented understanding of the Shang people.

Raymong Chang and Margaret Scrogin Chang

Recalling Information

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The following statements relate to the three questions you were asked to focus on in the prercading exercise. Write T (true) or F (false) in front of each statement. Correct false statements to make them true.

1. At the beginning of the twentieth century, China found itself humiliated and controlled militarily and economically by cultures it had once considered unimportant.
2. Chinese writers of this time paid no attention to Western scientific thought and maintained that the ancient wisdom of their culture was superior.
3. . Some Western scholars even suggested that the Chinese written language had been invented by the British.

Just as in Western tradition, the Chinese dragon has always been portrayed as an evil monster in league with the devil.

5. In the Chinese Buddhist sect called Ch'an (known as Zen in Japan), the dragon was a symbol for the flash of Truth that enlightens a person.

The farmers from the village of Hsiao T'un used to scrape off the strange symbols from the bones because they didn't want people to know the origins of the Chinese language.

Fortunately, a scholar in Peking bought a bone for medicine and recognized a symbol that had not been scraped off.

8. The bones provided proof that the Chinese language was about a thousand years old.

9. In reality, the "dragon bones" were from cattle and turtles.

10. . These bones had been used in ages past in special rituals for the purpose of answering questions about the future.

Talking It Over

1. In Line 23, the authors mention "a small coincidence" that was eventually to provide an important key to Chinese history. What is this coincidence?
2. Do you think that the origins of the Chinese language would have been discovered someday even without this coincidence? Why or why not? Do you believe that this coincidence occurred simply by chance?
3. Have you heard of any other legends or mysteries from the past that people used to laugh at but that were later discovered to be true?

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Stories Behind Words: Words with Origins in Mythology

The article describes some Chinese scholars as being *"tantalized* by the mysterious dragon bone hieroglyphics." *Tantalized* is one of many English words that have their origins in myths and legends of the past (in this case, Greek and Roman ones). The meaning



Tantalus' torment.

of the verb *tantalize* is a very particular one: "to promise or show something desirable to a person and then take it away; to tease by arousing hope." Many (but not all) English dictionaries give you a brief indication of a word's origins in brackets before or after the explanation of the meaning. For *tantalize* the following explanation is given: [> Tantalus], This means that you should look up the name *Tantalus* to find out the word's origins, and if you do, you will find out that in Greek mythology, Tantalus was a king who was punished in the lower world with eternal hunger and thirst; he was put up to his chin in water that always moved away when he tried to drink it and with fruit on branches above him placed just a little bit out of his reach. Can you see why his name was changed into a verb meaning "to tease or torment by arousing desire"?

Another example is the word *siren,* familiar to us as the mechanical device that makes such an alarming sound when police cars, ambulances, or fire engines approach. This word also has its origins in Greek mythology. The traveler Odysseus (Ulysses to the Romans) made his men plug their ears so that they wouldn't hear the dangerous voices of the *sirens,* creatures who were half bird and half woman and who lured sailors to their deaths on sharp rocks. So the word came to be associated both with a loud sound and with danger! Of course, it also has another meaning when referring to a woman, and this one is also related to the legend. Similarly, when someone speaks of a *"jovial* mood" or a *"herculean* effort," he or she is using words with origins in mythology. Look these words up to find their meaning and relationship to myths.

Many common words, such as the names for the days of the week and the months of the year, also come from mythology. *Wednesday* derives from the ancient Norse king of the gods, Woden, and *Thursday* was originally *Thor'sday,* in honor of Thor, the god of thunder. Do you know which of the days of the week was named in honor of a Roman god? There is also a planet named for him. Another one of the planets is named for the Roman god of war because it is red, and one of the months is named for him too. Can you guess which one? In fact, all the planets, except the one we live on, bear names that come from Roman mythology, including the planet that is farthest away from the sun and for that reason was called after the Roman god of the dead. This god has also given his name to one of the chemical elements. Do you know what his name is? Several other elements have names that come from mythology, too.

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It seems that myths and legends live on in the English language. Is this true in other languages, too? Are the days of the week, the months, the planets, and the chemical elements named for mythological gods in the language of your native culture? Does

it also contain words and expressions derived from the ancient beliefs of your ancestors?

Finding Out More About Mysterious Phenomena

Work with one or two other members of your class to prepare a brief report about one of the following unsolved mysteries. Each person should use a different source (book or magazine article). You should discuss in class beforehand how to find the information in the library. The first person will explain what the phenomenon is; then the others will read in turn a small section about it from their book or article.

1. the Yeti, or Abominable Snowman
2. UFOs
3. the Loch Ness monster
4. werewolves
5. the Lost Continent of Atlantis
6. ESP
7. the Bermuda Triangle
8. firewalkers
9. Count Dracula
10. The *llorona* of Mexico
11. black holes

Answering Riddles

A riddle is a minimystery or little puzzle in the form of a question asked in such a way that it requires some cleverness to answer it. Often you must look at the whole question in a manner that is not at first obvious. Riddles are popular in most cultures and are often humorous. Some are silly and some are sophisticated, but they can all be fun if you are in the mood to relax and play with words and ideas. Sometimes they relate to current events or famous people in the news. Read the following riddles and try to answer them. They all refer to letters of the alphabet and to the dictionary. The answers are given for the first one; the answers to the others are listed below but not in the correct order. Tell which answer corresponds to each of the riddles,

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Riddles

Example: I occur once in every minute, twice in every moment but not once in a hundred thousand years. What am f?

The letter *m.*

1. Why is the letter *e* lazy?
2. What is the end of everything?

3. What begins with a *t,* ends with a *t,* and has *t* in it?
4. Why is an island like the letter *t?*
5. What four letters frighten a thief?
6. Which is easier to spell, seventeen or eighteen?
7. Why is *smile* the longest word in the dictionary?
8. Where does Thursday come before Wednesday?
9. What's the definition of *minimum?*

Answers: **i.** the first because it's spelled with more ease (e's) h. a teapot g. because it's in the middle of water f. because it's always in bed e. the letter *g* d. a small mother c. because there's a mile between its first and last letter b. OICU a. in the dictionary

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CHAPTER 5
TRANSITIONS



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Individuals, groups, and nations sometimes go through periods of stability or permanence and other times through periods of transition, when they change radically. The first selection in this chapter relates how a close encounter with death started such a transition for an active and successful journalist. The second selection presents a different type of transition: the changes that people in the Third World go through when they leave their villages and find themselves confronted for the first time with the modern urban environment. In the third selection, a popular American writer discusses yet another transition in his description of an entire generation: the "hippies" of the 1960s, who created a lifestyle that gained international attention and was widely imitated for a number of years. The chapter concludes with a brief selection on the "human waves" that are at present changing the makeup of world populations.

SELECTION ONE

Gail Sheehy

MADNESS AND METHOD

Have you ever felt that you were losing control of yourself, that you were actually going mad? This feeling is really more common than many people think, especially during times of great stress or crisis. The following selection is the true, powerful story of a woman reporter who tells how this happened to her. Her crisis begins while she is covering the civil war between Roman Catholics and Protestants in Northern Ireland.

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Prereading Exercise 1: Skimming

The title "Madness and Method" does not give many clues about the content of the selection. To prepare yourself to read, take a minute and quickly skim the whole article. Read the first paragraph, the first sentence of a few middle paragraphs, and the concluding paragraph. Try to answer these questions before you begin your first actual reading.

1. What is this article about?

2. How long will it take to read it? Will it take more than one sitting?

3. Will you need to read it more than once? (Does it seem difficult?)

4. Do you know anybody whose life was suddenly changed by a traumatic, or shocking, experience? Try to bring that story to mind as you read this account of an American journalist's sudden transition.

Prereading Exercise 2: Reading on Two Levels

As you can tell from having skimmed the selection, Gail Sheehy's story unfolds on two levels: her inner personal crisis and the outside events that form the background. Which one does she begin with in the first paragraph? When does she switch to the other? As you read, pay attention to this alternation between what is happening around the author and what is happening inside of her. Try to notice when they relate as cause and effect to each other. Do not try to understand every word. Read for the main ideas, to grasp in general terms what happened on the two levels.

Madness and Method

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Without warning, in the middle of my thirties, I had a breakdown of nerve. It never occurred to me that while winging along in my happiest and most productive stage, all of a sudden simply staying afloat would require a massive exertion of will. Or of some power greater than will.

I was talking to a young boy in Northern Ireland where I was on assignment for a magazine when a bullet blew his face off. That was how fast it all changed. We were standing side by side in the sun, relaxed and triumphant after a civil rights march by the Catholics of Derry. We had been met by soldiers at the barricade; we had vomited tear gas and dragged those dented by rubber bullets back to safety. Now we were surveying the crowd from a balcony.

"How do the paratroopers fire those gas canisters so far?" I asked.

"See them jammin' their rifle butts against the ground?" the boy was saying when the steel slug tore into his mouth and ripped up

the bridge of his nose and left of his face nothing but ground bone meal.

"My God," I said dumbly, 'they're real bullets." I tried to think how to put his face back together again. Up to that moment in my life I thought everything could be mended.

Below the balcony, British armored cars began to plow into the crowd. Paratroopers jackknifed out of them with high-velocity rifles. They sprayed us with steel.

The boy without a face fell on top of me. An older man, walloped on the back of the neck with a rifle butt, stumbled up the stairs and collapsed upon us. More dazed bodies pressed in until we were like a human caterpillar, inching on our bellies up the steps of the exposed outdoor staircase.

"Can't we get into somebody's house!" I shouted. We crawled up eight floors but all the doors to the flats were bolted. Someone would have to crawl out on the balcony in open fire to bang on the nearest door. Another boy howled from below: "Jesus, I'm hit!" His voice propelled me across the balcony, trembling but still insulated by some soft-walled childhood sac that I thought provided for my own indestructibility. A moment later, a bullet passed a few feet in front of my nose. I hurled myself against the nearest door and we were all taken in.

The closets of the flat were already filled with mothers and their clinging children. For nearly an hour the bullets kept coming. From the window I saw three boys rise from behind a barricade to make a run for it. They were cut down like dummies in a shooting gallery. So was the priest who followed them, waving a white handerkerchief, and the old man who bent to say a prayer over them. A wounded man we had dragged upstairs asked if anyone had seen his younger brother. "Shot dead," was the report.

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Something like this had happened to my own brother in Vietnam. But the funeral took place in the bland Connecticut countryside, and I was a few years younger. So neatly had the honor guard tricornered the victim's flag, it looked like a souvenir sofa pillow. People had patted my hand and said, "We know how you must feel." It made me think of the strangers who were always confiding in me that they were scheduled for surgery or "taking it easy" after a heart attack. All I had for their pain were the same words: "I know how you must feel." I had known nothing of the sort.

After the surprise massacre, I was one among trapped thousands cringing in the paper-walled bungalows of the Catholic ghetto. All exits from the city were sealed. Waiting was the only occupation. Waiting for the British army to perform a house-to-house search.

"What will you do if the soldiers come in here firing?" I asked the old woman who was harboring me.

"Lie on me stomach!" she said.

Another woman was using the telephone to confirm the names of the dead. Once upon a time I was a Protestant of strong faith; I tried to pray. But that silly game of childhood kept running through my mind: *If you had one wish in the whole world. ...* I decided to call my love. He would say the magic words to make the danger go away.

"Hi! How are you?" His voice was absurdly breezy; he was in bed in New York.

"I'm alive."

"Good, how's the story coming?"

"I almost wasn't alive. Thirteen people were murdered here today."

"Hold on. CBS News is talking about Londonderry right now—"

"It's called Bloody Sunday."

"Can you speak up?"

"It's not over. A mother of fourteen children was just run down by an armored car."

"Now look, you don't have to get in the front lines. You're doing a story on Irish women, remember that. Just stick with the women and stay out of trouble. Okay, honey?"

From the moment I hung up on that nonconversation, my head went numb. My scalp shrank. Some dark switch was thrown, and a series of weights began to roll across my brain like steel balls. I had squandered my one wish to be saved. The world was negligent. Thirteen could perish, or thirteen thousand; I could perish, and tomorrow it would all be beside the point.

As I joined the people lying on their stomachs, a powerful idea took hold: *No one is with me. No one can keep me safe. There is no one who won't ever leave me alone.*

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I had a headache for a year.

When I flew home from Ireland, I couldn't write the story, could not confront the fact of my own mortality. In the end, I dragged out some words and made the deadline but at an ugly price. My short temper lengthened into diatribes against the people closest to me, driving away the only sources of support who might have helped me fight my demons. 1 broke off with the man who had been sharing my life for four years, fired my secretary, lost my housekeeper, and found myself alone with my daughter Maura, marking time.

As spring came, I hardly knew myself. The rootlessness that had been such a joy in my early thirties, allowing me to burst the ropes of old roles, to be reckless and selfish and focused on stretching my newfound dream, to roam the world on assignments and then to stay

up all night typing on caffeine and nicotine—all at once that didn't work anymore.

Some intruder shook me by the psyche and shouted: *Take stock! Half your life has been spent. What about the part of you that wants a home and talks about a second child?* Before I could answer, the intruder pointed to something else I had postponed: *What about the side of you that wants to contribute to the world? Words, books, demonstrations, donations—is this enough? You have been a performer, not a full participant. And now you are thirty-five.*

To be confronted for the first time with the arithmetic of life was, quite simply, terrifying. 110

Gail Sheehy
Passages, 1976

Recalling Information: The Outside Events

Write T (true) or F (false) in front of the following statements about the events described in the article. Correct false statements to make them true.

1. The story began when the author was talking to a young boy on a balcony after a civil rights march in Northern Ireland.

2. The march had been completely peaceful, and the British soldiers had not attacked the people in any way before that moment.

3. Suddenly the boy was hit in the face by real bullets.

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4. Immediately, someone opened a door and pulled in the author and the other people who were being fired at.

5. When a priest waved a white handkerchief and came out into the open, the soldiers put down their guns.

6. The author's brother had died in the Vietnam War several years earlier.

7. The author called her lover who was in New York, but he wasn't able to understand her situation.

8. After her frightening experience, she returned to the United States and talked about these terrifying events with all the people she loved.

Recalling Information: The Inner Conflict

Write T (true) or F (false) in front of the following statements about the emotions and inner conflict described in the selection. Correct false statements to make them true.

1. The author was about twenty-five years old when she had a breakdown of nerve while covering the civil war in Northern Ireland.

2. She had suffered a severe emotional breakdown years earlier because of her brother's violent death.

   There was great danger, so she prayed to God and found relief and consolation.

4. She was anxious to talk with her lover because she thought his words would help her.

5. She suddenly realized that she was all alone and could die at any moment.

6. Afterward, she felt horrible and was constantly in a bad temper.

7. The only joy she still ha4 was her work, which continued to bring her satisfaction.

   . An inner voice seemed to tell her that she was getting older and must think about what she really wanted to do before death.

Recognizing the Use of Flashbacks

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A *flashback* is a scene representing earlier events that is inserted into a story. It is usually used for purposes of comparison and contrast. Something about the earlier scene is similar to the events being narrated (comparison), and something is different (contrast). In what paragraph does the author of "Madness and Method" bring in a flashback of one of her earlier experiences? What verb tense signals the beginning of the flashback? What is similar between her earlier experience and what was happening to her in Northern Ireland? What is different? In your opinion, why does she use this flashback?

Relating the Title to the Reading

Many English-speaking readers will recognize the title as an allusion to a famous quotation from Shakespeare's play *Hamlet.*

An older man is watching the young prince Hamlet, who is thought to be insane (mad), and exclaims, "There is a *method* to his *madness!"* Hamlet is acting in a very "crazy" way, but in fact there is a reason behind it: his belief that his father was murdered by his uncle and perhaps even with the cooperation of his own mother! This horrible possibility is tormenting the young prince and causing his madness. The older man does not know this, but he senses that there is *some* reason for Hamlet's seemingly insane actions. Why do you think that Gail Sheehy chose this title for her story?

Talking It Over

As a class or in small groups, discuss the following questions.

1. Line 103 begins with the words "Some intruder. . . ." An intruder is one who intrudes, who comes in without our invitation and forces himself upon us. Who is this intruder who speaks to the author?
2. Have you ever seen a person, or perhaps an animal, die or suffer a severe injury? Or have you yourself ever been close to death? If so, how did that experience affect you?
3. The selection is taken from Sheehy's best-selling book *Passages.* The phrase *midlife crisis,* which she uses to refer to the kind of breakdown described in the article, has become a commonly used term. She states that many people go through such a crisis around the age of thirty-five or forty. Afterward, they generally feel stronger and better than before. Why do you think this happens? What experiences, besides seeing a war, might produce such a crisis at this age?
4. What other ages are generally periods of transition? Why?
5. What do you think is meant by the phrase *the arithmetic of life* in the last sentence?

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SELECTION TWO

V. S. Naipctul

CONVERSATIONS IN MALAYSIA

The following selection is taken from the book *Among the Believers: An Islamic Journey* by V. S. Naipaul, one of the most renowned writers of English of our times. It is his interview of Shan, a young Muslim man in Kuala Lumpur, the capital city of Malaysia. Shan

used to live in a village and finds that life in the big city is very different. Think for a moment about what it would be like to move from a very small village to a modern city. What aspects of the urban lifestyle do you imagine would appeal to him? Which aspects would disturb him or cause him trouble? As you read, try to understand Shan's point of view. At the same time, notice what elements in his background would give him this point of view and ask yourself if your reactions would be similar to or different from his.

Prereading Exercise: Taking Note of the Change of Speakers

Although the title uses the word *conversation,* the following selection is really an *interview.* In what way is an interview different from a conversation? While reading either of these, it is important to take note of which person is speaking in each section as you read. How can you tell when the speaker changes? Sometimes the author tells you directly. Sometimes you get clues from the punctuation, the paragraph divisions, or simply the context. Sometimes the people speaking have different styles of speech. V. S. Naipaul speaks perfect English, for example, while Shafi makes certain grammar mistakes. In an interview, which person would you expect to ask more questions: the interviewer or the person being interviewed? Would this always be true?

Skim the selection and point out each time the speaker changes. Be prepared to explain how you know in each case; Then complete



Rice planting, Tambunan Valley, Malaysia,

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the following statement by circling the correct number: In "Conversations in Malaysia," the number of "paragraphs" spoken by Shan is: 9 14 18 25.

Conversations in Malaysia

Shafi worked for the Muslim cause. He didn't wear Arab clothes. But he understood the young men who did. Shafi had come to Kuala Lumpur from a village in the north. The disturbance of the move was still with him.

Shafi said: "When I was in the village the atmosphere is entirely different. You come out of the village. You see all the bright lights, you begin to sense the materialistic civilization around you. And 1 forgot about my religion and my commitments—in the sense that you had to pray. But not to the extent of going out and doing nasty things like taking girls and drinking and gambling and drugs. I didn't lose my faith. I simply forgot to pray, forgot responsibilities. Just losing myself. I got nothing firm in my framework. I just floating around and didn't know my direction."

I said, "Where did you live when you came to Kuala Lumpur?"

He didn't give a straight answer. At this early stage in our conversation concreteness didn't come easily to him. He said, "I was living in a suburb where I am exposed to materialistic civilization to which I had never been exposed before. Boys and girls can go out together. You are free from family control. You are free from society who normally criticize you in a village when you do something bad. You take a goat, a cow, a buffalo—somewhere where the goat is being tied up all the time—and you release that goat in a bunch of other animals: The goat would just roam anywhere he want to go without any strings."

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"Is that bad for the goat?"

"I think the goat would be very happy to roam free. But for me I don't think that would be good. If goat had brains, I would want to say, 'Why do you want to roam about when you are tied and being fed by your master and looked after? Why do you want to roam about?'"

I said, "But I want to roam about."

"What do you mean by being free? Freedom for me is not something that you can roam anywhere you want, Freedom must be within the definition of a certain framework. Because I don't think we are able to run around and get everything. That freedom means nothing. You

must really frame yourself where you want to go and what you want to do."

"But didn't you know what you wanted to do when you came to Kuala Lumpur?"

"The primary aim was education. That was a framework. But the conflict of this freedom and the primary aim is there, and I consider this is the problem I faced and many of my friends face."

"Other people in other countries face the same problem."

Shafi said, "Do they face the same restrictions of family life as I do?"

"What restrictions?"

"Religious restrictions. You have that frame with you. Religious tradition, family life, the society, the village community. Then you come into the city, where people are running, people are free. The values contradict.

"You see, in the village where I was brought up we have the bare minimum. We have rice to eat, house to live. We didn't go begging. In the city you can buy a lunch at ten dollars (Malaysian dollars, $2.20 to the American). Or in a stall you can have a lunch for fifty cents. That excess of nine-fifty which the city dwellers spend will be spent by us on other purposes. To us, with our framework and tradition and religion, that is excessiveness."

"Sometimes my wife feels that we should go back to the village, and I also feel the same. Not running away from the modern world, but trying to live a simpler, more meaningful life than coming to the cily, where you have lots of waste and lots of things that is not real probably. You are not honest to yourself if you can spend fifty cents and keep yourself from hunger, but instead spend ten dollars.

"I will tell you about waste. Recently the government built a skating rink. After three months they demolished it because a highway going to be built over it. They are building big roads and highways across the villages. And whose lorries are passing by to collect the produce of the poor and to dump the products that is manufactured by the rich at an exorbitant price—colour t.v.s, refrigerators, air conditioners, transistor radios?"

"Don't people want those things?"

"In the end they are going to use the colour t.v.s—which the people enjoy—to advertise products to draw people into wasteful living."

"Village life—wouldn't you say it is dull for most people?"

"The village? It's simple. It's devoid of—what shall I say?—wastefulness. You shouldn't waste. You don't have to rush for things. My point about going back to the *kampong* is to stay with the community and not to run away from development. The society is

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well knit. If someone passed away there is an alarm in the *kampong,* where most ot us would know who passed away and when he is going to be buried, what is the cause of death, and what happened to the next of kin—are they around? It's not polluted in the village. Physical pollution, mental, social."

"Social pollution?"

"Something that contradicts our customs and traditions. A man cannot walk with a woman who doesn't belong to his family in the *kampong.* It is forbidden."

"Why is it wrong?"

"The very essence of human respect and dignity comes from an honourable relationship of man and woman. You must have a law to protect the unit of your society. You need your family to be protected. When the girls come from the villages to Kuala Lumpur they don't want to be protected by the law."

V. S. Naipaul
Among the Believers: An Islamic Journey

Finding Support for Main Ideas

The main purpose of the selection is to present Shan's point of view concerning his transition from village to city life. Check the statement in each group that expresses a main idea Shafi communicates. (Remember: You are looking for Shafi's ideas, not those of the author.) Then find at least two examples in the reading that support or illustrate each of these main ideas.

1. City life is better than village life because it gives more freedom.

City life is not as good as village life because it lacks structure.

2. People in the city are wasteful.

People in the village are dull.

3. The city offers many wonderful products—color t.v.s, refrigerators, and so on—that improve people's lives.

The village *(kampong)* offers a sense of community that improves people's lives.

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Paraphrasing What You've Read

Explain the following opinions taken from the selection in a clear and concise manner and in your own words.

1. "He didn't give a straight answer. At this early stage in our conversations concreteness didn't come easily to him."

2. "You take a goat, a cow, a buffalo—somewhere where the goat is being tied up all the time—and you release that goat in a bunch of other animals: The goat would just roam anywhere he want to go without any strings."

3. "In the end they are going to use the colour t.v.s—which the people enjoy—to advertise products to draw people into wasteful living."

4. "It's not polluted in the village. Physical pollution, mental, social."

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Talking It Over

1. In your opinion, why does Shafi have problems in adjusting to city life?
2. Do you agree with Shaft's ideas about the city and the village or not? In which place would you live more happily? Explain.
3. When Shafi gives an example of the excesses of city life, he talks about the difference between a lunch of ten dollars and one of fifty cents. He speaks as if the nine dollars and fifty cents

were simply thrown away and would not benefit anyone in any way. What might an urban person argue in defense of the ten-dollar lunch?

Interviewing a Classmate

Select a partner and interview each other about some important transition that you each have made (for example, a move from one country to another, a change of lifestyle, a change of job, a marriage). Before you start, decide on four or five questions. Try to focus on how the other person's point of view has changed or is changing because of the transition. Take notes and be prepared to hand them in or read them to the class.

Some Differences Between British and American English

Most people learn either the British or American form of English. Canadians speak in their own style, which contains some elements in common with each of the others. Could you tell which type was being used by the author and the young man he interviewed in Malaysia? Two words show us immediately that they are using the British form of English: *lorries* in Line 67 and *honourable* in Line 90. Americans do not use the word *lorry,* and many of them would not even know what it means; instead they say *truck. Honourable* would be spelled *honorable*—without the *u*—by an American.

The first selection in this chapter was written by an American, but since she was recalling events in Ireland she used the British way of referring to a group of rooms that one rents. Instead of *apartment* (used in Canada and the United States), what word did she use?

_____Line 29).

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How good are you at spotting differences in vocabulary and spelling between the two types of English? Do you know which of the two types has retained the longer, more old-fashioned way of spelling certain words and which one now spells them in a shorter way?

Test your skill at making this distinction by guessing which of the words in the following pairs is American and which is British.

Vocabulary

1. subway/underground
2. (electric) flex/cord

Spelling

1. programme/program
2. cheque/check

3. stove/cooker
4. (car) hood/bonnet
5. flashlight/torch

3. color/colour
4. catalogue/catalog
5. behavior/behaviour

SELECTION THREE

Tom Wolfe

THE ME DECADE

At times, not just an individual but an entire generation makes a transition from one philosophy and lifestyle to another. This happened in the United States during the 1960s. Many American young people felt disillusioned with the business and politics of the adult world. They dropped out of school, went to live in communes, wore exotic clothing, and took mind-altering drugs, which they called "dope." These drugs caused psychedelic experiences characterized by hallucinations—illusions and distorted mental states that they preferred to reality. They were called *hippies,* and their lifestyle became famous and imitated throughout the world.

The hippie movement did not last long; by the mid-1970s it had almost vanished, though it left a lasting impression on the popular imagination. In the following selection, the well-known American writer Tom Wolfe describes the reactions that Italian students had to the American hippies and contrasts the lifestyles of the two groups of young people at the time.

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Prereading Exercise: Anticipating the Reading

1. Before beginning to read, look at the title and illustration and try to get a general idea of what the article is about. Why do you think Wolfe used this title to refer to the 1960s in America?

2. What have you heard about the hippies?

3. Why do you think their lifestyle became so popular so fast? Why did it decrease in popularity so soon?

4. What aspect of the hippie lifestyle do you imagine would have been most surprising to the Italian students?



"Love in" party in the late 1960s.

The Me Decade

In 1971 I made a lecture tour of Italy, talking (at the request of my Italian hosts) about "contemporary American life." Everywhere I went, from Turin to Palermo, Italian students were interested in just one question: Was it really true that young people in America, no older than themselves, actually left home and lived communally according to their own rules and created their own dress styles and vocabulary and had free sex and took dope? They were talking, of course, about the hippie or psychedelic movement that had begun flowering about 1965. What fascinated them the most, however, was the first item on the list: that the hippies *actually left home and lived communally according to their own rules.*

To the Italian students this seemed positively amazing. Several of the students I met lived wild enough lives during daylight hours. They were in radical organizations and had fought pitched battles with police, *on the barricades,* as it were. But by 8:30 P.M. they were back home, obediently washing their hands before dinner with Mom and Dad and Buddy and Sis and the Maiden Aunt. When they left home for good, it was likely to be via the only admissible ticket: marriage. Unmarried sons of thirty-eight and thirty-nine would still be sitting around the same old table, morosely munching the *gnocchi.*

Meanwhile, ordinary people in America were breaking off from conventional society, from family, neighborhood, and community, and creating worlds of their own. This had no parallel in history, certainly considering the scale of it. The hippies were merely the most flamboyant example. The New Left students of the late 1960s were another. The New Letters lived in communes much like the hippies' but with a slightly different emphasis. Dope, sex, nudity, costumes, and vocabulary became symbols of defiance of bourgeois life. The

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costumery tended to be semi-military: noncom officers' shirts, combat boots, commando berets—worn in combination with blue jeans or a turtleneck jersey, however, to show that one wasn't a uniform freak.

That people so young could go off on their own, without taking jobs, and live a life completely of their own design—to Europeans it was astounding.

Tom Wolfe

Guessing the Meaning of Vocabulary from Context

This short selection contains a good deal of rather difficult vocabulary. After completing the reading, however, you can use your knowledge of the entire context to make intelligent guesses about the meaning of these complex words. This usually involves rereading. Explain the italicized words, using the hints provided.

1. "They were talking, of course, about the hippie or psychedelic movement that had begun *flowering* about 1965." (Lines 7-9) *(Hint:* Think of the usual meaning referring to plants.)

   *flowering:*_____

2. "Unmarried sons of thirty-eight and thirty-nine would still be sitting around the same old table, morosely *munching* the *gnocchi."* (Lines 19-20) *(Hint:* The second word is Italian. You can see that Wolfe is trying to paint a funny picture, and all you need to see it is to identify the general categories the words refer to.)

   munching:_____
   gnocchi: ._____

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3. "The hippies were merely the most flamboyant example. The *New Left* students of the late 1960s were another." (Lines 25-26) *(Hint:* The words *left, right,* and *center* are often used to refer to political attitudes. Which one do you think usually means "favoring a strong established authority"? Which one means "against such an authority"? What would the third one mean?)

   *New Left:*_____

4. "Dope, sex, nudity, costumes, and vocabulary became symbols of *defiance* of *bourgeois* life." (Lines 27-28) *(Hint:* The verb form of this word is *defy.* If you don't know it, you can get a good idea from the general action described by the verb in the first sentence of the paragraph.)

defiance: _____

{Hint: What group in society would the practices mentioned in the first part of the sentence defy?)

bourgeois: _____

Finding Points of Contrast

Wolfe draws a contrast between American and European youth of the 1960s and 1970s. In this short selection he mentions certain specific differences, and others are *implied*—that is, suggested but not stated directly. Describe the differences stated or implied between these two groups with regard to the following aspects of life:

1. where they live
2. how they dress
3. how they talk
4. rules of behavior
5. excitement and entertainment
6. rebellion against authority
7. political attitudes
8. philosophy, way of thinking

Talking It Over

1. What do you think of the hippies? Have you ever seen pictures, books, or movies about them?
2. Why do you think that their lifestyle spread so quickly to many other countries? Why do you think that it decreased in importance so fast? Do you believe that there are still hippies in some places?
3. How are young people today trying to express their rebellion against the older generation? Do you notice differences between North American youth and young people of your culture?

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SELECTION FOUR

Leon F. Bouvier

HUMAN WAVES

While our own crises and those of our families or of our generation concern us in a dramatic and personal way, there are also larger transitions, which affect the whole world. One of these is the mass migration or movement of people to new regions. Can you think

of three different reasons why large numbers of people are leaving the lands of their birth and moving to other areas or countries?

1. _____

2. _____

3. _____

Which of these do you think is the most common?

What problems does it cause and for whom? The following article examines these and other questions relating to current trends in human migration and population.

Prereading Exercise: Guessing the Meaning of New Words from Context

Use the context and the hints provided in parentheses to make up definitions for the italicized words taken from the article.

1. "When the problem of worldwide population growth is mentioned, attention is almost always focused on *fertility* rates." (Lines 1-2) *(Hint;* This noun [here used as an adjective] is related to the adjective *fertile,* which means "productive, capable of having children.")

   *fertility:*_____

2. "… some are illegal migrants who enter a country *surreptitiously* and lead *guarded* lives for fear of *apprehension,"* (Lines 23-25) *(Hint:* Adverbs often answer the question *how?* How would people with no legal papers enter?)

   surreptitiously: _____

   (Hint: The verb *guard* means to "watch over, protect." What do you think the related adjective means?)

   *guarded:*_____

   (Hint: Remember that *comprehension* means "a grasping or catching hold of an idea [in the sense of understanding it].")

   *apprehension:*_____

3. "Some half a million Colombians may be living *clandestinely* in Venezuela." (Lines 35-36) *(Hint:* The paragraph is talking' about *illegal* immigrants. The sentence expresses uncertainty—they *may* be living there—which is due in part to *how* they are living.)

   *clandestinely:*_____

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4. "Should the millions of residents who have lived and worked here for years without documentation be granted the legal right to remain or should they be *repatriated?"* (Lines 69-72) *(Hint:* The word comes from the Latin root *patria,* meaning "homeland," and the prefix *re-,* meaning "again.")

   *repatriated:*_____

5. "Does a nation have a right to determine its own *demographic* and cultural characters?" (Lines 81-82) *{Hint: demo-* is a prefix from Greek meaning "people" and is used in such words as *democracy.* The second part contains the word *graph,* which should be familiar to you.)

   *demographic:*_____

Human Waves

When the problem of worldwide population growth is mentioned, attention is almost always focused on fertility rates. Yet another side of the population problem is causing growing concern—the movement across national borders of millions of people in search of a better life. People have always dreamed of moving to greener pastures, but never in history have migration levels been as high as those of today.

In 1940, 65 percent of the people on the earth lived in developing countries; today the number approaches 75 percent of the 4.6 billion world population. In a short seventeen years it will surpass 80 percent or some 6.1 billion people. Increasingly, residents of the poorest nations are making the decision to move across international borders in an attempt to improve their lives. But with the appearance of nation-states and political barriers, migration has become subject to control. To people facing the prospect of staggering poverty at home, the spectacular advances in communications and transportation have made the possibly dire consequences of migration seem less risky than staying put. This is becoming evident all over the planet as people move from Mexico and Central America to the United States; from Guinea to the Ivory Coast; from Colombia to Venezuela; even from such small islands as Saint Vincent and Saint Lucia to Barbados. Some are legal migrants whose decision to move results from considerable discussion and thought; some 13 million are refugees forced to abandon their homelands for political reasons; some are illegal migrants who enter a country surreptitiously and lead guarded lives for fear of apprehension. The effects of these movements across borders are awesome.

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El Salvador refugees fleeing from their bombarded town.

When Third World countries exhibit rapid industrial growth, as some OPEC nations have in recent years, they attract residents from less fortunate neighboring states. Thus in Kuwait and the United Arab Emirates, 75 to 80 percent of the population are immigrants-temporary residents who are not citizens and probably will never become citizens. Illegal immigrants from such impoverished countries as Colombia and Ghana have moved in great numbers to Venezuela and Nigeria. The recent forced departure of Ghanaians from Nigeria uncovered hundreds of thousands of illegal migrants. Some half a million Colombians may be living clandestinely in Venezuela. About 25 percent of the population of the Ivory Coast are foreigners, many having migrated from Upper Volta and other African countries.

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What happens when the economic bubble bursts and there is no longer any employment for foreign workers, when there is not even enough work for the native-born citizens of the country? Nigeria has provided one answer with its sudden mass expulsion of Ghanaians. The arbitrary and cyclical nature of economic differences between countries is pointed up by Ghana's expulsion in 1969 of ail aliens without residential permits, forcing some 200,000 persons, mostly Nigerians, to leave.

In the United States there is increasing concern with immigration issues involving refugees and both legal and illegal immigrants. Since the mid-1970s we have accepted well over 100,000 refugees every year, and given the unstable political situation in many regions of the

world, one can only speculate as to the demands in future years. Since 1980, legal immigrants to the United States have averaged more than 600,000 per year. To that we must add the untold hundreds of thousands of clandestine immigrants who enter the country without legal documents. Their number is simply not known. Some illegal immigrants return home each year so that estimates of net illegal migration vary from as low as 100,000 to upward of 500,000 per year. In particular, the number of clandestine entrants across the two-thousand-mile border between the United States and Mexico is increasing as economic and political conditions grow worse in parts of Latin America.

Does an independent nation have the right to block immigration or to expel recent and not-so-recent immigrants if their presence is perceived as jeopardizing the economic well-being of the native inhabitants?

In the United States more than one million apprehensions of those engaged in illegal entry occur every year. These people are sent back to their home countries, but many return again and again. The U.S. Congress is currently wrestling with the issue of amnesty. Should the millions of residents who have lived and worked here for years without documentation be granted the legal right to remain or should they be repatriated?

Many in the United States feel that the increase in number should come to an end and be followed by an era of zero population growth at perhaps 275 or 300 million. Even with our very low fertility the population will, if immigration continues at recent rates, approach 350 million within a hundred years and will still be growing. Furthermore, the existing culture of the nation will be altered by the increasing proportion of immigrants and their descendants in the population. Thus ethical considerations are raised that go far beyond the matter of competition for jobs. Does a nation have a right to determine its own demographic and cultural characters?

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The problems are not limited to countries with a long history of receiving immigrants. Tiny Belize, with a population of fewer than 150,000 people and independent of Great Britain only since September 1981, is faced with massive refugee and immigrant movements from El Salvador, Guatemala, and Nicaragua. Some inhabitants worry that their English-speaking country will lose its own culture and become Hispanic through immigration. Barbados, population 250,000 with fertility below replacement, is concerned about current immigration from neighboring, poorer islands; some Barbadians are worried that their nation's culture will be changed by the incursion of East Indians. Such agonizing issues face many nations. Is it proper

for a nation to insist that its culture remain as it is? If the answer is yes, is this a subtle new form of racism or is it a laudable expression of cultural identity?

Leon F. Bouvier

Scanning for Statistics to Support Generalizations

Scan the article to find the statistics (numbers and percentages) that relate to the following points of information. Write them in the blanks provided. On the basis of these statistics, complete the generalizations correctly.

1. The number of immigrants accepted by the United States each year:

   Since 1980 the United States has been accepting (many fewer /somewhat fewer /somewhat more /many more) immigrants each year as compared with the 1970s.

   The percentage of the world population living in developing (Third World) countries now and in the past:

   This percentage seems to be (increasing /decreasing).

3. The percentage of immigrants who reside in some of the wealthy Arab states and who probably will never be citizens:

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   These states seem to have one of the (highest /lowest) percentages of immigrants in their populations.

Sentence Blocking for Better Understanding

Long, complex sentences contain several ideas and are often hard to understand at first glance. Sometimes they also contain unfamiliar vocabulary. If you figure out the relationships between the ideas, though, this can help to understand the vocabulary. It certainly helps you to grasp the whole meaning. One way of doing this is by sentence blocking.

To block out a long, complex sentence, follow these steps (the following sample sentence from the article is used to illustrate):

"To people facing the prospect of staggering poverty at home, the spectacular advances in communications and transportation have made the possibly dire consequences of migration seem less risky than staying put."

1. Find the main idea (clause), the one that *does not* start with any connecting word (such as a conjunction, preposition, or transition). Copy the sentence on a piece of paper and put a block or rectangle around the simple subject and the simple verb. If there is an object of the verb, block out the object, too. Now what you have in blocks is this:

   advances have made consequences

2. Now block out the modifiers that are needed to make some sense of the idea, skipping the ones you don't know.

   advances in communications and transportation have made

   consequences of migration seem less risky than

3. Block out whatever else you need to complete the main idea. Try to guess from the context the meaning of key words or idioms. *Staying put* is contrasted with another word by the comparative expression *than.* This usually indicates that its meaning is the opposite of or at least very different from that word. What do you think it means? Now try to put in your own words the main idea of the sentence:

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4. Go back to the secondary or subordinate ideas (clauses or phrases). In this case there is one, separated by a comma from the rest of the sentence. How is it related to the main idea? Are the words *staggering* and *dire* needed to understand the general meaning? Add this secondary idea to express the meaning of the sentence briefly in your own words.

In small groups or as a class, block out the following sentences from the article. Do not use a dictionary. Finish with a brief, clear paraphrase of the general meaning of each sentence. Compare these with your class.

1. "The arbitrary and cyclical nature of economic differences between countries is pointed up by Ghana's expulsion in 1969

of all aliens without residential permits, forcing some 200,000 persons, mostly Nigerians, to leave." (Lines 43-46)

2. "Since the mid-1970s we have accepted well over 100,000 refugees every year, and given the unstable political situation in many regions of the world, one can only speculate as to the demands in future years." (Lines 48-51)

3. "Does an independent nation have the right to block immigration or to expel recent and not-so-recent immigrants if their presence is perceived as jeopardizing the economic well-being of the native inhabitants?" (Lines 62-65)

Talking Ii Over

1. What countries in the world have large numbers of illegal immigrants at present?
2. What kinds of lives do you imagine that these people lead?
3. Do you think that the United States should grant citizenship to the thousands of illegal immigrants who are living in the country or not? Should it perhaps make a distinction between those who have just arrived and those who came long ago? Explain your opinion.
4. Why are people in certain small countries concerned about the large number of refugees entering their country?
5. The last three paragraphs of the article end with questions. Questions such as these, which are used without the expectation of getting an answer, are called *rhetorical questions.* Why do you think an author uses them? Are these questions at the end of the paragraphs all different or do they ask the same thing?
6. How would you answer the question at the end of the reading?

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Discussion

The Universal Declaration of Human Rights adopted by the United Nations General Assembly in 1948 states: "Everyone has the right to leave any country including his own and to return to that country." Is this actually observed in the world today? Should it be? Read the following proposition and decide if you agree with it or not, or if you agree perhaps with only part of it. Be prepared to explain your opinion to the class or to a small group, according to your teacher's instructions.

Proposition: Everyone should have the right to leave any country and to go to live in any country he or she chooses, without fear of penalties or imprisonment.

Stories Behind Words: Counting Worlds and Measuring Development

In the article, the terms *developing* and *Third World* seem to be used as synonyms to refer to certain countries. Which countries are these? Why do they belong to a "Third World"? One explanation of the popular use of this term is that the press in democratic nations lends to divide the world in two: (1) the free (capitalist) world and (2) the totalitarian (communist) world. The press in communist countries makes a similar division but with different terms: (1) the socialist world and (2) the imperialistic world. In both cases, a section of the world does not quite fit into either category, and so the term *Third World* has come to be used.

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It is interesting to note that the newspapers of a given country tend to use a complimentary, flattering word, such as *free* or *socialist*, to describe themselves and a *pejorative* or *derogatory* (negative, unflattering) word to describe those countries that have different politics: *totalitarian* or *imperialistic*. Vocabulary often reflects the attitude of the speaker, and the very same character trait can be described in a flattering or in a pejorative way, depending on the viewpoint of the speaker. For example, someone might refer to a man who spends all his evenings and weekends working at his job as an *industrious person* or a *hard worker*. A person with a different viewpoint might refer to the same man as a *workaholic*, a term that implies that the man is addicted to work as an alcoholic is addicted to alcohol. The compliment has become a criticism.

Can you recognize pejorative words in English? Would you rather have someone call you *thin* or *skinny? Lazy* or *easygoing?*

Proud or *arrogant? Stingy* or *frugal?* Can you think of any other traits that can be described in both a flattering and a pejorative way?

The countries now referred to as *developing* used to be referred to as *underdeveloped* until this was officially changed and the new term substituted a couple of decades ago. Why do you think it was changed? Do you think it was a good idea to change it? How are these countries referred to in the language of your culture?

SELECTION FOUR

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CHAPTER 6
THE MIND



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Many scientists today speak of the mind as the "new frontier," the single most dynamic and productive area of research. Psychologists have been studying people with an extraordinary ability for remembering or memorizing and have recently come up with some amazing results, discussed in the first selection. A look at the actual physical repository of the mind, the human brain, is presented next, with a description of some of the electrical and chemical aspects of its functions. Then the classic American writer of horror stories, Edgar Allan Poe, gives us an inside look at the disordered and diseased mind of a madman who seems to possess a strange rationality. The final selection is a timed reading about artificial brains—computers.

SELECTION ONE

Stephen Singular

A MEMORY FOR ALL SEASONINGS

Memory is one of the most important functions of the mind. Without our memories, we would have no identity, no individuality. The following article is about a *mnemonist,* a person with an extraordinary power of remembering. The title includes a *pun, a* form of humor based on a play on words. The usual phrase to describe something constant and dependable is "for all seasons"; here the phrase is changed to "for all *seasonings." (Seasonings* is another word for spices, such as salt, pepper, and curry.) What hint does this give you about the mnemonist? (Early in the article you will find out.)

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Prereading Exercise:
Anticipating the Reading

Before beginning to read an article, it's helpful to try to anticipate what it will be about and determine what associations you have with the topic.

1. When you think of a person with an extraordinary memory, what is the first question that comes to your mind?

2. Is there something practical you might learn from this reading?

3. What is the earliest distinct event in your life that you can remember?

4. Approximately how old were you when it occurred?

Compare your first memory with those of your classmates. When you read the article, you will find out how these memories compare with the earliest memory of the mnemonist. You may also learn the answers to your questions about memory.

A Memory for All Seasonings

One evening two years ago, Peter Poison, a member of the psychology department at the University of Colorado, took his son and daughter to dinner at Bananas, a fashionable restaurant in



John Conrad.

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Boulder. When the waiter took their orders, Poison noticed that the young man didn't write anything down. He just listened, made small talk, told them that his name was John Conrad, and left. Poison didn't think this was exceptional: There were, after all, only three of them at the table. Yet he found himself watching Conrad closely when he returned to take the orders at a nearby table of eight. Again the waiter listened, chatted, and wrote nothing down. When he brought Poison and hischildren their dinners, the professor couldn't resist introducing himself and telling Conrad that he'd been observing him.

The young man was pleased. He wanted customers to notice that, unlike other waiters, he didn't use a pen and paper. Sometimes, when they did notice, they left him quite a large tip. He had once handled a table of nineteen complete dinner orders without a single error. At Bananas, a party of nineteen (a bill of roughly $200) would normally leave the waiter a $35 tip. They had left Conrad $85.

Poison was impressed enough to ask the waiter whether he would like to come to the university's psychology lab and let them run some tests on him. Anders Ericsson, a young Swedish psychologist recently involved in memory research, would be joining the university faculty soon, and Poison thought that he would be interested in exploring memory methods with the waiter. Conrad said he would be glad to cooperate. He was always on the lookout for ways to increase his income, and Poison told him he would receive $5 an hour to be a guinea pig.

Conrad, of course, was not the first person with an extraordinary memory to attract attention from researchers. Alexander R. Luria, the distinguished Soviet psychologist, studied a Russian newspaper reporter named Shereshevskii for many years and wrote about him in *The Mind of a Mnemonist* (Basic Books, 1968). Luria says that Shereshevskii was able to hear a series of fifty words spoken once and recite them back in perfect order fifteen years later. Another famous example of extraordinary memory, the conductor Arturo Toscanini, was known to have memorized every note for every instrument in 250 symphonies and 100 operas.

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For decades the common belief among psychologists was that memory was a fixed quantity; an exceptional memory, or a poor one, was something with which a person was born.

This point of view has come under attack in recent years; expert memory is no longer universally considered the exclusive gift of the genius, or the abnormal. "People with astonishing memory for pictures, musical scores, chess positions, business transactions, dramatic scripts, or faces are by no means unique," wrote Cornell psychologist Ulric Neisser in *Memory Observed* (1981). "They may

not even be very rare." Some university researchers, including Poison and Ericsson, go a step further than Neisser. They believe that there are no physiological differences at all between the memory of a Shereshevskii or a Toscanini and that of the average person. The only real difference, they believe, is that Toscanini trained his memory, exercised it regularly, and wanted to improve it.

Like many people with his capacity to remember, Toscanini may also have used memory tricks called mnemonics. Shereshevskii, for example, employed a technique known as *loci.* As soon as he heard a series of words, he mentally "distributed" them along Gorky Street in Moscow. If one of the words was "orange," he might visualize a man stepping on an orange at a precise location on the familiar street. Later, in order to retrieve "orange," he would take an imaginary walk down Gorky Street and see the image from which it could easily be recalled. Did the waiter at Bananas have such a system? What was his secret?

John Conrad would be the subject of Anders Ericsson's second in-depth study of the machinations of memory. As a research associate at Carnegie-Mellon University in Pittsburgh, Ericsson had spent the previous three years working with William Chase on an extensive study of Steve Faloon, an undergraduate whose memory and intellectual skills were considered average. When Ericsson and Chase began testing Faloon, he could remember no more than seven random digits after hearing them spoken once. According to generally accepted research, almost everyone is capable of storing five to nine random digits in short-term memory. After twenty months of working with Chase and Ericsson, Faloon could memorize and retrieve eighty digits.

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"The important thing about our testing Faloon is that researchers usually study experts," Chase says. "We studied a novice and watched him grow into an expert. Initially, we were just running tests to see whether his digit span could be expanded. For four days he could not go beyond seven digits. On the fifth day he discovered his mnemonic system and then began to improve rapidly."

Faloon's intellectual abilities didn't change, the researchers say. Nor did the storage capacity of his short-term memory. Chase and Ericsson believe that short-term memory is a more or less fixed quantity. It reaches saturation quickly, and to overcome its limitations one must learn to link new data with material that is permanently stored in long-term memory. Once the associations have been made, the short-term memory is free to absorb new information. Shereshevskii transferred material from short-term to long-term memory by placing words along Gorky Street in Moscow. Faloon's hobby was

long-distance running, and he discovered that he could break down a spoken list of eighty digits into units of three or four and associate most of these with running times.

To Faloon, a series like 4,0,1,2 would translate as four minutes, one and two-tenths seconds, or "near a four-minute mile"; 2, 1, 4, 7 would be encoded as two hours fourteen minutes seven seconds, or "an excellent marathon time." When running didn't provide the link to his long-term memory, ages and dates did; 1, 9, 4, 4 is not relevant to running, but it is "near the end of World War II."

Chase and Ericsson see individual differences in memory performance as resulting from previous experience and mental training. "In sum," they write, "adult memory performance can be adequately described by a single model of memory."

Not every student of psychology agrees with Chase and Ericsson, of course. "I'm very suspicious of saying that everyone has the same kind of memory," says Matthew Erdelyi, a psychologist at Brooklyn College. "In my research," he says, "I find that people have very different memory levels. They can all improve, but some levels remain high and some remain low. There are dramatic individual differences."

It is unlikely that there will be any agreement among psychologists on the conclusions that they have thus far drawn from their research. The debate about exceptional memory will continue. But in the meantime it is interesting to look deeper into the mind of a contemporary mnemonist.

Ericsson and Poison, both of whom have tested Conrad over the past two years, believe that there is nothing intellectually outstanding about him. When they began testing Conrad's memory, his digit span was normal: about seven numbers. His grades in college were average.

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Conrad himself says that he is unexceptional mentally, but he has compared his earliest memories with others' and has found that he can recall things that many people can't. His first distinct memory is of lying on his back and raising his legs so that his mother could change his diapers. As a high-school student he didn't take notes in class—he says he preferred watching the girls take notes—and he has never made a list in his life. "By never writing down a list of things to do, and letting it think for me," he says, "I've forced my memory to improve."

Conrad does believe that his powers of observation, including his ability to listen, are keener than most people's. Memory, he says, is just one part of the whole process of observation. "I'm not extraordinary, but sometimes people make me feel that way. I watch them and realize how many of them have disorganized minds and memories

and that makes me feel unusual. A good memory is nothing more than an organized *one."*[7]

One of the first things Conrad observed at Bananas was that the headwaiter, his boss, was "a very unpleasant woman." He disliked being her subordinate, and he wanted her job. The only way he could get it was by being a superior waiter. He stayed up nights trying to figure out how to do this; the idea of memorizing orders eventually came to him. Within a year he was the headwaiter.

"One of the most interesting things we've found," says Ericsson, "is that just trying to memorize things does not insure that your memory will improve. It's the active decision to get better and the number of hours you push yourself to improve that make the difference. Motivation is much more important than innate ability."

Conrad began his memory training by trying to memorize the qrders for a table of two, then progressed to memorizing larger orders.

He starts by associating the entree with the customer's face. He might see a large, heavy-set man and hear "I'd like a big Boulder Steak." Sometimes, Peter Poison says, "John thinks a person looks like a turkey and that customer orders a turkey sandwich. Then it's easy."

In memorizing how long meat should be cooked, the different salad dressings, and starches, Conrad relies on patterns of repetition and variation. "John breaks things up into chunks of four," Ericsson says. "If he hears 'rare, rare, medium, well-done,' he instantly sees a pattern in their relationship. Sometimes he makes a mental graph. An easy progression—rare, medium-rare, medium, well-done—would take the shape of a steadily ascending line on his graph. A more difficult order—medium, well-done, rare, medium—would resemble a mountain range."

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The simplest part of Conrad's system is his encoding of salad dressings. He uses letters: *B* for blue cheese; /-/for the house dressing; 0 for oil and vinegar; *F* for French; *T* for Thousand Island. A series of orders, always arranged according to entree, might spell a word, like *B-O-O-T,* or a near-word, like *B-O-O-F,* or make a phonetic pattern: *F-O-F-O.* As Ericsson says, Conrad remembers orders, regardless of their size, in chunks of four, This is similar to the way Faloon stores digits, and it seems to support Chase and Ericsson's contention that short-term memory is limited and that people are most comfortable working with small units of information.

One of the most intriguing things about Conrad is the number of ways he can associate material. Another is the speed with which he is able to call it up from memory. Ericsson and Poison have also tested him with animals, units of time, flowers, and metals. At first, his recall was slow and uncertain. But with relatively little practice, he could

retrieve these "orders" almost as quickly as he could food.

"The difference between someone like John, who has a trained memory, and the average person," says Ericsson, "is that he can encode material in his memory fast and effortlessly. It's similar to the way you can understand English when you hear it spoken. In our tests in the lab, he just gets better and faster." "What John Conrad has," says Poison, "is not unlike an athletic skiil. With two or three hundred hours of practice, you can develop these skills in the same way you can learn to play tennis."

Stephen Singular

Study Skills: Underlining and Marginal Glossing

Memorizing is necessary when you review for a test. John Conrad spoke of the importance of having an organized mind in developing one's memory. In this textbook, four skills will be presented that can help you to organize materials for study: underlining, marginal glossing, study mapping, and outlining. This section will deal with underlining and glossing.

Underlining

Before underlining, you should have read the material once. Then skim the reading, underlining key words and phrases that relate to main ideas and important statistics or examples that support them. Do not underline entire sentences. Underline only about 20 to 30 percent of the material. Many students underline with felt pens, often using one color for main concepts and a different color for statistics and examples.

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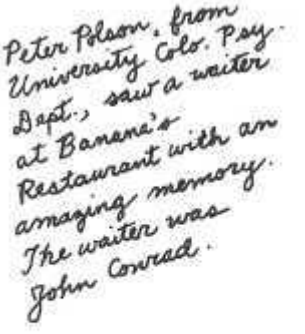
Marginal Glossing

Marginal glossing is another way to organize material for study. In this case, a marginal gloss is a note in the margin of your book summarizing the material next to it. When you study, these notes stand out and remind you of other points as well. This saves time because you do not reread everything, only the brief notes.

Here are the first eight paragraphs from a "Memory for All Seasonings" with underlining and marginal glosses done for the first four paragraphs. Look over the four paragraphs that have been

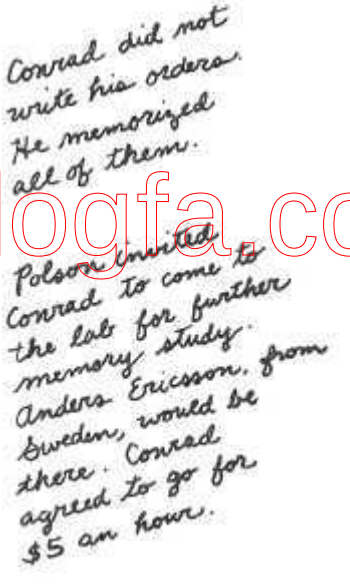
marked. Then finish the remaining paragraphs by underlining and glossing them yourself. Afterwards, compare what you have done with your classmates. Choose the best work by selecting the shortest one that includes all main points. (If you cannot write in your textbook, make a photocopy of the pages. Ask your instructor for help with any difficulties.) Afterwards, you should find that the first part of the comprehension quiz is quite easy.

A Memory for All Seasonings



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The young man was pleased. He wanted customers to notice that, unlike other waiters, he didn't use a pen and paper. Sometimes, when they did notice, they left him quite a large tip. He had once handled a table of nineteen complete dinners without a single error. At Bananas, a party of nineteen (a bill of roughly $200) would normally leave the waiter a $35 tip. They had left Conrad $85.



Poison was impressed enough to .ask the waiter whether he would like to come to the university's psvcholoqyjab_and let them run some tests on him. Anders Ericsson, a young Swedish psychologist recentiy involved in memory research, would be joining the university faculty soon, and Poison thought that he would be interested in exploring memory methods with the waiter, Conrad said he would be glad to cooperate. He was always on the lookout for ways to increase his income, and Poison told him he would receive $5 an hour to be a guinea pig.

Conrad, of course, was not the first person with an extraordinary memory to attract attention from researchers. Alexander R. Luria, the distinguished Soviet psychologist, studied a Russian newspaper reporter named Shereshevski[for many years and wrote about him

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For decades the common belief among psychologists was that memory was a fixed quantity; an exceptional memory, or a poor one, was something with which a person was born. "No amount of culture would seem capable of modifying a man's general retentiveness," wrote William James in *The Principles of Psychology* (1890).

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with Chase and Ericsson, Faloon could memorize and retrieve eighty digits.

Comprehension Quiz

Choose the best way of finishing each statement, based on what you have just read.

1. The psychology professor discovered John Conrad's incredible ability to memorize:
   a. in school
   b. on a test
   c. in a restaurant

2. Conrad agreed to let the professor study his memory because:
   a. Conrad was interested in psychology
   b. Conrad wanted to increase his income
   c. Conrad needed to improve his memory

3. The famous Russian mnemonist Shereshevskii used a memory trick called *loci* to remember objects by:
   a. associating them with events in Russian history
   b. imagining them placed along a street in Moscow
   c. picturing each one in his mind in a different color

4. The memory trick used by Steve Faloon was the association of certain numbers with:
   a. running times
   b. important dates
   c. both of the above
   d. none of the above

5. Conrad had been:
   a. a gifted student
   b. a below-average student
   c. an average student

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6. Part of Conrad's motivation for developing memory tricks to aid him as a waiter was:
   a. his desire to get his boss's job
   b. his great admiration for the headwaiter
   c. his fear of not finding any work

7. Imagine that four customers have requested that their steaks be cooked in the following way: well-done, medium, medium-rare, rare. According to John Conrad's "mental graph" technique, this order would be remembered as:
   a. a steadily ascending line
   b. a steadily descending line
   c. a mountain range

8. From this article a careful reader should infer that:
   a. everyone has about the same memory capacity and can develop a superior memory through practice and motivation
   b. a good or bad memory is an ability that a person is born with and cannot change to any great degree
   c. there is still no conclusive evidence as to whether outstanding memories are inborn or developed

Applying Concepts from the Reading

Several different mnemonic systems (memory tricks) are described in the reading. Working by yourself or in small groups, show that you have understood these tricks by applying them to the following situations. (A list of the systems with line references is given in case you want to review them.)

Mnemonic Systems Mentioned in Article

a. *loci* (imagining objects in a familiar place), used by Shereshevskii. Line 54-61
b. number association, used by Steve Faloon, Lines 89-98
c. physical appearance association, used by John Conrad, lines 148-152
d. mental graph or picture, used by Conrad, Lines 153-161
e. word or sound pattern association, used by Conrad, Lines 162-168

Situation 1: You want to remember the names of all the psychologists mentioned in this article: Poison, Ericsson, Luria, Neisser, Chase. How would you do this using word or sound pattern association?

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Situation 2: You want to remember to buy the following items at the grocery store: apples, milk, rice, pepper, salad dressing, and olives. How would you do this, using *loci?* How would you do it using word or sound pattern association? Which system would be better for you?

Situation 3: You have just a minute or two to look at the alphabetical list of exam grades and want to remember the grades of seven of your friends. What kind of mental graph would you picture in your mind to remember them in the following order: A, D, A, D, B, C, B?

Situation 4: You want to remember the combinations for the locks you use for your bicycle, your school locker, and your gym locker: 0915, 1220, 1492. How could you do this, using number association? Is there any other way you can think of doing it?

Situation 5: You are at a dinner party and want to remember the names of the four other guests: a very tall lady named Mrs. Stemski; a large, heavy-set man named Mr. Barnes; a cheerful young woman with a big smile named Miss Rich; and a sad-looking young man named Mr. Winter. How could you use physical appearance association to remember their names?

Talking It Over

1. In what other professions, besides that of a waiter, is it useful to have a good memory? Why?
2. Do you know or have you heard of any people (besides those mentioned in the article) who have extraordinary memories?
3. What techniques, other than those mentioned in the preceding exercise, are sometimes used to aid memory?
4. Are there some situations in life when it is important to develop the ability to forget rather than to remember? If so, how can this be done? Explain.

Finding Support For or Against a Hypothesis

As the article points out, some psychologists today believe that extraordinary memories are simply the result of development through hard work and the application of a system. According to them, an average person could achieve a superior memory if he or she tried hard enough. Find evidence from the article to support this hypothesis. Then find evidence from the article that goes against this hypothesis. What is your opinion of this controversial question?

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SELECTION TWO

Nigel Ccdder

UNDER THE SKULL

While psychologists are learning a great deal about memory and other functions of the human mind through clinical studies, biologists and neurophysiologists are using experiments, dissection, and high technology to penetrate its mysteries. Did you know that a particular section of the brain controls laughing? This was

discovered by accident in 1955 during an operation. When one part of his brain was touched, the patient immediately broke out into wild laughter, completely amazing the doctor, who had certainly not expected his surgery to be so entertaining!

There is also a chemical related to the use of obscene words. People who suffer from Gilles de la Tourette's disease lack this chemical and find themselves, to their great embarrassment, shouting out foul language even at good friends. Fortunately, this syndrome is now controlled by medication containing the important chemical. These examples show that scientists have discovered a great deal about our mental functioning, though they still have a long way to go. Nigel Calder, a noted British scientist and writer, presents some basic facts about the brain in this excerpt from his book *The Mind of Man.*

Pierending Exercise: Anticipating the Reading

Thinking ahead about the contents of an article can help you to focus on the important points. What do you already know about the human brain? Fill out the following description as well as you can, using the drawings to help you.

Color: Weight:

Consistency:

Major sections:

Number and types of cells:

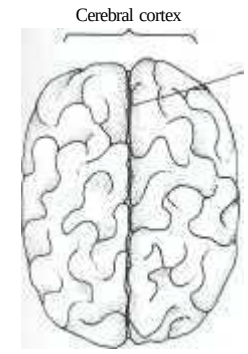
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Method of transmitting its messages:

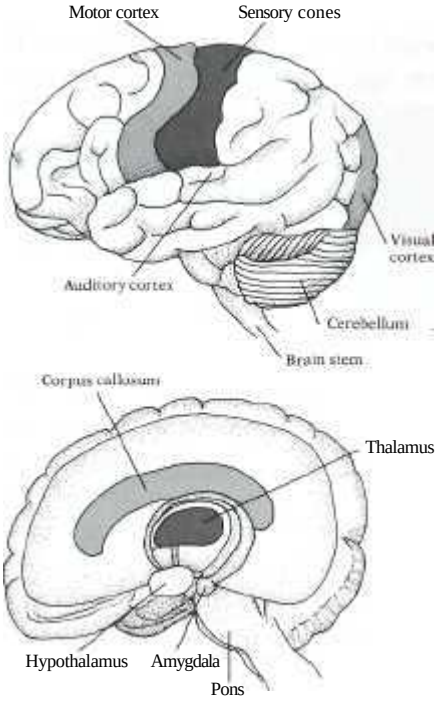
As you read the excerpt from Calder's book, see what new information you can learn about these aspects of the brain.

Under the Skull

The "face barrier" is a perpetual problem for anyone to overcome who tries to imagine the brain at work. The brain seems almost like an abstract theory, even though it lies only a few millimetres behind the eyebrows. Yet it is the more durable embodiment of human and



View from the top. The wrinkled surface of the two cerebral hemispheres, the cortex, is much greater in area than the cortex of any comparable animal brain.



Right hemisphere. The connection between the hemispheres is the *corpus callosom.* The *thalamus* and *hypo-thalamus* both contain many nuclei dealing with specific functions of body and brain (such as emotions, regulation of body temperature, and secretions of the pituitary glands).

Left hemisphere. This hemisphere, in the great majority of cases, is responsible for language. It also contains regions responsible for vision, the senses, and movement on the right side of the body.

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individual nature, while the face is just a kind of cinema screen across which flicker the projections of the brain's activities.

Even when exposed, the human brain is not very impressive to look at. Greyish in colour and with the consistency of soft cheese, it fits snugly inside the top of the skull. It weighs about as much as a dictionary of moderate size. But this lump of tissue, your brain or mine, is the most intricate and powerful of all the works of nature known to us. It is a machine millions of times more complex than the mightiest computers now built; furthermore, it is a machine that is conscious of its own existence. Here, and nowhere else, we presume, are generated the thoughts and feelings, dreams and creative actions that are the essence of human life; it is the organ of the mind of man.

Like all other parts of the body, and all plants and animals, the brain consists of cells, little units of life normally visible only under the microscope. There are many billions of cells in the brain. The ones most directly involved in mental and other processes are the neurons, nervelike cells that come in many shapes and sizes and have vast numbers of connections. The others are glia, or "flue" cells. If the cells were as big as grains of sand, they would fill a large truck. This great mass of cells is bewildering for those who try to trace its organisation and connections, but it is certainly not without pattern. The cells are arranged neatly in layers, which plainly has something to say about how the brain operates. Furthermore, the overall sculpture of the brain is far from meaningless.

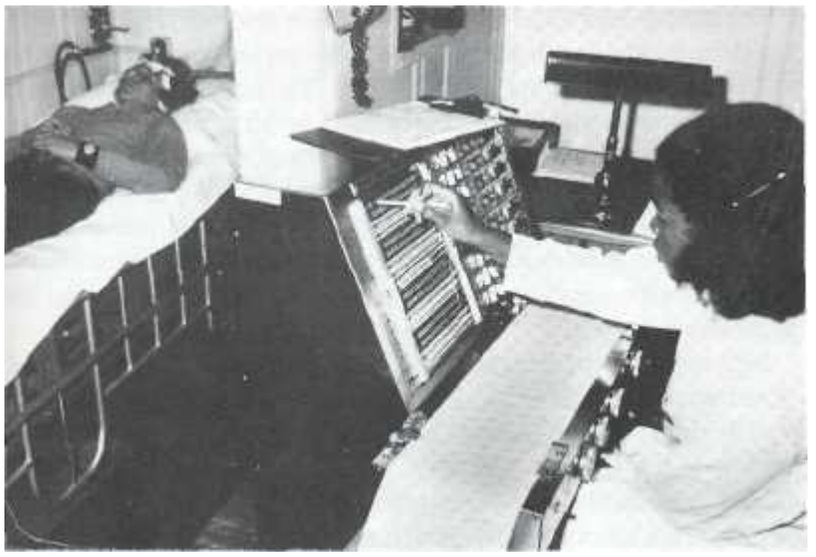
The most obvious part of the human brain consists of the two cerebral hemispheres on the top. The hemispheres are separated by a fissure running from front to back, but they are reconnected by thick cables of fibres lying towards the centre of the brain. Message-carrying fibres also fill much of the volume of the hemispheres, leaving most of the work of the brain to be done in the outermost three millimetres. This is the cerebral cortex, to which I shall refer as "the roof of the brain." It is very crumpled; if it were ironed flat, it would form a sheet about half a metre square.

The upper components of the brain grow outwards from a stem. The central part of the brain, closest to the top of the brain stem, is the hub of communications for the whole brain, with busy traffic of information flowing in all directions. It also has a specialised role in the expression of drives and emotions. The brain stem itself runs down to connect with the cables of the spinal cord, from which radiates the tracery of nerves that carry signals to and from all parts of the body. The important sense organs, including those of sight, hearing, and smell, have more direct access to the higher parts of the brain. At the back of the brain there is an additional component, the cerebellum, or "little brain," which is dedicated to learning and reconstructing skilled movements.

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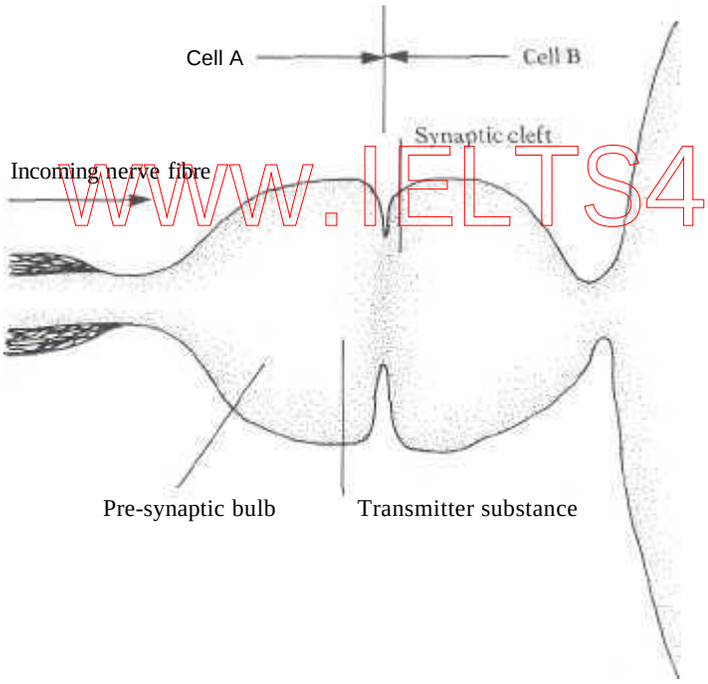
The brain is an electrical machine. That much is evident from the EEG [electroencephalograph] recorded at its outer surface, and disturbances due to epilepsy and other malfunctions appear in the wavy traces of the pen recorders. The technique was pioneered in the 1920s by Hans Berger of the University of Jena. Apart from other obvious uses in studies of sleeping, waking, and excitement, the EEG recorded at the scalp remains rather disappointing. After half a century, it still tells us little about how the normal human brain works, although, with modern techniques, it is possible to detect the arrival of signals in particular regions of the brain.

The intricate electric business of the brain is transacted by impulses



An EEG examination.

within individual brain cells which "fire" intermittently. These can be detected only with very fine probes, or microelectrodes, inserted right into the brain. An understanding of the ever-changing patterns of electrical activity comes with the simultaneous tracing of connections and influences involving many individual cells, but in very few parts of the brain has this tracing been done thoroughly.



The link, or synapse, between one brain cell and another. A signal travels from left to right by the release of a transmitter substance.

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The brain is also a chemical machine. The discovery that chemicals are involved in nerve action outside the brain was made at about the same time as that of the EEG. In 1921 Otto Loewi of the University of Graz showed that material produced when a nerve stopped the action of one frog's heart could be used to stop the heart of another frog. The identification of chemical agents within the brain has been a slow business. But it is now abundantly clear that one brain cell influences the action of another not by direct electrical connection but by releasing a "transmitter" substance into a narrow gap that separates them.

Different cells use different transmitters with fairly awkward names: Noradrenalin, serotonin, dopamine, GABA, and acetylcholine are all now thought to figure as brain transmitters. One recent benefit of the studies of transmitters has been the introduction of dopa, a drug related to dopamine, as a treatment for many cases of Parkinson's disease. This brain disorder, which causes loss of muscular control and was known to our forefathers as the shaking palsy, is found sometimes to involve shortages of dopamine in an important mass of cells deep in the brain.

Nigel Calder

Study Skills: Study Mapping

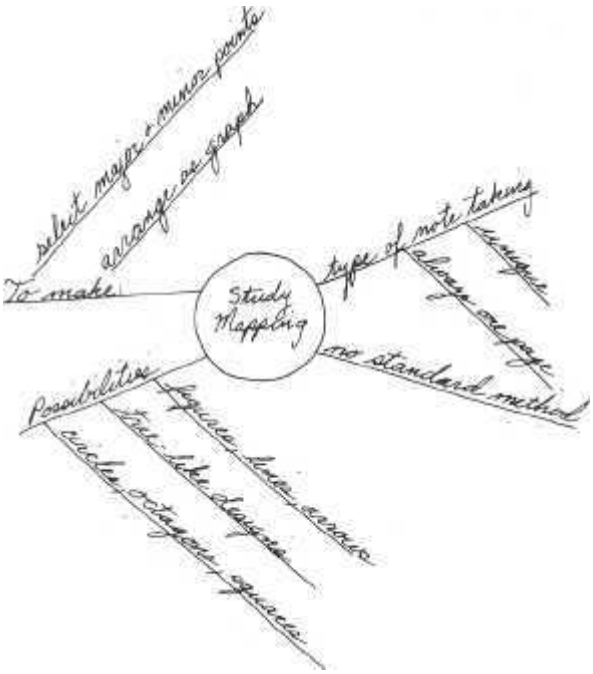
In the previous section on study skills, you were instructed to underline and gloss the important points in part of an article to help you review it. Another way to organize information for study is to make a study map.

Study mapping is a method of taking notes. It is unique in that an entire article or even a chapter of a textbook is mapped on just one page. To make a map, you must select the major and minor points of the article or chapter. Then arrange them in graph form. Students who enjoy drafting, charts, or symbols tend to like mapping. No exact method of map making is standard. Figures or shapes, lines, and arrows can be used. Some students prefer treelike designs for their maps; others use circles, octagons, or squares.

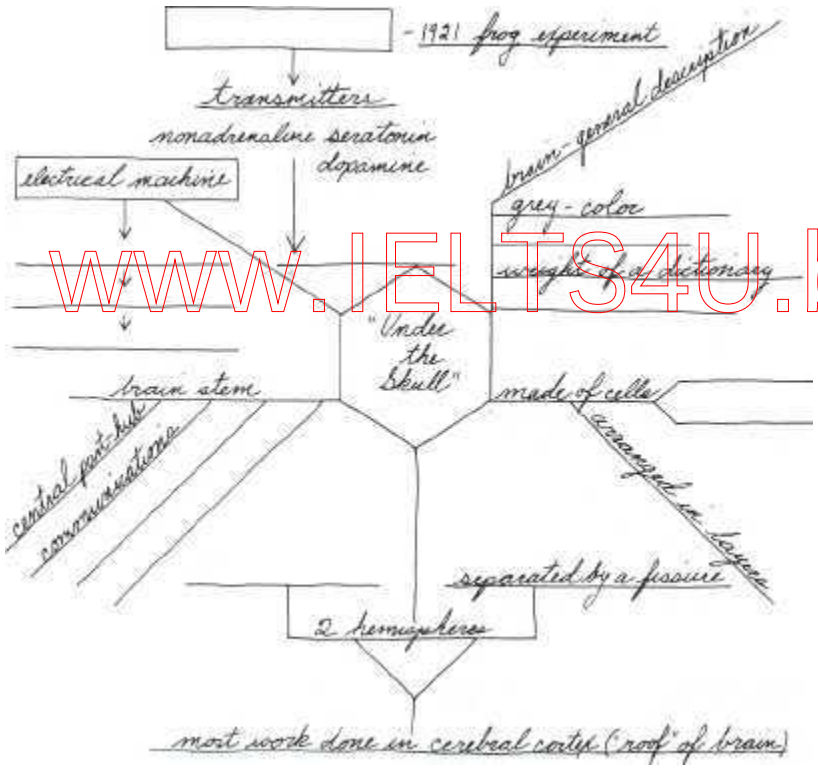
Like underlining, mapping should be done after the first reading. A study map of the preceding paragraph appears at the top of the next page.

Look at the partial study map for "Under the Skull" shown on the next page. Working as a class or in small groups, finish the map. Compare your work afterward with your classmates'. Did you add too much information? Too little? Refer to your map if you need help as you work out the comprehension quiz.

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How-to-study map.



How-to-study map for "Under the Skull."

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Comprehension Quiz

Choose the best way of finishing each statement, based on what you have just read.

1. The brain has the consistency of:
   a. soft cheese b. hard wood c. dry cotton
2. The cells of the brain most directly involved in mental processes are:
   a. glia b. "flue" cells c. neurons
3. The two large hemispheres of the brain are separated by:
   a. thick cables of fibres
   b. a fissure running between them
   c. the crumpled cerebral cortex
4. The cerebellum, or "little brain," specializes in:
   a. the expression of drives and emotions
   b. sending signals to and from all parts of the body
   c. learning and skilled movements
5. The EEG demonstrates that the brain is an electrical machine by:
   a. measuring intelligence with electrical energy
   b. drawing a map of the mind's functions
   c. recording disturbances with a wavy line
6. In 1921, Otto Loewi stopped the heart of a frog with a substance produced in a different frog when a nerve had stopped its heart. This experiment was important because it showed that:
   a. one brain cell influences the action of another by direct electrical connection
   b. the brain is a chemical machine and depends in part on chemicals to send its messages
   c. the impulses that "fire" within individual cells can be detected by very fine probes
7. Transmitters such as noradrenalin and dopamine are substances that:
   a. cure many diseases, such as measles and the common cold
   b. act as a bridge to carry messages from one cell to another
   c. are related to the brain's action in a way that is still not understood

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Paraphrasing Complex Ideas

Show that you have understood the following excerpts from the article by rephrasing the ideas in simpler words.

1. "The 'face barrier' is a perpetual problem for anyone to overcome who tries to imagine the brain at work."

2. "The cells are arranged neatly in layers, which plainly has something to say about how the brain operates."

3. "The central part of the brain, closest to the top of the brain stem, is the hub of communications for the whole brain, with busy traffic of information flowing in all directions."

Talking It Over

1. What examples can you give from the introduction and the article to show that research into the brain has benefited humanity?
2. What new facts did you learn about the human brain from the article? Did you learn anything that surprised you? Explain.
3. Do you think there is any danger in scientists' continued research into the brain's functions? Why or why not?
4. There are many common expressions related to the brain in English. Would you rather that someone called you *brainy* or *scatterbrained?* Why? What does it mean if someone says to you that he or she has just had a *brainstorm?* If someone complains about the *brain drain* that is affecting certain countries?

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Some Small Differences Between British and North American English

Calder states that there are "many billions of cells in the brain." Exactly what does he mean by the word *billion:* 1,000,000,000 or 1,000,000,000,000? Here we see a difference between usage in Great Britain and in the United States and Canada. Nigel Calder is British, and so he actually means a million millions (the second figure),

whereas a North American means a thousand millions (the first figure) when he or she says a *billion.*

All languages that have spread over a large geographic area show differences from one region to another, but in written English, these are surprisingly small. Examples of these are in the spelling of the following words taken from the selection. How would a North American spell them?

1. organisation
2. specialised
3. fibre
4. metre
5. colour

SELECTION THREE

Edgar Allan Poe

THE TELL-TALE HEART

It is not only science that brings us a better understanding of the human mind: Throughout the ages writers of fiction have examined the mind also. The famous American poet and short story writer Edgar Allan Poe was born in Boston, Massachusetts, in 1809. He died forty years later after a stormy but productive life that included wild sprees of drinking and gambling and numerous love affairs as well as a great deal of serious writing in journalism and literature. His works are still popular today, and several have served as the basis for modern plays and movies. He is best known for his tales of horror, such as "The Tell-Tale Heart."

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The story is told from the point of view of a madman who commits a terrible crime. Many psychologists and criminologists have felt that Poe describes with great accuracy the inner workings of a severely disordered mind. What do you know, from reading or from personal contact, about madness (insanity)? List some of the characteristics of the thinking, perception, or speech of a person that show he or she is insane.

Watch for examples of these in the story.

Prereading Exercise: Reading Nineteenth-Century English

Some words and expressions that Poe uses in the story are now archaic (no longer used or quite uncommon in modern English). Most English-speaking readers would not be familiar with them. However, they would have little trouble following the story because the context provides many clues, so it is not necessary to understand every word.

Many great American and English writers lived in the nineteenth century; to read nineteenth-century English, simply skip words or expressions you do not understand and then go back and reread after you see more of the context. Practice this technique in the following exercise. Read the selections from Poe's story and select the modern word or expression that best fits the context to replace the old-fashioned one in italics.

1. "How, then, am I mad? *Hearken!* and observe how healthily—how calmly I can tell you the whole story." (Lines 5-6)

   a. Speak! b. Listen! c. Go away!

2. "It is impossible to say how first the idea entered my brain, but once conceived, it haunted me day and night. *Object* there was none. Passion there was none. . . . For his gold I had no desire." (Lines 7-10)

   a. fear b. purpose c. argument

3. "Now this is the point. You *fancy* me mad. Madmen know nothing. But you should have seen me," (Lines 15-16)

   a. like b. imagine c. offend

4. "Presently I heard a slight groan, and I knew it was the groan of mortal terror. It was not a groan of pain or of grief—oh, no!—it was the low stifled sound that arises from the bottom of the soul. . . . I knew the sound well. Many a night . . . it has welled up from my own *bosom."* (Lines 58-62)

   a. house b. chest c. table

5. "I knew what the old man felt, and pitied him. . . . His fears had been ever since growing upon him. . . . He had been saying to himself—'It is nothing but the wind in the chimney. . . .' Yes, he had been trying to comfort himself with these suppositions: but he had found all *in vain. AH in vain;* because Death . . . had stalked with his black shadow before him, and enveloped the victim." (Lines 63-72)

   a. useless b. successful c. harmful

6. "But, for many minutes, the heart beat on with a muffled sound. This, however, did not *vex* me; it would not be heard through

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the wall. *At length* it ceased. The old man was dead." (Lines 107-109)

vex: a. delight b. confuse c. irritate

at length: a. soon b. finally c. in a moment

7. "I took my visitors all over the house. I *bade* them search-search well." (Lines 134-135)

   a. finished b. directed c. refused

8. "They sat, and while I answered cheerily, they chatted of familiar things. But, *ere long*, I felt myself getting pale and wished them gone." (Lines 142-144)

   a. after many hours
   b. in a short while
   c. with too much time

The Tell-Tale Heart

True—nervous—very, very dreadfully nervous I had been and am; but why *will* you say that I am mad? The disease had sharpened my senses—not destroyed—not dulled them. Above all was the sense of hearing acute. I heard all things in the heaven and in the earth. I heard many things in hell. How, then, am I mad? Hearken! and observe how healthily—how calmly I can tell you the whole story.

It is impossible to say how first the idea entered my brain; but once conceived, it haunted me day and night. Object there was none. Passion there was none. I loved the old man. He had never wronged me. He had never given me insult. For his gold I had no desire. I

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Scenes from the animated version of "The Tell-Tale Heart," based on the short story by Edgar Allen Poe.





think it was his eye! yes, it was this! He had the eye of a vulture—a pale blue eye, with a film over it. Whenever it fell upon me, my blood ran cold; and so by degrees—very gradually—I made up my mind to take the life of the old man, and thus rid myself of the eye forever.

Now this is the point. You fancy me mad. Madmen know nothing. But you should have seen *me.* You should have seen how wisely I proceeded—with what caution—with what foresight—with what dissimulation I went to work! I was never kinder to the old man than during the whole week before I killed him. And every night, about midnight, I turned the latch of his door and opened it—oh, so gently! And then, when I had made an opening sufficient for my head, I put in a dark lantern, all closed, closed, so that no light shone out, and then I thrust in my head. Oh, you would have laughed to see how cunningly I thrust it in! I moved it slowly—very slowly, so that I might not disturb the old man's sleep. It took me an hour to place my whole head within the opening so far that I could see him as he lay upon his bed. Ha!—would a madman have been so wise as this? And then, when my head was well in the room, I undid the lantern cautiously—oh so cautiously—cautiously (for the hinges creaked)—I undid it just so much that a single thin ray fell upon the vulture eye. And this I did for seven long nights—every night just at midnight—but I found the eye always closed; and so it was impossible to do the work; for it was not the old man who vexed me, but his Evil Eye. And every morning, when the day broke, I went boldly into the chamber, and spoke courageously to him, calling him by name in a hearty tone, and inquiring how he had passed the night. So you see he would have been a very profound old man, indeed, to suspect that every night, just at twelve, I looked in upon him while he slept.

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Upon the eighth night I was more than usually cautious in opening the door. A watch's minute hand moves more quickly than did mine. Never before that night, had I *felt* the extent of my own powers—of my sagacity. I could scarcely contain my feelings of triumph. To think that there I was, opening the door, little by little, and he not even to dream of my secret deeds or thoughts. I fairly chuckled at the idea; and perhaps he heard me; for he moved on the bed suddenly, as if startled. Now you may think that I drew back—but no. His room was as black as pitch with the thick darkness (for the shutters were close fastened, through fear of robbers), and so I knew that he could not see the opening of the door, and I kept pushing it on steadily, steadily.

I had my head in, and was about to open the lantern, when my thumb slipped upon the tin fastening, and the old man sprang up in bed, crying out—"Who's there?"

I kept quite still and said nothing. For a whole hour I did not move a muscle, and in the meantime I did not hear him lie down. He was

still sitting up in the bed listening;—just as I have done, night after night, hearkening to the death watches in the wall.

Presently I heard a slight groan, and I knew it was the groan of mortal terror. It was not a groan of pain or of grief—oh, no!—it was the low stifled sound that arises from the bottom of the soul. I knew the sound well. Many a night, just at midnight, when all the world slept, it has welled up from my own bosom, deepening, with its dreadful echo, the terrors that distracted me. I say I knew it well. I knew what the old man felt, and pitied him, although I chuckled at heart. I knew that he had been lying awake ever since the first slight noise, when he had turned in the bed. His fears had been ever since growing upon him. He had been trying to fancy them causeless, but could not. He had been saying to himself—"It is nothing but the wind in the chimney—it is only a mouse crossing the floor." Yes, he had been trying to comfort himself with these suppositions: but he had found all in vain. *All in vain;* because Death, in approaching him had stalked with his black shadow before him, and enveloped the victim. And it was the mournful influence of the unperceived shadow that caused him to feel—although he neither saw nor heard—to *feel* the presence of my head within the room.

When I had waited a long time, very patiently, without hearing him lie down, i resolved to open a little—a very, very little crevice in the lantern. So I opened it—you cannot imagine how stealthily, stealthily—until, at length a single dim ray, like the thread of the spider, shot from out the crevice and fell full upon the vulture eye.

It was open—wide, wide open—and I grew furious as I gazed upon it. I saw it with perfect distinctness—all a dull blue with a hideous veil over it that chilled the very marrow in my bones; but I could see nothing else of the old man's face or person: for I had directed the ray, as if by instinct, precisely upon the damned spot.

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And have I not told you that what you mistake for madness is but overacuteness of the senses?—now, I say, there came to my ears a low, dull, quick sound, such as a watch makes when enveloped in cotton. I knew *that* sound well, too. It was the beating of the old man's heart. It increased my fury, as the beating of a drum stimulates the soldier into courage.

But even yet I refrained and kept still. I scarcely breathed. I held the lantern motionless. I tried how steadily I could maintain the ray upon the eye. Meantime the hellish tattoo of the heart increased. It grew quicker and quicker, and louder and louder every instant. The old man's terror *must* have been extreme! It grew louder, I say, louder every moment—do you mark me well? I have told you that I am nervous: so I am. And now at the dead hour of the night, amid the dreadful silence of that old house, so strange a noise as this excited

me to uncontrollable terror. Yet, for some minutes longer I refrained and stood still. But the beating grew louder, louder! 1 thought the heart must burst. And now a new anxiety seized me—the sound would be. heard by a neighbor! The old man's hour had come! With a loud yell, I threw open the lantern and leaped into the room. He shrieked once—once only. In an instant I dragged him to the floor, and pulled the heavy bed over him. I then smiled gaily, to find the deed so far done. But, for many minutes, the heart beat on with a muffled sound. This, however, did not vex me; it would not be heard through the wall. At length it ceased. The old man was dead. I removed the bed and examined the corpse. Yes, he was stone, stone dead. I placed my hand upon the heart and held it there many minutes. There was no pulsation. He was stone dead. His eye would trouble me no more.

If you still think me mad, you will think so no longer when I describe the wise precautions I took for the concealment of the body. The night waned, and I worked hastily, but in silence. First of all I dismembered the corpse. I cut off the head and the arms and the legs.

I then took up three planks from the flooring of the chamber, and deposited all between the scantlings. I then replaced the boards so cleverly, so cunningly, that no human eye—not even *his*—could have detected anything wrong. There was nothing to wash out—no stain of any kind—no blood-spot whatever. I had been too wary for that. A tub had caught all—ha! ha!

When I had made an end of these labors, it was four o'clock—stiil dark as midnight. As the bell sounded the hour, there came a knocking at the street door. I went down to open it with a light heart,—for what had I *now* to fear? There entered three men, who introduced themselves, with perfect suavity, as officers of the police. A shriek had been heard by a neighbor during the night; suspicion of foul play had been aroused; information had been lodged at the police office, and they (the officers) had been deputed to search the premises.

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I smiled,—for *what* had I to fear? I bade the gentlemen welcome. The shriek, I said, was my own in a dream. The old man, I mentioned, was absent in the country. I took my visitors all over the house. I bade them search—search *well.* I led them, at length, to *his* chamber. I showed them his treasures, secure, undisturbed. In the enthusiasm of my confidence, I brought chairs into the room, and desired them *here* to rest from their fatigues, while I myself, in the wild audacity of my perfect triumph, placed my own seat upon the very spot beneath which reposed the corpse of the victim.

The officers were satisfied. My *manner* had convinced them. I was singularly at ease. They sat, and while I answered cheerily, they chatted of familiar things. But, ere long, I felt myself getting pale and

wished them gone. My head ached, and I fancied a ringing in my ears: but still they sat and still chatted. The ringing became more distinct:—it continued and became more distinct: I talked more freely to get rid of the feeling: but it continued and gained definiteness—until, at length, I found that the noise was *not* within my ears.

No doubt I now grew *very* pale;—but I talked more fluently, and with a heightened voice. Yet the sound increased—and what could I do? It was a *low, dull, quick sound—much such* a *sound as a watch makes when enveloped in cotton.* I gasped for breath—and yet the officers heard it not. I talked more quickly—more vehemently; but the noise steadily increased. 1 arose and argued about trifles, in a high key and with violent gesticulations; but the noise steadily increased. Why *would* they not be gone? I paced the floor to and fro with heavy strides, as if excited to fury by the observations of the men—but the noise steadily increased. Oh God! what *could* I do? I foamed—I raved—I swore! I swung the chair upon which I had been sitting, and grated it upon the boards, but the noise arose over all and continually increased. It grew louder— louder—*louder!* And still the men chatted pleasantly, and smiled. Was it possible they heard not? Almighty God!—no, no! They heard!—they suspected!—they *knew!—they* were making a mockery of my horror!—this I thought, and this I think. But anything was better than this agony! Anything was more tolerable than this derision! I could bear those hypocritical smiles no longer! I felt that I must scream or die! and now—again!—hark! louder! louder! louder! *louder!*

"Villains!" I shrieked, "dissemble no more! I admit the deed!—tear up the planks! here, here!—it is the beating of his hideous heart!" 170

Edgar Allan Poe

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Recalling Information

Choose the best way of finishing each statement, based on what you have just read.

1. The narrator believes that he suffers from acute nervousness that has:
   a. destroyed the power of his senses
   b. increased the power of his senses
   c. driven him mad
2. The motive for the murder was:
   a. a strong desire for the victim's money

b. an intense hatred for the victim
c. a dislike of the victim's eye

3. During the week before he killed him, the narrator's manner toward the old man was very:

a. kind b. angry c. indifferent

4. Each night just at midnight, he thrust into the old man's room a:

a. black cat b. chain c. lantern

5. On the eighth night, the old man awakened because of a noise and then:

a. went right back to sleep
b. began to shriek for help
c. sat up waiting in terror

6. After a while, the murderer heard a sound that increased his fury and that he thought was:

a. a watch enveloped in cotton
b. the neighbors coming to enter the house
c. the beating of his victim's heart

7. The murderer disposed of the old man's body by putting it:

a. in the garden b. under the floor c. into the chimney

8. At four in the morning three police officers arrived because neighbors had complained of:

a. the lights b. some knocking c. a shriek

9. The officers found out the truth because:

a. the murderer confessed
b. they heard a strange sound
c. there was a bloodstain on the floor

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Talking It Over

1. Give three statements the narrator makes to prove he is sane. Then show how the author indicates to us that these claims are not true.
2. We are not told what relationship the murderer had to the old man or why they lived together. What did you imagine about this?
3. To whom do you think the murderer is telling this story and for what reason?
4. Have you heard of people who believe in the "evil eye"? According to this belief, you can suffer bad luck or illness if you are looked at by someone who has this power. What do

you think is the origin of this belief? Why do you think the narrator of the story was so disturbed by the old man's eye?

5. Various interpretations have been given to explain the loud beating sound that the narrator hears during the police visit. Do you agree with any of the following interpretations?
   a. It is simply a clock or other normal sound that seems louder to him because of his guilt.
   b. It is really the beating of his *own* heart, which becomes stronger as he gets more and more nervous.
   c. It is the old man's ghost taking revenge on him.

   Or do you have some other interpretation? Explain.

6. What do you think causes madness? What should be done with people who are insane?

Identifying Elements That Create a Feeling of Horror

Edgar Allan Poe is considered a master of the horror story. Have you ever read a horror story or seen a horror movie that really frightened you? Many people in North America seem to enjoy being frightened in this way. Are horror stories popular in your culture as well?

This story and several others by Poe have been recorded. If you can get one of these recordings, listen to it in class. If you cannot get a recording, your teacher and a few volunteers from the class should read aloud some sections. After listening to them, try to explain how tone of voice increases the feeling of terror.

Most horror stories include certain elements commonly used to provoke terror. Can you think of some of these? Listen to the story or look through it and make a list of these elements. Then compare your lists. Why do you think that these elements are frightening?

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Making a Summary from a Different Point of View

What really happened when the three police officers came to search the narrator's house? What did he do or say to make them so suspicious that they stayed to chat with him? The events are presented from *his* point of view, but we must read "between the lines" in order to see what really happened. We must take into account his character and pinpoint the places in which he describes events incorrectly. Working as a class or in small groups, make a summary of what really occurred in the form of a brief *police report* from the point of view of the three officers.

TIMED READING

Geoff Simons

ARE COMPUTERS ALIVE?

You have been practicing study skills for times when you must study a text thoroughly, perhaps to prepare for an exam or interview. Sometimes, however, you have only a small amount of time and you must read something quickly. In this and several of the remaining chapters, there will be a timed reading to give you a chance to practice reading rapidly for main ideas. A quiz at the end of each timed reading will test your comprehension.

The following selection discusses what many people view as the most recent extension of the human mind: the computer. Is it simply a tool or can we speak of it as an intelligent being that "thinks"? Read the selection to find out the author's point of view on this question. Try to finish the reading and quiz in six minutes. *(Hint:* Looking at the quiz first will help focus on the reading.)

Are Computers Alive?

The topic of *thought* is one area of psychology, and many observers have considered this aspect in connection with robots and computers: Some of the old worries about AI (artificial intelligence) were closely linked to the question of whether computers could think. The first massive electronic computers, capable of rapid (if often unreliable) computation and little or no creative activity, were soon dubbed "electronic brains." A reaction to this terminology quickly followed: To put them in their place, computers were called "high-speed idiots," an effort to protect human vanity, in such a climate the possibility of computers actually being alive was rarely considered: It was bad enough that computers might be capable of thought. But not everyone realized the implications of the *high-speed idiot* tag. It has not been pointed out often enough that even the human idiot is one of the most intelligent life forms on earth. If the early computers were even that intelligent, it was already a remarkable state of affairs.

One consequence of speculation about the possibility of computer thought was that we were forced to examine with new care the idea of thought in general. It soon became clear that we were not sure what we meant by such terms as *thought* and *thinking.* We tend to assume that human beings think, some more than others, though we often call people *thoughtless* or *unthinking.* Dreams cause a problem, partly because they usually happen outside our control. They are

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obviously some type of mental experience, but are they a type of thinking? And the question of nonhuman life forms adds further problems. Many of us would maintain that some of the higher animals—dogs, cats, apes, and so on—are capable of at least basic thought, but what about fish and insects? It is certainly true that the higher mammals show complex brain activity when tested with the appropriate equipment. If thinking is demonstrated by evident electrical activity in the brain, then many animal species are capable of thought. Once we have formulated clear ideas on what thought is in biological creatures, it will be easier to discuss the question of thought in artifacts. And what is true of thought is also true of the many other mental processes. One of the immense benefits of AI research is that we are being forced to scrutinize, with new rigor, the working of the human mind.

It is already clear that machines have superior mental abilities to many life forms. No fern or oak tree can play chess as well as even the simplest digital computer; nor can frogs weld car bodies as well as robots. The three-fingered mechanical manipulator is cleverer in some ways than the three-toed sloth. It seems that, viewed in terms of intellect, the computer should be set well above plants and most animals. Only the higher animals can, it seems, compete with computers with regard to intellect—and even then with diminishing success. (Examples of this are in the games of backgammon and chess. Some of the world's best players are now computers.)

Geoff Simons

Comprehension Quiz

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1. The first electronic computers were:
   a. slow and reliable
   b. creative and accurate
   c. large and fast
2. The author feels that by calling these early computers "high-speed idiots," people were really implying that computers:
   a would never be capable of thought
   b. were already somewhat intelligent
   c. can never work as rapidly as people
3. The author believes that such words as *thought* and *thinking:*
   a. are terms that are not clear and will never be exactly defined
   b. might come to be better understood because of research into artificial intelligence and computers

c. have precise biological meanings that refer only to human mental processes

4. In the author's view, mental activities are characteristic of:
   a. all plants and animals
   b. some animals
   c. human beings alone

5. The author's opinion regarding the possibility of machines thinking seems to be that:
   a. there are already machines that think
   b. this is somewhat possible
   c. this is totally improbable

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CHAPTER 7
WORKING



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From the moment they finish school to the day they retire, most people spend about a third of their lives working. Whether these hours bring them pleasure and fulfillment or boredom and frustration depends on many factors (besides the most obvious one of salary). Some of these factors are explored in the first selection, an excerpt from an economics textbook that describes modern experiments in work management. Next, a job application form is presented with clues about how to tell what kind of person is wanted for the job. The last selection is a description of the qualities needed to be a good manager, written by a businessman with many years of experience.

SELECTION ONE

David W. Rasmussen and
Charles T. Haworth

THE QUALITY OF WORK IN AMERICA

More than fifty years ago the famous comic actor Charlie Chaplin appeared in a movie called *Modern Times*, which presented the modern factory worker in a series of comical situations. In one scene he was shown trying desperately to keep in time with a rapid assembly line on which his job consisted of turning two bolts with a pair of pliers. After a while, dazed with boredom and frustration, he began running around trying to turn anything that looked like those bolts—including two buttons on the blouse of a rather large lady who happened to pass by! Beneath the humor there seemed to be a sad and serious message: a picture of the modern worker, reduced and humiliated, a servant to the machine. Has this dire prediction come true? What is it like to work on an assembly line or in an office in North America today? The following excerpt from a textbook entitled *Economics: Principles and Applications* discusses this important question.

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Piereading Exercise: Anticipating the Reading

Work. Think about it for a moment.

1. What conditions do you need to get enjoyment out of work?

2. What conditions make you frustrated and unhappy when you work?

3, What changes do you think need to be made in factories to motivate workers and make them more content?

Compare your answers with those of your classmates. Then see how these compare to the contents of the selection.

Defining Key Words and Expressions from Context

Write your own definitions or explanations of the italicized words or expressions in the following excerpts from the article. Use the hints to aid you.

1. "It lists two job characteristics that seem particularly unpleasant to many people: (1) situations involving *repetitive operations* performed according to *set procedures. . . ."*

   {Hint: You probably know the verbs *repeat* and *proceed,* which should help you with the related words.)

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2. "Even if one has a job of responsibility and freedom, the pleasure from this activity can be severely undermined if the worker knows that the product is worthless, unimportant, or *shoddy."*

   {Hint: You must use logic here and guess what other quality in a product, besides the two listed, would undermine a worker's pleasure.)

3. "Large-scale *bureaucracies* dominate business, government, and universities. All rely on organizational procedures for accomplishing their tasks."

   {Hint: It is derived from the French word *bureau,* meaning "office.")

4. "The traditional view of management is based on the 'boss system,' which relies on the *carrot and stick* to motivate employees—the carrot of wages and the stick of dismissal."

   (Hint: In olden days, many machines were powered by donkeys that walked in a circle with a carrot suspended from a stick on their heads so that they would keep going forward trying to eat it. When this did not work, they were hit from behind with a stick.

5. "The Imperial Chemical Industries of Great Britain had factory workers with low *morale*—as indicated by five *walkouts* in one week!"

   (Hint: The end punctuation tells you that the situation is emotional, and you can figure out *walkouts* by breaking the word apart.)

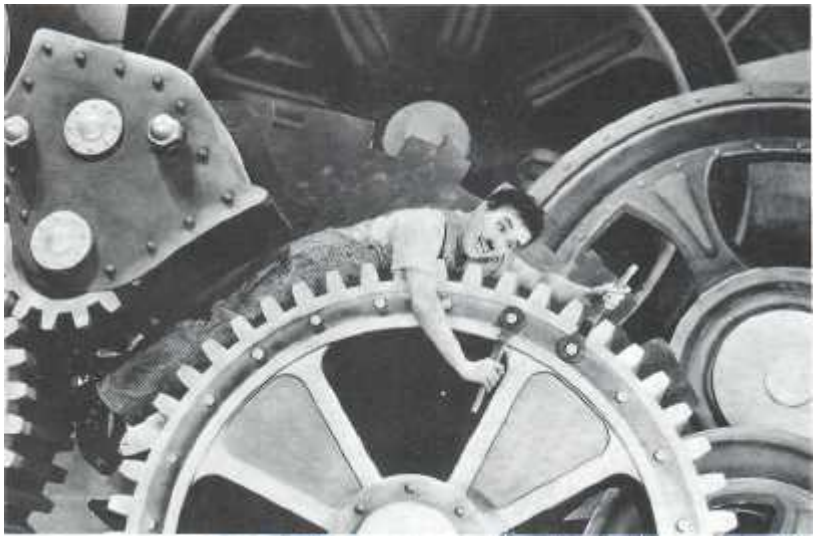
The Quality of Work in America

When college students anticipate future employment, they often imagine many things: high status, stimulation, good income, prestige, responsibility, and some freedom. They seek meaning and enjoyment in their work. In this section we investigate the quality of work available in America.

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The U.S. Department of Labor has developed a set of job descriptions to help guide people into employment that appeals to them. This *Dictionary of Occupational Titles* describes the training and education required for each occupation, the physical abilities and aptitudes required, and working conditions. It lists two job characteristics that seem particularly unpleasant to many people: (1) situations involving repetitive operations performed according to set procedures, and (2) situations allowing no room for independent action or judgment.

Unfortunately, almost 22 percent of all jobs in the United States have both these characteristics. Forty percent have one of them. Among the occupations with both are farm laborers, dishwashers, and auto assemblers. The latter job is widely considered one of the worst occupations in the United States. The reason is probably best



Charlie Chaplin in *Modern Times*.

stated by an auto worker interviewed by Studs Terkel. Phil Stallings, a spot welder, describes his job:

> I stand in one spot two or three feet in area, all night. The only time a person stops is when the line stops. We do about thirty-two jobs per car, per unit. Forty-eight units an hour, eight hours a day. Thirty-two times forty-eight times eight. Figure it out. That's how many times I push that button.
>
> The noise, oh, it's tremendous. You open your mouth and you are liable to get a mouth full of sparks. (*Shows his arms.*) That's a burn, these are burns. You don't compete against the noise. You go to yell and at the same time you are straining to maneuver the gun to where you have to weld. . . . I don't understand how come more guys don't flip. Because you are nothing more than a machine when you hit this type of thing. They give better care to that machine than they will give to you. They'll have more respect, give more attention to that machine, And you know this. Somehow you get the feeling that the machine is better than you are.*

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Independent of working conditions, other factors may undermine the rewards of work. Even if one has a job of responsibility and freedom, the pleasure from this activity can be severely undermined if the worker knows that the product is worthless, unimportant, or shoddy. Psychologist Abraham Maslow once observed that he did not think he could feel self-esteem if he worked in a factory producing chewing gum or shoddy furniture. To get rewards from work, one must be doing something one feels is important: To do an idiotic task very well is not a real accomplishment.

'Studs Terkel, *Working (Hew* York: Avon, 1975), pp. 159-60.

Being a professional does not necessarily solve the problem. Management specialist Peter Drucker has observed that many people see themselves as professionals but in fact are merely upgraded skilled workers. Rather than work as professionals they work as staff, dependent upon some higher authorities who determine to a large extent the pace and quality of their work. According to Drucker, this explains why so many highly educated young people are unhappy in their jobs. And they have few places to turn. Large-scale bureaucracies dominate business, government, and universities. All rely on organizational procedures for accomplishing their tasks. By their very presence, these procedures reduce independence and freedom on the job.

Two Theories of Management

Major developments in management theory in the past two decades reflect worker desires for job satisfaction. The traditional view of management is based on the "boss system," which relies on the carrot and stick to motivate employees—the carrot of wages and the stick of dismissal. This is sometimes called the *Theory X approach to management.* It is based on the proposition that people hate to work and will do so only if threatened in some way. It holds that people wish to avoid responsibility, have little ambition, and will work effectively only under strict and continuous supervision.

Another approach to management is based on a different conception of human motivation. This view, called *Theory Y,* is based on the notion that most workers want to like their work. They will seek responsibility and job satisfaction. This is an integral part of Peter Drucker's theory that defines "the guidelines by which management can encourage the achieving worker, make his efforts productive, provide him constant feedback, and allow for the constant learning that transcends the immediate jobs." Workers are motivated by the carrot of material reward *combined* with an opportunity for personal development. As workers become more affluent and money becomes relatively less important to them, it is likely that there will be incentives for private business corporations to meet these other needs.

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Experiments indicate that business firms benefit by improving the work experience because satisfied workers are more productive. Evidence suggests that meeting the higher needs of workers can increase productivity by as much as 40 percent. Consider the following cases:

1. Texas Instruments, Inc. experimented with improved working conditions for 600 women who assembled electronic instruments.



When people have their basic needs satisfied (food, water, shelter, sex), they can begin to think of other things to fulfill their life expectations. Well-known psychologist Abraham Maslow has developed a "Hierarchy of Human Needs" pyramid, in which he categorizes the steps to "self-fulfillment." At which stages of the pyramid do working and job satisfaction fit in? What are the most important requirements for a job? Is self-esteem directly connected with the type of job one has or are other things in life more important?

The workers derived more satisfaction from their work, and assembly time per unit decreased from 138 to 32 hours. Absenteeism, labor turnover, and complaints also declined.

2. Nob Fabrikker of Norway wanted to improve simple repetitive jobs. In a one-year experiment, production rates increased 22 percent, and worker absenteeism fell.
3. The Imperial Chemical Industries of Great Britain had factory workers with low morale—as indicated by five walkouts in one week! Changes giving workers more autonomy and variety on their jobs resulted in a 20 percent increase in production and a 30 percent cut in supervision.
4. Monsanto Chemical's textile division reported that its attempts at job improvement resulted in workers making 50 percent more instruments and a 50 percent reduction in the number of supervisors. An agricultural division of Monsanto reported a 75 percent increase in productivity after four months of a job-improvement program.
5. Corning Glass Works abandoned an assembly line technique for electrical hotplates in favor of workers assembling the entire product. A worker reported, "I feel like a human being. You know what you have to do and you push to do it." The firm reported that absenteeism fell from 8 to 1 percent, and rejected products dropped from 23 to 1 percent.

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These results seem to support the Theory Y approach to management: Ordinary workers may have higher motivations than Theory X gives them credit for.

Workers have ways of registering their unhappiness with work. Absenteeism, carelessness, labor turnover, walkouts, and outright

sabotage all raise the costs of production. Each can be reduced through efforts to improve the job design. Unfortunately, there are no clear formulas to show how to meet these needs. The small number of firms redesigning jobs makes the entire process very experimental.

The Volvo Experiment

As workers become more educated and their career expectations rise, they are less willing to work on noisy, dirty, and mind-numbing assembly lines. Volvo's auto plant in Kalmar, Sweden, was designed to improve working conditions by eliminating the assembly line. Volvo adopted a flexible production technique that allows work teams to take responsibility for a large area of production—for example, door assembly or electric wiring. The workers can switch jobs within their groups and can organize production as they like; they can have some responsibility, variety, and creativity that is impossible on an ordinary automobile assembly line.

Worker morale is reported to be high in the Kalmar plant, and production costs are only $7.74 per auto higher than at conventional Volvo plants. This production technique has been widely studied, but U.S., French, and Italian auto makers don't believe it can be adapted to large-scale plants. Volvo's Kalmar plant turns out 60,000 units a day, whereas General Motors' Lordstown plant can produce 400,000. Although the Volvo design may not be appropriate for other firms, it shows that it is possible to redesign the work place and still turn a profit,

David W. Rasmussen and Charles T. Haworth

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Study Skills: Outlining

Underlining, marginal glossing, and study mapping can help you select and organize your material. Another important tool for students is the outline.

An outline is a word graph, a method of describing in visual form the relationships between ideas. When you write an outline for your own use—for an essay exam, for a report, or for general study purposes—the form is not important. However, outlining for formal purposes—for example, for a course assignment or for a research proposal—requires that you follow certain conventions. Generally, you use roman numerals for the main ideas and capital letters for points to be included under these; you then use arabic numerals and finally small letters for further details. Here is a partial outline of the article you just read. Read the material

in Part I of the outline. Use it as a guide. Then fill in the outline of the rest of the article, beginning with Part II. After you have finished, compare your outline with those of your classmates and correct any parts that are incorrect. Use your corrected outline to help you with the exercises that follow.

"The Quality of Work in America"

I. U.S. Department of Labor *Dictionary of Occupational Titles*
   A. Describes training, education, aptitude for jobs
   B. Classifies two undesirable characteristics of work
      1. Repetitive tasks with set procedures
      2. Situations with no room for independence
   C. Twenty-two percent of jobs in U.S. have both characteristics (example: quotation from auto worker on assembly line)

II. Other factors that undermine the rewards of work

   A. Product is worthless,_____

   B. Professionals are

   C. Large-scale bureaucracies

HI. Two theories of management

   A.

      1.
      2.

   B.

      1.
      2.

IV.

   A. Five examples

      1. Texas Instruments, Inc.

      2. Nob Fabrikker of Norway:

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3.

4. Monsanto Chemical's textile division:

5.

B. Results support

V. Volvo experiment

A._____

B.

Comprehension Quiz

Choose the best way of finishing each statement, based on what you have just read.

1. The U.S. Department of Labor has developed a set of job descriptions to help people find appealing jobs. This resource is entitled:
   a. *Finding Work in America*
   b. *American Job Directory*
   c. *Dictionary of Occupational Titles*
   d. *Dictionary of Trades and Professions*

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2. According to this article, two job characteristics that most people seem to dislike are:
   a. low pay and short hours
   b. few supervisors and crowded offices
   c. no seniority or incentive program
   d. repetitive operations and little independence

3. According to management specialist Peter Drucker, many highly educated young people who are called professionals are unhappy in their jobs because:
   a. they have too much responsibility and stress
   b. they must determine their own pace and the quality of their work

c. large bureaucracies control their actions
d. necessary procedures are usually absent

4. Theory X, the traditional view of management, is based on the following philosophy:
   a. people enjoy the challenge of work and respond to supportive staff
   b. workers are very ambitious and want to be promoted
   c. people hate to work and will do so only when threatened
   d. since each individual is different, generalizations are inaccurate

5. According to Theory Y, it is *not* true that:
   a. workers want to like their work
   b. workers will seek responsibility and job satisfaction
   c. workers are motivated by money combined with opportunity for personal development
   d. workers need strict and constant supervision

6. Evidence suggests that when companies improve working conditions and give their workers more responsibility, they get:
   a. increased production
   b. improved employee morale
   c. reduced absenteeism and labor turnover
   d. all of the above

7. It is believed that the flexible production technique of Volvo's auto plant in Sweden cannot be used in many plants in other countries because:
   a. it only works in a cold climate
   b. most other plants are much bigger
   c. the Swedish have the best work teams
   d. the production costs are higher

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Linking Supporting Material to Main Ideas

Read the following examples, quotations, and statistics from "The Quality of Work in America." Then tell what main idea or ideas each one supports or illustrates.

1. The Imperial Chemical Industries of Great Britain achieved a 20 percent increase in production by giving workers more variety and autonomy in their work.

2. Phil Stallings, a spot welder, described his job on the assembly line in the following words: "We do about thirty-two jobs per car, per unit. Forty-eight units an hour, eight hours a day. Thirty-two times forty-eight times eight. Figure it out. That's how many times I push that button."

3. The Volvo auto plant in Kalmar, Sweden, replaced the assembly line with work teams that have responsibility for a large area of production and found that worker morale improved.

4. "Absenteeism, carelessness, labor turnover, walkouts, and outright sabotage all raise the costs of production."

5. Abraham Maslow once said that he did not think he could feel self-esteem if he worked in a factory producing chewing gum or shoddy furniture.

A worker at Corning Glass Works reported his feelings about his company's change from the assembly line to the method of each worker assembling the entire product: "I feel like a human being. You know what you have to do and you push to do it."

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Using an Outline for a Brief Oral Summary

Using your outline as a guide, talk for about half a minute on one of the following topics:

1. working on an assembly line
2. what people want and need from their jobs
3. two different theories of management

4. the relationship between worker morale and production
5. experiments in improving conditions and morale for employees

SELECTION TWO

EMPLOYMENT APPLICATION FORM

Have you ever filled out an application form for a job? The following form is an application for a job with the cafeteria of a large company. The positions that are open are manager, assistant manager, and service personnel (the people who hand out the food). Why do you think that a careful reading of an application form is important? Would you skim the entire form first or just read it as you filled it out? Why?

Prereading Exercise: Reading Between the Lines

Obviously, the purpose of an application form is to find out information about your previous job experience and education. But there is another purpose, too, that is more subtle: to find out about your character and personality. The employer is looking for people with certain qualities for the particular job at hand. If you can determine what qualities are desired, you can fill out the form in such a way as to emphasize these traits. The interviewer's copy of the form on pages 176-179 actually has these qualities listed at the bottom of each section, so that he or she can fill in a rating of the applicant before handing the form over to the person who makes the final choice. These are not listed on the applicant's form, but they are listed below (though not in the proper order);

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academic competence
stress tolerance
work interest and flexibility
background and experience
work standards
willingness to cooperate

Now you know what qualities the interviewer is looking for, but which part of the form is testing for which qualities? Try to read "between the lines" and decide which quality is being rated in each section.

Employment Application Form

DIRECTIONS: Fill out the following form in a clear and concise manner. Try to be as specific as possible, to describe definite experiences and situations rather than just generalizations about your background. The more specific and to-the-point your examples are, the better we will be able to make a fair and appropriate decision regarding your application for employment. If your application suggests that you might be suited for one of the jobs we now have available, you will be called in later for a half-hour interview based on what you have written.

SECTION 1

Discuss three previous jobs you have had. What was your position there? Your responsibilities?

(Alternate: If you have not had actual job experience, discuss three activities or projects that show your achievements.)

First job/activity:

Second job/activity:

Third job/activity:

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SECTION 2

1. Have you ever worked a job where:
   a. hours varied from week to week? How many hours did you usually work each week? How much variation was there? What problems did this cause you?
   b. you had to work on weekends or in the evening? What problems did this cause you?
   c. you had to work overtime? Problems?
2. This job might require you to work hours that vary from week to week, evenings or weekends or both, and perhaps occasional overtime. Would that cause you problems? Explain.

3. In your most recent jobs, what things really pleased you? What things did you like the least? Why did you leave each job? (Repeat this sequence of questions for three activities if you do not have job experience.)

Job/Activity 1	Liked Most	Liked Least	Reason for Leaving
Job/Activity 2	Liked Most	Liked Least	Reason for Leaving
Job/Activity 3	Liked Most	Liked Least	Reason for Leaving

SECTION 3

1. How well did you do in high school/college? (If you have not yet graduated, how well are you doing there?)

   Grade-point average:_____

   Toughest subjects: _____

   What did you do to get through?

   Grade?_____

2. When beginning a new job (or joining a new club or starting a new activity or project), most people have trouble learning new skills or acquiring the necessary information about the new job. Describe a time when this was true for you. What did you do? How long did it take you to become skilled?

Situation(s)/Job(s)/Problem(s)	Action(s)	Result(s)

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SECTION 4

1. Describe a job you completed where you really worked hard, and the job (or project or activity) showed it. How did you make sure that the job would turn out well?

Job/Project	Action(s)	Result(s)

2. Everyone occasionally finishes a job (activity) that just doesn't turn out as well as had been hoped. Can you describe a time when this happened to you? What went wrong? What did you do about it?

Job/Activity	Why It Didn't Turn Out Well	Action

SECTION 5

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1. There are times when we are concentrating so hard on our work that when someone comes to us for help, we don't feel like dropping what we are doing. Can you describe two times when this happened to you? What did you do?

Situations	Your Action	Results

2. Can you describe two times when you had to compromise by giving in on some things you really wanted so that a group could finish a job or project?

Situations	Your Action	Results

SECTION 6

Can you remember two times when someone made unfair demands on you, asking you to do the impossible? For example, perhaps you had to finish a job or activity by a certain date; then you were asked also to do another task before finishing the first one. How did the unreasonable demands make you feel? What did you do? What was the outcome?

Situations	Your Action	Outcome

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Comparing Interpretations of the Reading

With your class or in small groups, write the quality that you feel is being rated in each section. (See the list of qualities in the prereading exercise.) Compare your answers with those of your classmates. Give examples of each quality and tell why it is desirable in an employee.

Section 1:_____

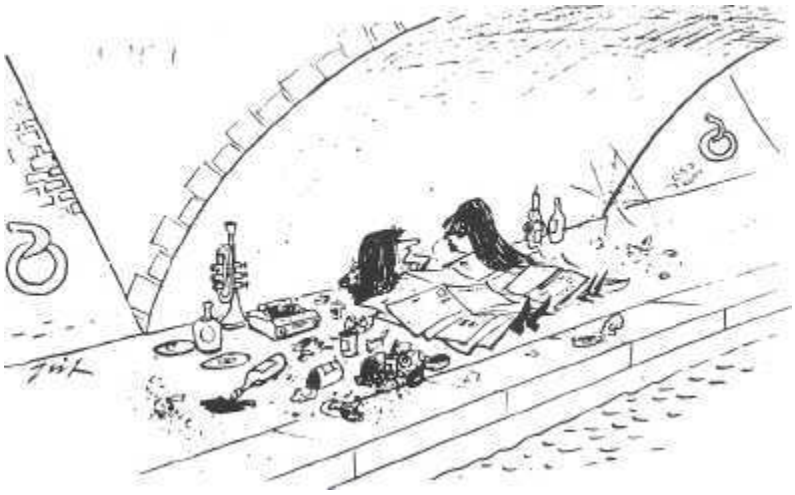
Section 2:_____

Section 3: _____

Section 4:_____

Section 5: _____

Section 6:_____



"I had a terrible dream. Someone offered me a job."

Making Inferences

Inferences are ideas or opinions that are not directly stated but that can be inferred or concluded from the information given. Write V (valid) in front of those statements that could be correctly inferred from the application; write I (invalid) in front of those that could not be inferred. Find specific statements from the application form to support your judgments.

1. A person with no previous job experience need not even apply for work with this company.
2. Interest and effort seem to be at least as important to the company as academic achievement.
3. The company assumes that employees will work whatever hours are asked of them.
4. The company wants people who have never had problems with fellow workers in previous jobs.
5. The ability to work under pressure and to overcome difficulties is considered a positive quality in a worker.

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Talking It Over

1. Why do you think that the directions on the application form ask for specific experiences and situations rather than generalizations?

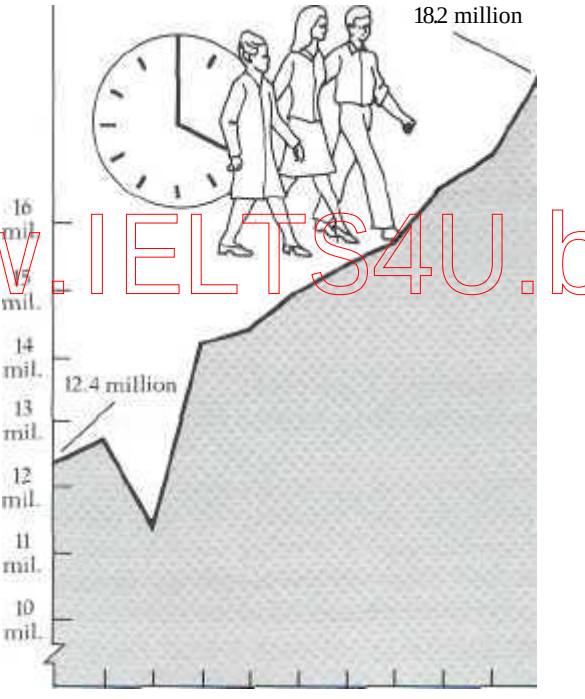
2. Which sections of the application do you think are more relevant to the positions of manager and assistant manager than to service personnel?
3. What experience could you describe to make a good impression in the section on willingness to cooperate?
4. Describe the kind of person you think would score well on stress tolerance. In what kind of on-the-job situations would this quality be important?
5. Would you prefer a nonstressful job that you could do well or a job in which new demands are constantly made on you? Why?
6. Do you think that people are completely honest when they fill out applications like these or not? Explain.

Interpreting a Graph

In general, a graph is designed to provide a visual representation of a fact or trend. Look at the following graph. Notice the ascending line, the numbers, the title. What fact or trend does it show us?

PART-TIME WORKERS IN THE U.S.

Part-time workers are employed fewer than 35 hours a week.



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Is there any secondary information you can infer from the graph and illustration? Explain.

SELECTION THREE

Ralph Z. Sorenson

A LIFETIME OF LEARNING TO MANAGE EFFECTIVELY

Have you ever worked for someone you really liked and admired? Have you had the opposite experience—working for someone you disliked and did not respect? If so, you know that a manager or boss can make a great difference in the quality of an employee's work. The following article is written by Ralph Z. Sorenson, who is president and chief executive officer (CEO) of Barry Wright Corporation, a manufacturer of computer accessories and other products. He gives his opinion on the kind of person who makes a good manager and explains how his views on this subject have changed over the years.

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Prereading Exercise: Understanding Idiomatic Phrases

Sometimes you recognize every word in a phrase but still do not understand the meaning of the whole phrase in the special (idiomatic) way it is being used. Usually, if you keep reading, you will find a clue to the meaning—an example, an explanation, or a contrasting phrase. All of the following phrases from the selection have these kinds of clues except the first one. Scan the article for each phrase and write a definition or explanation; then write the words that provided clues to the meaning. (Line references are given to make scanning faster.)

SELECTION THREE

1. raw brain power (Line 3)

   definition:_____

   (In this case there are no clues. You have to think of the more common usage of *raw* when applied to foods and extend the meaning.)

2. broad human beings (Line 20)

   definition:_____

   clue:

3. sense of integrity (Lines 29-30)

   definition:_____

   clue:

4. cut corners (Line 41)

   definition: _____

   clue:

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5. in the short run (Line 42)

   definition: _

   clue:

6. hard knocks (Line 74)

   definition:_____

   clue:



"The executive decisions are never easy."

Years ago, when I was a young assistant professor at the Harvard Business School, I thought that the key to developing managerial leadership lay in raw brain power. I thought the role of business schools was to develop future managers who knew all about the various functions of business—to teach them how to define problems succinctly, analyze these problems and identify alternatives in a clear, logical fashion, and, finally, to teach them to make an intelligent decision.

My thinking gradually became tempered by living and working outside the United States and by serving seven years as a college president. During my presidency of Babson College, I added several additional traits or skills that I felt a good manager must possess.

The first is the *ability to express oneself \n* a clear, articulate fashion. Good oral and written communication skills are absolutely essential if one is to be an effective manager.

Second, one must possess that intangible set of qualities called *leadership skills.* To be a good leader one must understand and be sensitive to people and be able to inspire them toward the achievement of common goals.

Next I concluded that effective managers must be *broad human beings* who not only understand the world of business but also have a sense of the cultural, social, political, historical, and (particularly today) the international aspects of life and society. This suggests that exposure to the liberal arts and humanities should be part of every manager's education.

Finally, as I pondered the business and government-related scandals that have occupied the front pages of newspapers throughout the seventies and early eighties, it became clear that a good manager in today's world must have *courage and a strong sense of integrity.* He or she must know where to draw the line between right and wrong.

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That can be agonizingly difficult. Drawing a line in a corporate setting sometimes involves having to make a choice between what appears to be conflicting "rights." For example, if one is faced with a decision whether or not to close an ailing factory, whose interests should prevail? Those of stockholders? Of employees? Of customers? Or those of the community in which the factory is located? It's a tough choice. And the typical manager faces many others.

Sometimes these choices involve simple questions of honesty or truthfulness. More often, they are more subtle and involve such issues as having to decide whether to "cut corners" and economize to meet

profit objectives that may be beneficial in the short run but that are not in the best long-term interests of the various groups being served by one's company. Making the right choice in situations such as these clearly demands integrity and the courage to follow where one's integrity leads.

But now I have left behind the cap and gown of a college president and put on the hat of chief executive officer. As a result of my experience as a corporate CEO, my list of desirable managerial traits has become still longer.

It now seems to me that what matters most in the majority of organizations is to have reasonably intelligent, hard-working managers who have a sense of pride and loyalty toward their organization; who can get to the root of a problem and are inclined toward action; who are decent human beings with a natural empathy and concern for people; who possess humor, humility, and common sense; and who are able to couple drive with "stick-to~it-iveness" and patience in the accomplishment of a goal.

It is the *ability to make positive things happen* that most distinguishes the successful manager from the mediocre or unsuccessful one. It is far better to have dependable managers who can make the right things happen in a timely fashion than to have brilliant, sophisticated, highly educated executives who are excellent at planning and analyzing, but who are not so good at implementing. The most cherished manager is the one who says "1 can do it," and then does.

Many business schools continue to focus almost exclusively on the development of analytical skills. As a result, these schools are continuing to graduate large numbers of MBAs and business majors who know a great deal about analyzing strategies, dissecting balance sheets, and using computers—but who still don't know how to manage!

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As a practical matter, of course, schools can go only so far in teaching their students to manage. Only hard knocks and actual work experience will fully develop the kinds of managerial traits, skills, and virtues that I have discussed here.

Put another way: The best way to learn to manage is to manage. Companies such as mine that hire aspiring young managers can help the process along by:

- providing good role models and mentors
- setting clear standards and high expectations that emphasize the kind of broad leadership traits that are important to the organization, and then rewarding young managers accordingly
- letting young managers actually manage



Having thereby encouraged those who are not only "the best and the brightest" but *also* broad, sensitive human beings possessing all of the other traits and virtues essential for their managerial leadership to rise to the top, we just might be able to breathe a bit more easily about the future health of industry and society.

Ralph Z. Sorenson

Reviewing Study Skills: Underlining and Marginal Glossing

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Use the previous article to practice underlining and marginal glossing (discussed on page 136). (You may want to make a photocopy of the article first.) Write your marginal gloss for lines 59-66:

Compare this with the glosses written by your classmates. Who wrote the best one? Why is it the best? Use your underlined and glossed copy to help you with the following exercises.

Recalling Information

Choose the best way of finishing each statement, based on what you have just read.

1. The author's work experience includes:
   a. college teaching and administration
   b. working outside the United States
   c. business management
   d. all of the above
2. Since he believes managers should be broad human beings, he would like to see their education focused on business and also on:
   a. the humanities and liberal arts
   b. computers and high technology
   c. accounting and finance
3. For him, a manager should have leadership skills; a good *leader* is one who:
   a. defines problems succinctly
   b. understands and inspires people
   c. expresses his ideas clearly
   d. none of the above
4. One of the experiences that convinced him of the need for a sense of integrity in managers was:
   a. a conversation with a high government official
   b. the discovery of dishonesty among students
   c. reading about scandals in the newspapers
5. According to Sorenson, when facing a decision about the possible closing of a factory that is not profitable, a manager should consider the interests of:
   a. the stockholders and customers
   b. the employees
   c. the community
   d. all of the above
6. He thinks that managers should think not just of what is profitable in the short run but also of:
   a. how to "cut corners" to meet objectives
   b. the long-term interests of those involved
   c. the fastest way to make money for the company
7. In his view at present, the trait that distinguishes the successful manager from the mediocre is:
   a. high academic achievement

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b. the ability to get things done
c. a critical and analytical mind

8. Companies that hire young managers ought to:

a. let them manage right away
b. put them under the authority of an older manager
c. give them a training course

Applying Inferences to a Specific Situation

Now that you have read Sorenson's article, imagine that he is looking for a new manager for a department of his company and has received the following descriptions of three candidates for the position. Based on what he says in the article, what can you infer about his reaction to these candidates? Working as a class or in small groups, decide which one he would probably hire and why. Support your opinion for or against each candidate with specific statements from the reading.

Candidate A

- graduated with high honors from a top East Coast university
- majored in business, minored in computer science
- won two prizes for inventing new computer programs
- was chess champion of the university for two years
- received a medal for highest academic achievement in her senior year
- was described by her teachers as "brilliant, analytical, clear-thinking"

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Candidate B

- graduated with above-average marks from a large Midwestern state university
- majored in history, minored in business
- spent two summers traveling through Europe and the Orient
- won a national essay contest
- was secretary of a debate club
- was active in community activities—for example, neighborhood cleanup drive, fund raising for new senior citizens' center
- worked part-time for three years as assistant manager of the school bookstore in order to finance his education
- was described by his teachers as "well-liked, honest, industrious"

Candidate C

- graduated with honors from a well-known California university
- had a joint major in political science and business and a minor in economics

is fluent in three languages
spent his junior year at an international school in Switzerland
was president of the music society and treasurer of the drama club
was editor of the campus humor magazine
organized and successfully ran (for two years) a small mail-order company that sold tapes and records of local singers
was suspended from the university for six months for cheating on an accounting exam but was later reinstated without penalties
was described by his teachers as "highly intelligent, ambitious, a natural leader"

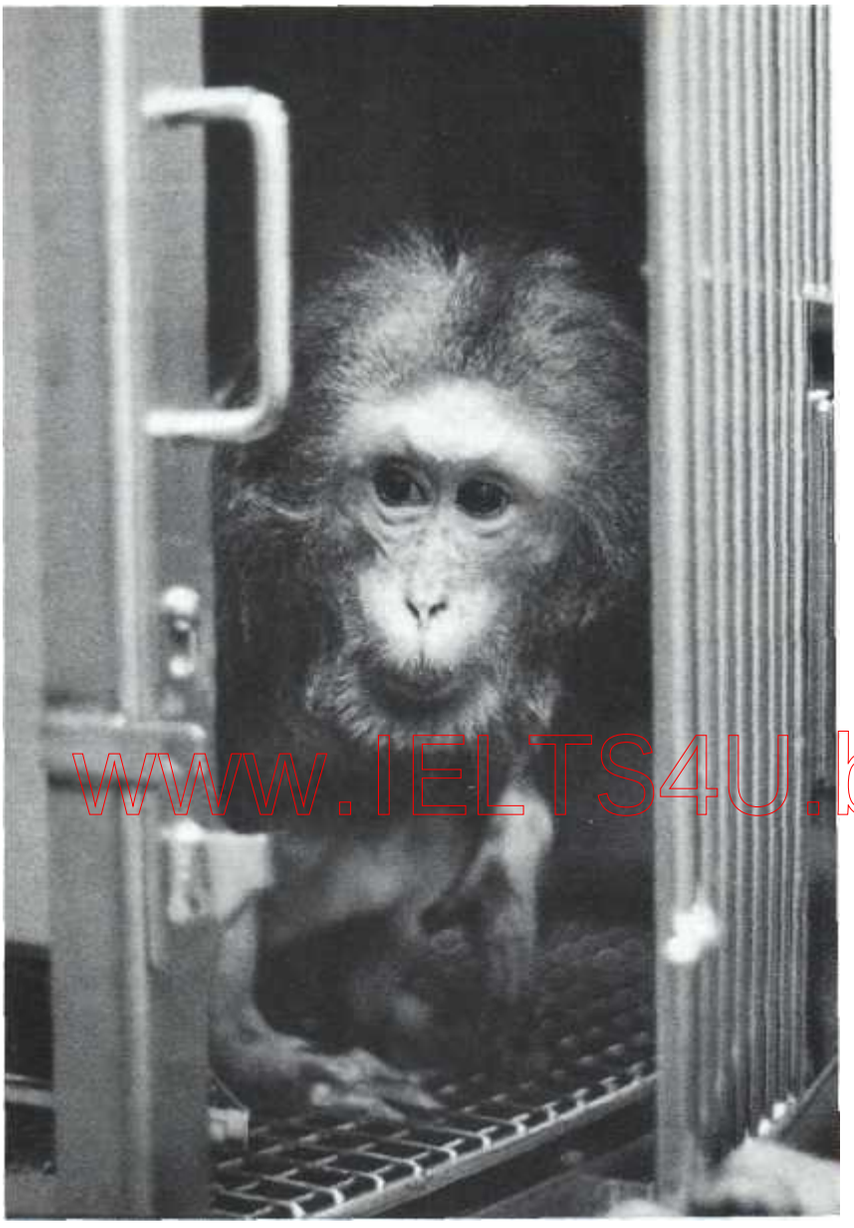
Candidate most likely to be hired by Sorenson:

Reasons:

SELECTION THREE

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CHAPTER 8
ETHICAL QUESTIONS



Female baboon being used in lab experiment.

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Throughout history, human beings have faced basic questions of ethics, those involving a choice between right and wrong. But modern technology has brought many new complications that make such decisions more difficult now than ever before. This is especially evident in the field of medicine, where ethical decisions are matters of life and death. The first article in this chapter examines some of the complex situations in today's hospitals. The second selection is a descriptive piece about the national cemetery in Washington, D.C., which implies rather than states the most serious ethical question facing humanity today. After this, you gel the chance to be the judge on a series of everyday ethical issues that have been debated recently in American courts. Here the question seems to involve not so much a decision between right and wrong as a choice between opposing or conflicting "rights." The chapter ends with a timed reading about another moral issue of our times: our treatment of animals.

SELECTION ONE

Abigail Trafford

DOCTOR'S DILEMMA: TREAT OR LET DIE?

The wonders of modern medicine dazzle us daily as we read about new discoveries and lifesaving techniques. Smallpox, one of the ancient scourges of humanity, has now been virtually eliminated. Patients whose kidneys have ceased to function live on thanks to the recently invented dialysis machine. People who just a few decades ago would have been pronounced dead when their hearts stopped beating arc rushed into surgery and given a new heart; many later return to normal life. This all seems like wonderful news, but is there a darker side to these medical miracles? As is so often the case, new benefits bring new problems. It becomes more and more difficult for doctors, nurses, and patients to know what is right and wrong in medicine. The following magazine article gives an overview of these complex questions.

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Prereading Exercise 1: Focusing on a Key Issue

As a class or in small groups, discuss the following specific example of a current ethical problem in medicine:

During the winter of 1982, a retired dairyman from Poteet, Texas, carried out a most difficult decision. Woodrow Wilson Collums went into the nursing home where his older brother Jim lay helpless and suffering, a victim of severe senility resulting from Alzheimer's disease. Collums took out a gun he had hidden in his coat and shot his brother to death.

1. Why do you think Collums shot his brother?
2. Should the courts treat Collums as a murderer?

In the article you will find out what was decided in this and other cases.

Prereading Exercise 2: Guessing the Meaning of New Words from Context

Read the sentences and use the contexts to try to determine what each word in italics means. Then write the italicized word next to the correct definition below.

1. *Ethicists* fear that if doctors decide not to treat certain patients who are *comatose* and dying, death may become too easy.
2. In fact, to many physicians, modern medicine has become a *double-edged sword.*
3. The question of *euthanasia* forces doctors, patients, and relatives into a *predicament.*
4. The doctor's power to treat with an *array* of space-age techniques has *outstripped* the body's capacity to heal.
5. The *dilemma* posed by the question of treatment or nontreatment has created a growing new discipline of *bioethics.*

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a. _____ a troublesome situation

b. something that can be interpreted in two opposing ways

c. a situation requiring a choice between two unpleasant possibilities

d. people who follow strict moral rules

e. the study of morality in life-or-death situations

mercy killing (killing to relieve pain)

impressive arrangement or grouping

h. in a state of coma

exceeded, gone ahead

Doctor's Dilemma: Treat or Let Die?

Medical advances in wonder drugs, daring surgical procedures, radiation therapies, and intensive-care units have brought new life to thousands of people. Yet to many of them, modern medicine has become a double-edged sword.

Doctors' power to treat with an array of space-age techniques has outstripped the body's capacity to heal. More medical problems can be treated, but for many patients, there is little hope of recovery. Even the fundamental distinction between life and death has been blurred.

Many Americans are caught in medical limbo, as was the South Korean boxer Duk Koo Kim, who was kept alive by artificial means after he had been knocked unconscious in a fight and his brain ceased to function. With the permission of his family, doctors in Las Vegas disconnected the life-support machines and death quickly followed.

In the wake of technology's advances in medicine, a heated debate is taking place in hospitals and nursing homes across the country-over whether survival or quality of life is the paramount goal of medicine.

"It gets down to what medicine is all about," says Daniel Callahan, director of the Institute of Society, Ethics, and the Life Sciences in Hastings-on-Hudson, New York. "Is it really to save a life? Or is the larger goal the welfare of the patient?"

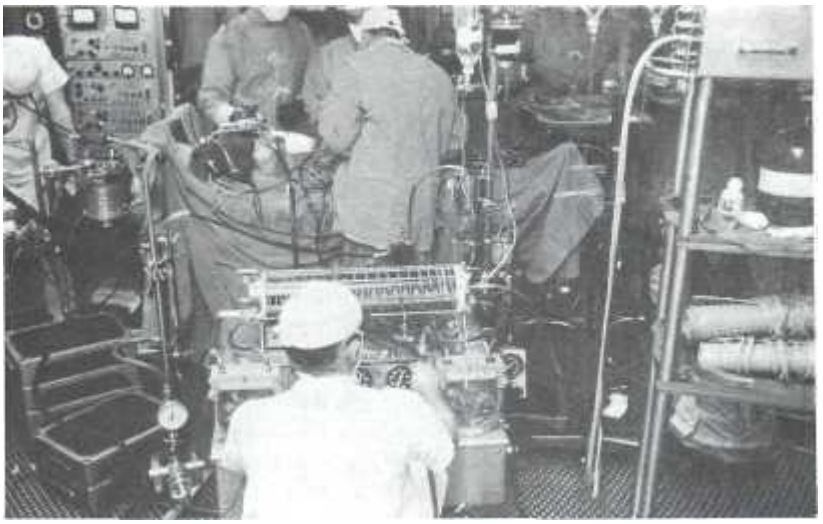
Doctors, patients, relatives, and often the courts are being forced to make hard choices in medicine. Most often it is at the two extremes of life that these difficult ethical questions arise—at the beginning for the very sick newborn and at the end for the dying patient.

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The dilemma posed by modern medical technology has created the growing new discipline of bioethics. Many of the country's 127 medical schools now offer courses in medical ethics, a field virtually ignored only a decade ago. Many hospitals have chaplains, philosophers, psychiatrists, and social workers on the staff to help patients make crucial decisions, and one in twenty institutions has a special ethics committee to resolve difficult cases.

Death and Dying

Of all the patients in intensive-care units who are at risk of dying, some 20 percent present difficult ethical choices—whether to keep trying to save the life or to pull back and let the patient die. In cancer units, decisions regarding life-sustaining care are made about three times a week.



A life-supporting heart-lunj machine.

Even the definition of death has been changed. Now that the heart-lung machine can take over the functions of breathing and pumping blood, death no longer always comes with the patient's "last gasp" or when the heart stops beating. Thirty-one states and the District of Columbia have passed brain-death statutes that identify death as when the whole brain ceases to function.

More than a dozen states recognize "living wills" in which the patients leave instructions to doctors not to prolong life by feeding them intravenously or by other methods if their illness becomes hopeless. A 1979 survey of California doctors showed that 20 to 30 percent had followed instructions of such wills in that year. Meanwhile, the hospice movement,* with its emphasis on providing comfort—not cure—to the dying patient, has gained momentum in many areas.

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Despite progress in society's understanding of death and dying, thorny issues remain. *Example*: A woman, 87, afflicted by the nervous-system disorder of Parkinson's disease, has a massive stroke and is found unconscious by her family. Their choices are to put her in a nursing home until she dies or to send her to a medical center for diagnosis and possible treatment. The family opts for a teaching hospital in New York City. Tests show the woman's stroke resulted from a biood clot that is curable witn surgery After the operation, she says to her family: "Why did you bring me back to this agony?" Her health continues to worsen, and two years later she dies.

*The hospice movement is a group dedicated to providing a homelike atmosphere where dying people may live out their last days in dignity and with a minimum of pain. The staff in a hospice docs not try lo cure al all costs but rather to encourage a normal life until the end.

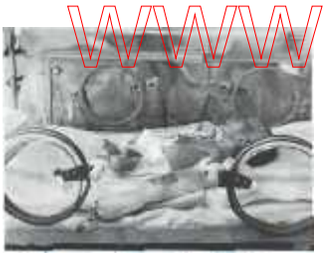
On the other hand, doctors say prognosis is often uncertain and that patients, just because they are old and disabled, should not be denied lifesaving therapy. Ethicists also fear that under the guise of medical decisions not to treat certain patients, death may become too easy, pushing the country toward the acceptance of euthanasia.

For some people, the agony of watching high-technology dying is too great. Earlier this year, Woodrow Wilson Collums, a retired dairyman from Poteet, Texas, was put on probation for the mercy killing of his older brother Jim, who lay helpless in his bed at a nursing home, a victim of severe senility resulting from Alzheimer's disease. After the killing, the victim's widow said: "I thank God Jim's out of his misery. I hate to think it had to be done the way it was done, but I understand it."

Crisis in Newborn Care

At the other end of the life span, technology has so revolutionized newborn care that it is no longer clear when human life is viable outside the womb. Twenty-five years ago, infants weighing less than three and one-half pounds rarely survived. The current survival rate is 70 percent, and doctors are "salvaging" some babies that weigh only one and one-half pounds. Tremendous progress has been made in treating birth deformities such as spina bifida. Just ten years ago, only 5 percent of infants with transposition of the great arteries—the congenital heart defect most commonly found in newborns—survived. Today, 50 percent live.





A premature baby in an incubator.

Yet, for many infants who owe their lives to new medical advances, survival has come at a price. A significant number emerge with permanent physical and mental handicaps.

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"The question of treatment and nontreatment of seriously ill newborns is not a simple one," says Thomas Murray of the Hastings Center. "But I feel strongly that retardation or the fact that someone is going to be less than perfect is not good grounds for allowing an infant to die."

For many parents, however, the experience of having a sick newborn becomes a lingering nightmare. Two years ago, an Atlanta mother gave birth to a baby suffering from Down's Syndrome, a form of mental retardation; the child also had blocked intestines. The doctors rejected the parents' plea not to operate, and today the child, severely retarded, still suffers intestinal problems.

"Every time Melanie has a bowel movement, she cries," explains her mother. "She's not able to take care of herself, and we won't live forever. I wanted to save her from sorrow, pain, and suffering.

I don't understand the emphasis on life at all costs, and I'm very angry at the doctors and the hospital. We felt doing nothing to sustain her life was best for her. The doctors went against nature. I asked the doctors, who threatened to take us to court if we didn't go along with their procedures: 'Who will take care of Melanie after we're gone? Where will you doctors be then?'"

Changing Standards

The choices posed by modern technology have profoundly changed the practice of medicine. Until now, most doctors have been activists, trained to use all the tools in their medical arsenals to treat disease. The current trend is toward nontreatment as doctors grapple with questions not just of who should get care but when to take therapy away.

Always in the background is the threat of legal action. In August, two California doctors were charged with murdering a comatose patient by allegedly disconnecting the respirator and cutting off food and water. In 1981, a Massachusetts nurse was charged with murdering a cancer patient with massive doses of morphine but subsequently was acquitted.

Between lawsuits, government regulations, and patients' rights, many doctors feel they are under siege. Modern medical technology actually has limited their ability to make choices. More frequently, these actions are resolved by committees.

Public Policy

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In recent years, the debate on medical ethics has moved to the level of national policy. "It's just beginning to hit us that we don't have unlimited resources," says Washington Hospital Center's Dr. Lynch. "You can't talk about ethics without talking about money."

Since 1972, Americans have enjoyed unlimited access to a taxpayer-supported, kidney-dialysis program that offers life-prolonging therapy to all patients with kidney failure. To a number of policy analysts, the program has grown out of control—to a $1.4 billion operation supporting 61,000 patients. The majority are over 50, and about a quarter have other illnesses, such as cancer or heart disease, conditions that could exclude them from dialysis in other countries.

Some hospitals are pulling back from certain lifesaving treatments. Massachusetts General Hospital, for example, has decided not to perform heart transplants on the ground that the high costs of

providing such surgery help too few patients. Burn units—though extremely effective—also provide very expensive therapy for very few patients.

As medical scientists push back the frontiers of therapy, the moral dilemma will continue to grow for doctors and patients alike, making the choice of to treat or not to treat the basic question in modern medicine.

Abigail Trafford

Recalling Information

Choose the best way of finishing each statement, based on what you have just read.

1. Recent medical advances have:
   a. left many accident victims without the ability to receive insurance benefits
   b. forced a debate over whether survival or quality of life is the paramount goal of medicine
   c. made ethical decisions much easier for doctors because of the intervention of the courts
   d. none of the above

2. Difficult ethical questions most often arise:
   a. at the end of life for the dying patient
   b. during the beginning of life for the newborn infant
   c. both of the above

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3. In cancer units, it is common to find decisions regarding life-sustaining care made:
   a. once a year
   b. twice a month
   c. three times a week

4. The majority of states have passed laws that now define the time of death as the moment when:
   a. the patient breathes a "last gasp"
   b. the whole brain ceases to function
   c. the heart stops

5. One of the problems with the great progress medicine has made in saving the lives of very tiny newborn babies is that these infants:
   a. never grow to a normal size or weight

b. must be kept completely apart from their families and other babies
c. often have permanent physical and mental handicaps

6. The decision of whether or not to let a patient die:
   a. is now a completely private matter between the doctor and his patient
   b. is always resolved to the benefit of the patient
   c. is frequently made by committees
7. According to Dr. Lynch, you cannot talk about ethics in medicine without talking about:
   a. miracles
   b. money
   c. drugs
   d. operations
8. Some hospitals are now cutting back on certain expensive lifesaving treatments, such as heart transplants, because:
   a. they help very few people
   b. they are simply too painful
   c. they are not done properly

Talking It Over

1. What do you think of the idea of "living wills"? What problems can they cause for doctors and nurses today?
2. What do you think of the hospice movement? What do the people in this movement hope to do?
3. Are you for or against the practice of euthanasia? Explain.
4. If your mother or grandmother were eighty-seven and her doctors said that she needed a major operation, would you wish that she have it or not? Why?

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Solving Problems in Groups

Discuss the following problem in small groups. Try to reach a unanimous decision (one agreed to by all). Later, report to the class on the reasons for your choice.

The year is 2050. Medicine has advanced a good deal and a limited number of efficient but very expensive artificial hearts is now available. There are not enough for everyone. Four candidates have applied to your hospital, and only one of them

can receive the artificial heart. Without it, the other three will surely die. You and the other members of your group form the bioethics committee, which must make the decision. Which of the candidates do you choose? Why?

1. Sandra, a small, somewhat sickly two-year-old girl of average intelligence, the only daughter of a young carpenter and his wife
2. Jeremy Wells, fifty-eight years old, a famous novelist who has received the Nobel Prize for Literature; married with no children, currently working on a new novel
3. Peggy Anderson, thirty-three, unmarried mother of five children, who works as a secretary and is active in community affairs in the small town where she lives with her family
4. Scott, twelve years old, a brilliant student who is said by his teachers to be a "near-genius in math"; one of three children of two college professors

Round Table Discussion

General Hospital is considering whether or not to discontinue its burn unit, which costs a great sum of money and aids only about twenty patients a year. A meeting of the entire staff of doctors, nurses, and administrators has been called to decide the question. Four people have asked to appear and speak for or against the idea: a representative of the President's Commission on Bioethical Issues, a doctor or nurse who has worked on the burn unit for ten years, a hospital administrator, and the mother of a child who was severely burned and treated at the unit three years earlier. Four volunteers will play the roles of these speakers and give a short talk either in favor of or against discontinuing the unit. The rest of the class will act as the staff and ask questions of the speakers. Afterward, a vote should be taken to see which side won.

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Crossword Puzzle: Vocabulary from "A Doctor's Dilemma"

All of the words needed for this crossword puzzle appear in the article "A Doctor's Dilemma." The first letter of each word is given to aid you. Complete the puzzle using the clues.

Clues

Across

1. to give pain to the body or mind

4. the study of morality in life-and-death situations

8. through the veins

10. false appearance

12. impressive arrangement

13. treatment for a patient with kidney failure

14. a transitional state of mind

15. exceeded, gone ahead

Down

2. adjective describing student's state of mind at 8:00 A.M.

3. place where comfort is given to the dying

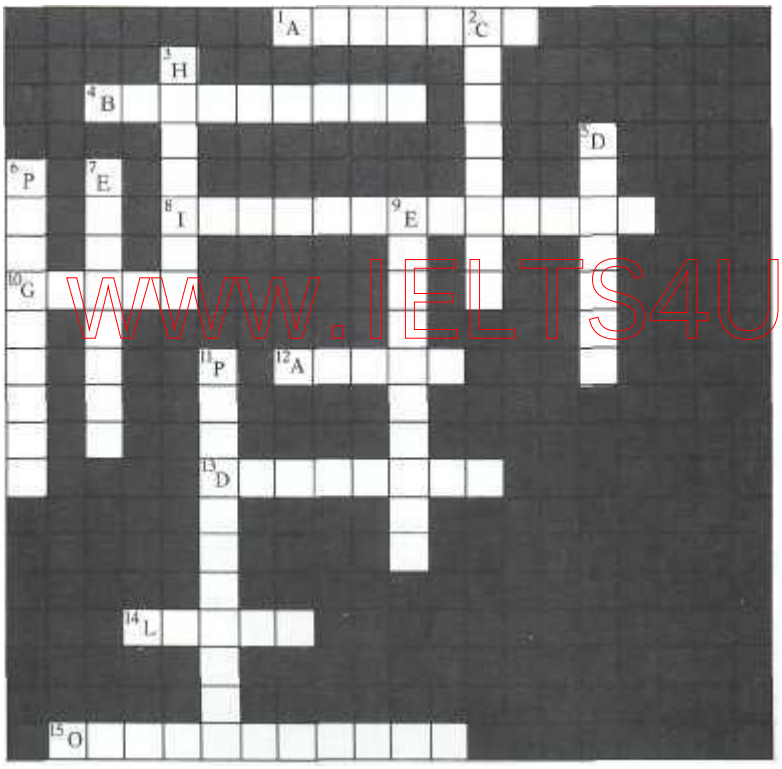
5. situation requiring a choice between two bad possibilities

6. prediction about the future condition of a sick person

7. person who follows a strict moral code

9. mercy killing; killing for pity

11. difficult situation



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SELECTION TWO James T. Woolen

MEMORIAL DAY AT ARLINGTON: "OUR ONLY SON"

The following selection is about a day of remembrance at the national burial grounds for American soldiers in Arlington, Virginia. It does not state any ethical question, but a close reading will show that it does imply or suggest one. The selection is mainly a description. In a way the author is painting a picture, but he is also trying to create a mood by including emotional scenes that will cause us to feel and question. What is the ethical question he is presenting to us? Read carefully for the hidden or implied meaning.

Prereading Exercise: Anticipating Tone and Mood

1. Before even beginning to read the article, how do you know it is written in an emotional tone?

2. Is there a special day of the year in your culture when people remember or honor their dead relatives and loved ones? If so, describe what is done.

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3. What do you think happens on May 30th in the United States and Canada?

4. What emotions do you expect to find described?

Read the article carefully to see how the author creates an emotional tone and suggests an ethical problem.

SELECTION TWO

Memorial Day at Arlington: "Our Only Son"

Arlington, Virginia
May 30, 1971

At the crest ot the great green hill, a slight figure moved haltingly among the white marble stones, stopping and stooping at each one, then stepping on toward the next, cradling a small wreath of red roses against her dark frock. "I only get to come from Richmond once a year, and I always get mixed up about just where he is," she explained apologetically.

The soft sod squished beneath her feet as she walked from one row to another until, finally, she knelt in the damp ground above the grave of Private Roy W. Maclan, Jr., ateenaged infantryman who died in Korea twenty years ago.

"He was our only son," she said, planting the wreath's wire tripod beside the stone. She smoothed the grass at its base with that quick tenderness mothers learn, and when she arose her eyes were moist with remembering.

"This makes the twentieth year, now," she said as she left. "You'd think I'd remember where he is, wouldn't you? But there are so many here like him."

A delicate spring rain was falling this morning when the big black gates of Arlington National Cemetery creaked open to admit a tiny



Services commemorating men killed in the Vietnam war.

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group of waiting, shivering visitors. As Memorial Day grew older, however, the shreds of charcoal clouds skittered away, and, by midday, the little lanes and walkways that ramble through the 518 rolling acres were like rush-hour expressways for pedestrians.

On any day, the cemetery attracts hundreds, but today, as on this holiday in past years, there were thousands—and across~the country, from here on the banks of the Potomac to the Punch Bowl, a national cemetery high above Pearl Harbor, thousands of other Americans made quiet visits to the graves that held meaning for them.

For some who came to Arlington, it was the Tomb of the Unknown Soldier where, after the traditional wreath-laying, General Leonard F. Chapman, Jr., the Marine Corps commandant, told a large crowd that the latest of this nation's wars had been its most unselfish.

For others who came here, the focal point was an elliptical walkway that brought them to the eternal flame burning over the body of President John F. Kennedy and to the small graveside of his brother Robert.

For many others, tourists in a tourists' town, coming to Arlington was much like going to the Smithsonian—a part of the prepaid bus tour.

"It's a tourist attraction just like the rest of Washington," a veteran employee at the cemetery's visitor center said. "For most of these people, it's just one more stop."

Mr. and Mrs. Lyle Bacon were standing at the back of their car in the newest section of the cemetery when the thunder of the salute at the Tomb of the Unknown Soldier reverberated across the valley.

She shuddered and looked inquisitively at her forty-one-year-old husband, an accountant in Baltimore. He placed his arm on her shoulder.

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The last time they came to Arlington was to watch the burial of their eighteen-year-old son, William, a Marine private killed last October near Danang by a Vietcong booby trap.

They both were torn by what has become a common schism in the soul of the American parent. "I would have been ashamed if he hadn't wanted to serve his country, and I don't think I could have stood it if he had cut and run," his father said. "But, God, how do I explain his death to myself? I mean, can anybody tell me what difference it made?"

Mrs. Bacon wept softly while he spoke. Then, suddenly, as though he had uttered some posthypnotic suggestion, her face was contorted in rage and her eyes flashed with a deep anger.

"Yes, that's right," she snapped. "Can anybody tell me? Me! Me! I'm his mother. Why shouldn't I be told?" Mr. Bacon wrapped his

arm around her as she began to sob, and they walked off into the line upon line of marble markers.

At the grave of a fellow Army major who was killed in the 1968 Tet offensive in Vietnam, a stocky career soldier with graying hair stood at attention and saluted the small American flag flapping beside the stone. He said:

"It's an honor to die for the right thing, and I'm convinced that this country, with all of its problems and sins, is still worth dying for."

Then, like the Bacons, he turned and strode away.

At an intersection, not far from the grave of President William H. Taft, a florist's van pulled to the curb, and a young man alighted with a basket of flowers.

"Can't talk," he said hurriedly. "Busy day. People phoning in orders from all over the place. Biggest day we've had this year. Bigger than Easter."

As large as it is, Arlington National Cemetery has almost reached its capacity, and there is serious discussion in the Army and in Congress about closing its lots forever, a move already made at eight other national cemeteries. There is no room for expansion. The Pentagon is on one side, Fort Myer sprawls on two other sides, and the Potomac curls along in front.

The road alongside the newest section, where most of the Vietnam dead are being buried, will be closed tonight, and tomorrow the asphalt will be removed to make room for more graves. After that, the cemetery officials say, there is no place else to go.

"Wouldn't it be nice if when it's full," seventeen-year-old Richard Billingsley of Silver Spring, Maryland, said wistfully, "they'd just stop having wars. I mean, like you'd just say, 'Well, I'm sorry, but we can't get in this war because we don't have any more room left in Arlington.'"

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James T. Wooten

Analyzing Contrasts to Determine Meaning

The description Wooten presents us of the cemetery on Memorial Day is full of contrasts. Some of the obvious ones are between the present and the past, silence and speech, the living and the dead. There is even a contrast in the weather, which is rainy at first and then clears up. But one of the strongest contrasts is more subtle, not immediately obvious. This is the contrast in the visitors, who are there for very different reasons and with very different attitudes. Describe three of the attitudes presented and list at least one example of words or actions that show each attitude.

1.

Example:

2.

Example:

3.

Example:

By presenting us with these different attitudes, the author is really asking us an ethical question, although he does not state it directly. In your opinion, what question is he asking? What is this selection really about?

What do you think is the viewpoint of the author on this question? Do you think he has a definite answer?

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Identifying Words That Create an Emotional Tone

Wooten has created an emotional tone by carefully selecting words that make the reader feel strongly about what he is describing. Scan for the following emotive words, using the clues given.

1. What adverb is used to describe the movements of the very first person mentioned, the woman who is having trouble finding her son's grave? What emotion do we feel toward her as a result?

2. What two verbs are used to express the fact that Mrs. Bacon cried? Why are they stronger than the simple verb *cry?*

3. What two words are used to describe the other strong emotion, besides sadness, that Mrs. Bacon feels? Why does she feel this?

4. What emotive noun does the career officer use to give meaning to the death of his friend as he stands by the grave? What emotions does it show he felt?

5. In the last paragraph, Wooten uses a very exact adverb to describe the way a young man is speaking. It means "in a sad, thoughtful way that shows longing or desire." What is this adverb?

Talking It Over

1. What is the purpose of the Tomb of the Unknown Soldier?
2. Why do you think many visitors went to see the graves of the Kennedy brothers?
3. What differences do we see between the parents of the boy who died twenty years earlier and the parents of the boy who was buried the previous autumn? Is it comforting or sad to see this change in feelings?
4. The end of an article is very important. How do you interpret the remark made by the seventeen-year-old boy, which concludes the selection?
5. Would you fight in a war if your country asked you to? Why or why not?

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SELECTION THREE John A. Ritter

YOU BE THE JUDGE

Whom should a waiter or a waitress serve first in a restaurant—the man or the woman? Well, it depends. If you are in France, it will be the woman, but if you cross the border into Germany, it will probably be the man. The idea of what is socially correct varies from one culture to another, and so do ideas of right and wrong. The dominant opinion is generally protected by law.

Prereading Exercise 1: Anticipating the Reading

Think about the issue of alcoholic beverages. Is it right to buy them on Sunday? Well, that depends on where you are. In Canada and the United States, this varies from one province or state to another. Try to think of some places in the world where the following rules apply:

1. You can usually buy alcoholic drinks, but not on Sundays:

2. You cannot buy any alcoholic drinks at any time:

3. You can buy alcoholic drinks, but only in government-controlled stores with restricted hours:

4. You can buy alcoholic drinks easily at any time, even from vending machines in the streets:

Of course, legality is only one aspect of the question of right and wrong. Everyone has his or her own beliefs, which do not always conform to current laws, and laws and customs change, not always at the same time. There is still a law on the books in Boston that a man may not kiss his wife in public on Sunday!

The following excerpts from the book *You Be the Judge* present in brief form eight different cases that came into the American courts in recent years. As you read, think about how you would decide each one in accordance with your own beliefs.

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Prereading Exercise 2: Learning Legal Terms from Context

The following common words all relate to the law and appear in the selection. They are given with brief definitions. Read through the story below and choose the correct one to fill in each blank according to the context.

testify to give evidence in front of a judge or jury

lawsuit case against someone presented to a judge or jury

defendant person accused of something before the law

sue (file suit against) to accuse someone of a crime so as to cause him or her to pay money or to be put in jail

regulation rule or law that controls people's actions

damages injury or harm caused to a person or property resulting in a loss

discriminate against to treat someone badly or unfairly because he or she comes from a certain background or belongs to a certain group

lawyer person trained in the law who advises and represents people with legal problems

manslaughter the killing of another person due to carelessness or poor judgment; different from murder (which is more serious) because there is no intention to kill

prohibit forbid, prevent

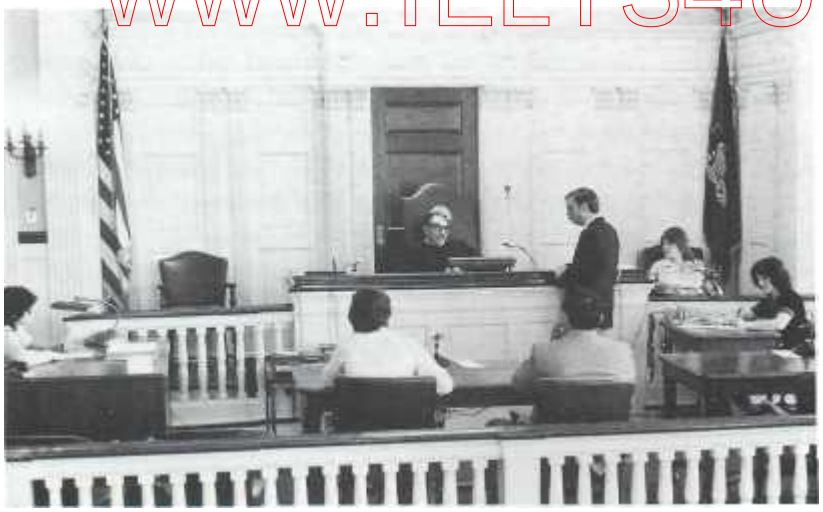
witness a person who saw or heard something and can give a firsthand account of it

court place where trials and official investigations take place; group of judges or jurors appointed by law to make legal decisions

The Truth Wins Out

The old lady was an eye_____1 of the accident because she had seen and heard everything from her window in the nursing home. She was a very sharp old lady, and she knew that the tall man w o u l d _ _ _____2 the frightened young girl in the green car for the _____3 to his motorcycle. She also knew that he had been going the wrong way on a one-way street and that the girl had not noticed!

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A typical courtroom scene.

She was right. The next week she read in the newspaper that the case was coming to_____4 soon. She telephoned the _____5 for t h e _____6 and told him: "Your client is innocent. I can give evidence to show that this whole_____7 is unfair." "But, madam," he countered, "You are ninety-eight years old and in a wheelchair." "So what?" responded the old lady. "You have no right to_____8 against me because 1 am old and sick. There is no_____._____._____9 against elderly people testifying at trials. Besides, if you _____10 me from helping that poor young girl, I shall probably have a heart attack. Then my relatives will accuse you of_____11 "OK. OK, take it easy," he replied. Special arrangements were made for the old lady to_____12 through the use of a videotape. Because of her, the young girl was declared innocent.

You Be the Judge

The following situations are based on real cases from the federal courts. Consider the arguments, then decide how *you* would rule.

1. When Darlene applied for a job as a city policewoman, the police chief said, "You meet all the requirements except that you're too short. You're only five feet, five inches tall, and we have a five-foot-sever! requirement."

   Darlene protested thst as a former physical-education teacher she was very strong. When the chief refused to back down, she went to court.

   "The five-foot-seven requirement discriminates against women," her lawyer told the judge. "Most men are taller than that, but not as many women are that height or more."

   If you were the judge, would Darlene get the job?

2. Robert took his two sons camping in Yellowstone National Park. A park brochure warned them to beware of bears. "Don't worry," Robert said. "The bears are more afraid of you than you are of them." But sure enough, a grizzly bear invaded their tent during the night and mauled Robert's face and chest. Robert sued

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the park. "Judge," he said, "the government park service should pay tor my injuries."

Would you rule tor Robert or the park service?

3. Mrs. Smith was only slightly interested when her son, a high school senior, told her he was taking a new course in transcendental meditation. But her curiosity was aroused when she found him chanting and burning incense in his bedroom.

   Questioned, her son reported that he was being taught about the search for ultimate reality beyond thought and feeling.

   "Why, that's religion," Mrs. Smith fumed. "And they certainly can't teach *that* in public school." She sued to stop the course.

   "This is not a class in religion," said the school board lawyer. "It's only a course in philosophy."

   Would you allow the high school to teach transcendental meditation?

4. Greg, a six-foot-eleven teenager, was one of the besl high school basketball players in the country. During the summer between his junior and senior years, he enrolled in a one-week basketball camp where he received expert coaching and played against other comparable high school stars.

   When he returned to school in the fall, he received a shock. "You can't play basketball this year," said an official of his high school league. "State regulations prohibit players from attending summer sports camps."

   Outraged, Greg's parents filed suit in federal court: "The boy has a constitutional right to prepare for a college and professional career," their lawyer said. The league attorney disagreed, saying, "We're trying to make it fair for the boys who don't get a chance to go to summer sports camps."

   Would you let Greg play?

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5. Charlie took his wife, Alice, to a restaurant for their anniversary. While they were drinking their wine, Alice's glass broke and cut her hand. Charlie drove Alice to a hospital emergency room, where the doctor told her she had severed a tendon and would never be able to move her right index finger again. Alice and Charlie filed suit against the restaurant, claiming $100,000 for permanent injury.

   "Judge," said the restaurant manager, "we shouldn't have to pay a penny. We sold the wine, but we didn't sell the glass."

   Would you make the restaurant pay for Alice's injury?

6. Vernon was charged with voluntary manslaughter for intentionally running over his mother-in-law with his pickup truck. His wife

was the only eyewitness, and the law cannot compel a wife to testify against her husband.

The state put the couple's next-door neighbor on the witness stand. "Just after the crash," the neighbor testifies, "Vernon'swife came running up to my door and shouted, '"My husband just ran over my mom!'"

"Objection!" roared Vernon's lawyer. "If a wife eyewitness can't testify, her statements can't be put into evidence through another witness to show that the defendant-husband may be guilty."

Would you allow the neighbor to testify as to what Vernon's wife said?

7. Mrs. Jones was an outspoken high school English teacher. During a private meeting with the principal over school policies, she lost her temper and called him several names in a loud voice.

   The next day the principal fired her. She filed a lawsuit in federal court, claiming the school violated her right of free speech. "A public employee cannot be fired for expressing her views," Mrs. Jones's lawyer told the judge.

   The school board attorney said the suit should be dismissed. "The right of free speech applies only in public places, not in private meetings," he said. "Besides, she deserved to be fired for being disrespectful to her boss."

   Should Mrs. Jones get her job back?

8. Perry, a young state trooper, was promoted to sergeant for bravery in the line of duty. Then he learned that every sergeant in the state highway patrol had a quota of one hundred speeding tickets to give out per week.

   "That's unfair to drivers, and it's illegal," he complained to his commander. "I refuse to comply."

   When Perry was demoted, he sued the deparment for loss of wages and punitive damages. "Judge," he argued, "you can't lower a man's rank and salary for speaking out against illegal conduct—especially in the police department."

   Would you decide for Perry or for the state?

John A. Ritter

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Relating Facts to Specific Parts of a Reading

Read over the following facts concerning the American legal system. Then tell which case or cases of those you have read would be affected in some way by each fact.

1. The main principles of law come from a document called the Constitution, which guarantees certain basic rights to American citizens. It is the duty of the judges to interpret and apply this document.
2. Among these constitutional rights are the right to life, liberty, and the pursuit of happiness and the right to freedom of speech.
3. In most cases, a witness may be compelled to testify, but a woman cannot be made to testify against her own husband.
4. It is now unlawful for an employer to discriminate against a possible employee on the basis of race, sex, or national origin.
5. Church and state are kept separate, and so religion should not be taught in the public schools.
6. A business cannot legally sell something to a customer that is likely to cause him or her unexpected injury.

Scanning for Antonyms

Scan for antonyms (opposites) of the following words. The case number is given to aid you. The first three are all made into antonyms by simply adding a prefix (use a different prefix for each word).

1. fair (8)
2. legal (8)
3. respectful (7)
4. hired (7)
5. promoted (8)
6. allow (4)
7. attached (5)
8. innocent (6)

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Solving Problems in Groups

Choose four of the cases to discuss with a small group of your classmates. Try to come to a unanimous decision. Afterward, compare your judgments with the information your teacher has about the judgments actually made by U.S. judges. Do you think the judge was incorrect in any of the cases? Explain.

TIMED READING

Paul and Anne Ehrlich

EXTINCTION

The following reading raises a difficult ethical question about the treatment of animals and the role of human beings in causing or preventing the extinction of certain animal species. As you read, focus on the following questions:

1. Who is Digit?
2. What happens to him and why?
3. What is the authors' point of view regarding what happened?
4. How do the authors use emotive words to try to convince us of their point of view?

Try to finish the reading and comprehension quiz in eight minutes.

Extinction



A male silverback gorilla.

Almost overcome with fear, Digit turned unarmed to face the spears and dogs of Munyarukiko and his five companions. He would have to gain time for his family to escape up the mountain slopes. It was his role, his "duty"—and although he may well have known it would mean his death, Digit stood his ground. To Munyarukiko and the other poachers, the silverback male gorilla, erect with his canines bared, was doubtless a terrifying sight, one made more terrifying by the quick demise of one of their dogs, whose frenzy at the smell of the gorilla's fear brought it too close to Digit's powerful arms. But gorillas, strong as they are, are sadly vulnerable to the weapons of their physically weaker human relatives. Digit bought the time for his family group to flee, but he took five mortal spear thrusts in the process.

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Thus on the last day of 1977 died one of the few remaining mountain gorillas—a death not atypical except in the detail in which it is known. Digit was one of a group of gorillas under intense study by Dian Fossey on Mount Visoke in the Pare des Volcans of Rwanda. He had, in a very real sense, become a friend of Dian's, as well as of millions of other human beings who had seen him on television. For Digit had been filmed examining Dian's pen and then her notebook, gently returning each to her, and then lying down and going to sleep by her side. This memorable scene was part of a National Geographic Society Special television program and has been reshown at least once in a collection of film clips of which the society is justly proud.

The tragedy of Digit's death was all the greater because of its motivation. In both Rwanda and Zaire, it is believed that certain portions of the body of a silverback male gorilla—testicles, tongue, ears, portions of the little fingers—have magical properties. Used in the proper portion, they are believed either to kill an enemy or make him impotent. Over the years gorillas had been killed for these parts, and the resultant distrust of human beings had to be overcome before Dian could befriend the gorilla.

But it was not this tradition of *sumu* ("poison") that led to the killing of Digit. When tourists and other foreigners began to arrive, poachers killed gorillas to make their skulls and hands into souvenirs. Digit was murdered not because the local people are meat-starved or especially impoverished but because an African" named Sebunyana-Zirimwabagabo offered Munyarukiko roughly twenty dollars for the head and hands of a silverback.

Many human beings obviously feet compassion for Digit and the other embattled mountain gorillas. They hope that Digit's baby, conceived before his death and christened by Dian *Mwelu* (Swahili for "a touch of brightness and light"), will have a chance for a proper gorilla existence. Others feel no such compassion; they basically ask, "What good are gorillas?" and conclude they are no good at all. In their view, Munyarukiko was right to do the beast in—gorillas' land can be put to good use grazing cattle, and the twenty dollars can be spent for human pleasure in the form of the native beer, *pombe.*

We could counter the latter view with the standard arguments that survival of Mwelu and the other gorillas would benefit humanity far more than their extermination. For example, by studying gorillas, human beings might come to understand themselves better. Or gorillas might serve useful ends in medical research. Or they might benefit African nations as tourist attractions. Most importantly, however, the disappearance of gorillas from the earth would be a very sad thing, apart from the real economic values they represent, simply because they are so interesting, and their very evident kinship with human beings appeals to people's sense of compassion.

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Paul and Anne Ehrlich

Comprehension Quiz

Choose the best way of finishing each statement, based on what you have just read.

1. What did Digit do when confronted by the men and dogs?
   a. ran away in fear

b. fought and managed to save his family
c. died immediately from a well-aimed bullet

2. Why was there so much interest in Digit?
   a. he belongs to a group of animals that has almost disappeared
   b. he was seen on television by millions of people
   c. both of the above
3. What had Dian Fossey managed to do with him?
   a. overcome his great distrust of human beings
   b. teach him many entertaining tricks
   c. train him to better defend himself
4. What is the tradition of *sumu?*
   a. the practice of eating gorilla meat to obtain nourishment
   b. the use of certain parts of the gorilla to make poisons
   c. the custom of leaving food to help the gorillas
5. What was the motivation for Digit's death?
   a. hatred and fear of gorillas among the local people
   b. the need for food in a meat-starved population
   c. the desire to make money by selling souvenirs
6. What is *Mwelu?*
   a. the land held by the gorillas that could be used for grazing cattle
   b. a word in Swahili meaning "a proper gorilla existence"
   c. the name given by Dian to Digit's baby
7. According to the authors, which is the best argument against the killing of gorillas?
   a. gorillas are interesting
   b. gorillas can be used in medical research
   c. gorillas can benefit African nations as tourist attractions
8. By using emotive words such as *fear, sadly vulnerable, friend, gently* when describing Digit, what emotion are the authors trying to make us feel for him?
   a. terror b. admiration c. compassion

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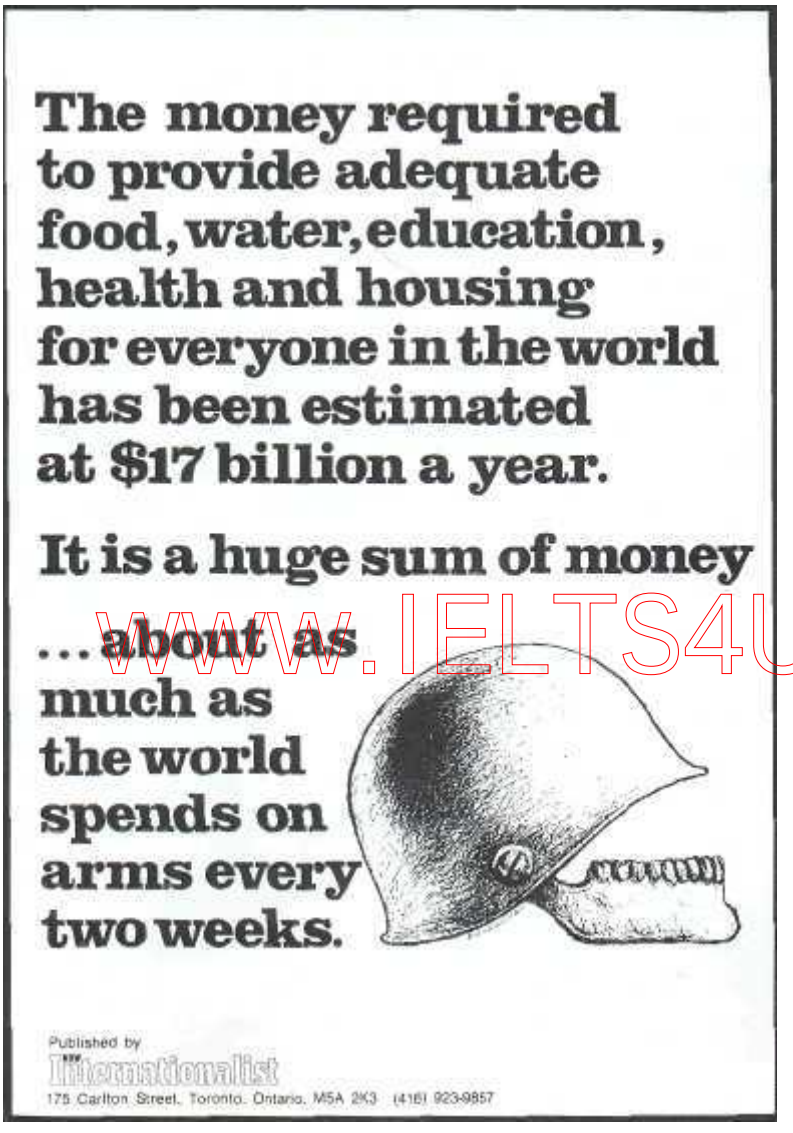
Questions

Answer the following questions briefly in complete sentences.

1. What is the ethical question being discussed in this selection?

2. What is the authors' point of view on this question?

3. Based on what you have read, what can you infer about the authors' attitude toward recent attempts to put an end to the killing of whales? Why do you infer that they would feel this way?



A poster that addresses another ethical question.

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CHAPTER 9
THE ARTS



Mural in Oakland, California.

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North America has been called a great "melting pot," a place where people from many countries, races, and ethnic backgrounds have come together to form a new culture. The arts—music, painting, sculpture, poetry, literature, and theater—reflect the rich variety and uniqueness of this blended culture. Much of what the United States and Canada have contributed to music has come in large part from its inhabitants of African descent: jazz, the Negro spiritual, rock, the blues. This contribution is examined in the first selection, an excerpt from the biography of a great American jazz musician, Duke Ellington. The next two selections explore two other examples of this varied artistic expression: the striking landscape paintings of Georgia O'Keeffe and the moving, often bittersweet poetry of the chicanos.

SELECTION ONE

Nat Hentoff

THE MAN WHO WAS AN ORCHESTRA

Do you enjoy listening to jazz? If so, you are not alone, for millions of people throughout the world rate it as their favorite type of music. Jazz began in the United States around the turn of the century, when it was played informally by black bands in New Orleans and other southern cities and towns. In the following article, you will find out more about this music with the strong rhythmic beat and about the people who create it, especially about one man, Duke Ellington, one of the greatest jazz musicians of all time.

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Prereading Exercise 1: Anticipating the Reading

Before starting to read the article, listen to a record or tape of jazz music, preferably of Duke Ellington's. Perhaps your teacher or a member of the class will bring some jazz music in or you can find some on the radio or the t.v. Then answer the following questions.

1. How does jazz differ from other types of music?

2. Why do you think that Duke Ellington felt sorry for composers of classical music?

3. What kind of relationship do you think exists between the leader of a jazz group and the other musicians in the group?

Compare your answers with those of your classmates. Then read to find out more about these questions.

Prereading Exercise 2: Guessing the Meaning of Key Words from Context

Match the correct lettered definitions with the italicized words from the article, according to the context.

a. creators of new things
b. destroyed
c. forceful
d. painful, touching
e. collection of musical pieces
f. explore thoroughly
g. invent without preparation
h. stimulating, invigorating
i. substitutes, replacements

1._____The element of surprise explains the *compelling* hold jazz has on listeners, which makes them sit very still for hours.

2._____Because of our patterned lives, jazzmen, of allinanaturaland musicians, are our *surrogates* for the unpredictable.

3._____Duke would play familiar numbers from his *repertory* during parts of the evening.followtheideasof

4._____Jazzmen generally *improvise* rather than play prepared pieces.

5._____After Duke Ellington had been afflicted by cancer, his strength was *decimated.*

6._____Musicians find performances exhausting yet *exhilarating* experiences.

7._____Ellington considered the unfortunate situation of many classical composers *voismant*

8._____By writing specifically for each of his men and letting them play relaxed manner, Ellington was able to probe the intimate recesses of their minds.

9.___While most people have to follow the ideas of others, every group needs also to have *innovators.*

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Duke Ellington.

The Man Who Was an Orchestra

Whitney Balliett, jazz critic for *The New Yorker* magazine, has called jazz "the sound of surprise." And it is that expectation of surprise which partly explains the compelling hold of jazz on listeners in just about every country in the world.

Most of us lead lives of patterned regularity. Day by day, surprises are relatively few. And except for economic or physical uncertainties, we neither face nor look for significant degrees of risk because the vast majority of us try to attain as much security as is possible.

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In this sense, jazzmen, of all musicians, are our surrogates for the unpredictable, our models of constant change.

"It's like going out there naked every night," a bass player once said to me. "Any one of us can screw the whole thing up because he had a fight with his wife just before the performance or because he's just not with it that night for any number of reasons. I mean, we're out there improvising. The classical guys have their scores, whether they have them on a music stand or have memorized them. But we have to be creating, or trying to, anticipating each other, transforming our feelings into music, taking chances every second. That's why, when jazz musicians are really putting out, it's an exhausting experience. It can be exhilarating, too, but always there's that touch of fear, that feeling of being on a very high wire without a net below."

And jazz musicians who work with the more headlong innovators in the music face special hazards. There is the challenge, for instance, of staying in balance all the way in performances with Thelonious Monk as he plunges through, in, underneath, and around time. "I got lost one night," one of the people in Monk's band told me, "and I felt like I had just fallen into an elevator shaft."

There is another dimension of jazz surprise, the kind and quality that Duke Ellington exemplified. It is true that during many of his concerts and other appearances, Duke would schedule familiar numbers from his repertory for parts of the evening, sometimes long parts. He felt this an obligation to those who had come to see him, sometimes over long distances, and wanted to hear their favorites. Duke, who had come up in the business (and jazz is also a business) at a time when, to most of its audiences, the music was show business rather than art, considered it rude to present an audience with a program of entirely unfamiliar work.

But for Duke himself the keenest pleasure in music was the continual surprising of himself. Always he was most interested in the new, the just completed work.

"The man," the late Billy Strayhorn said of Duke, "is a constant revelation. He's continually renewing himself through his music. He's thoroughly attuned to what's going on *now.* He not only doesn't live in the past. He rejects it, at least so far as his own past accomplishments are concerned. He hates talking about the old bands and the old pieces. He has to play some of the Ellington standards because otherwise the audiences would be disappointed. But he'd much rather play the new things."

Duke never could stop composing. Even toward the end, in the hospital, his strength decimated by cancer, Ellington was still composing. And throughout his life, the challenge and incomparable satisfaction for him was in the way he composed for the specific members of his orchestra.

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"After a man has been in the band for a while," Ellington once told me, "I can hear what his capacities are, and I write to that. And I write to each man's sound. A man's sound is his total personality. I hear that sound as I prepare to write. I hear all their sounds, and that's how I am able to write. Before you can play anything or write anything, you have to hear it."

As Billy Strayhorn said, "Ellington plays the piano, but his real instrument is his band. Each member of the band is to him a distinctive play of tone colors and a distinctive set of emotions, and he mixes them all into his own style. By writing specifically for each of his men, and thereby letting them play naturally and in a relaxed way, Ellington is able to probe the intimate recesses of their minds and find things that not even the musicians knew were there."

And having written—late at night in hotel rooms, in the car, on scraps of paper, between dates, wherever he was when not fronting the band—Ellington was able to hear the results immediately. And that was much to his satisfaction. Duke often told me that he considered the fate of most classical composers poignant. "They write and write and keep putting what they've done in a drawer and maybe, once in a great while, some orchestra will perform one of their works. The rest—they have to imagine, only imagine, what they've written sounds like. I could not exist that way, creating music only for myself, not communicating with anyone but myself. But having an orchestra always with me makes it unnecessary for me to wait." Duke did not have to travel constantly; he could have lived comfortably on the royalties earned from his abundance of compositions. But he greatly preferred the road so that he could hear his music, especially his new music, instantly. Or, as he put it, "I keep these expensive gentlemen with me to gratify that desire."

Nat Hentoff

Reviewing Study Skills: Study Mapping

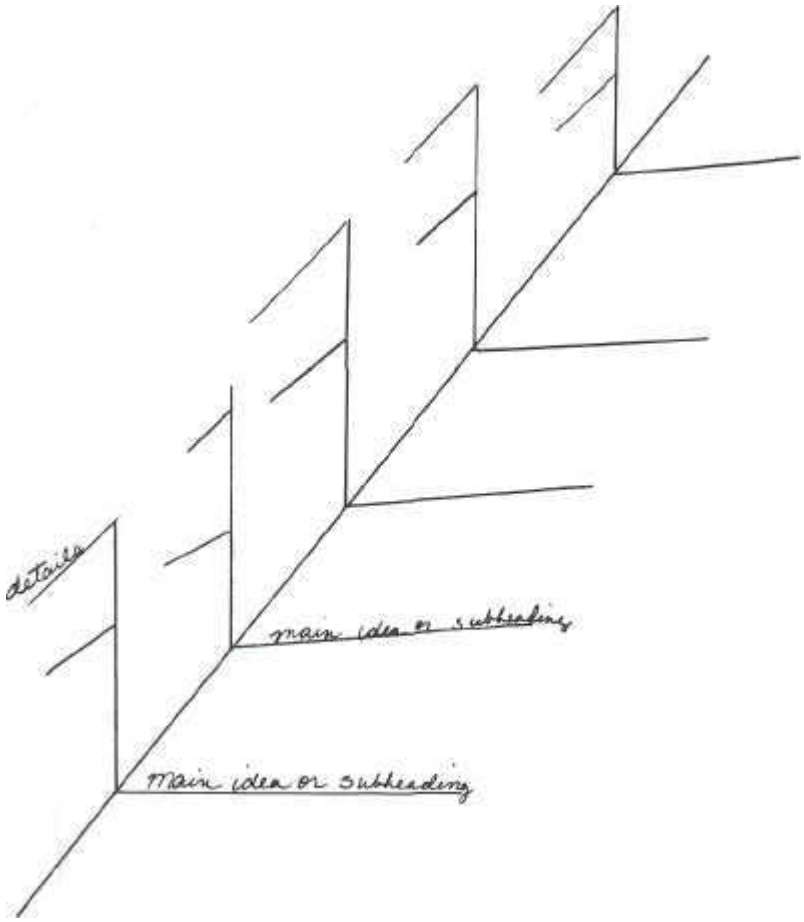
Look at the following examples of designs for study maps and the design given on page 147 in Chapter 6. Which one would work best for "The Man Who Was an Orchestra"? Or would you make a new design? Why? Working in small groups, choose a design and make a study map for the article. Compare the results with the other groups and decide which design is best. Afterward, use your study map to help you with the exercises that follow.

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Recalling Information

Choose the best way of finishing each statement, based on what you have just read.

1. The main reason that jazz is unpredictable and presents the listener with surprises is that:
   a. it sounds like an older style of music
   b. improvisation is an important part of it
   c. the musicians find the performances exhilarating
2. Duke Ellington included old familiar numbers from his repertory in many of his concerts because:

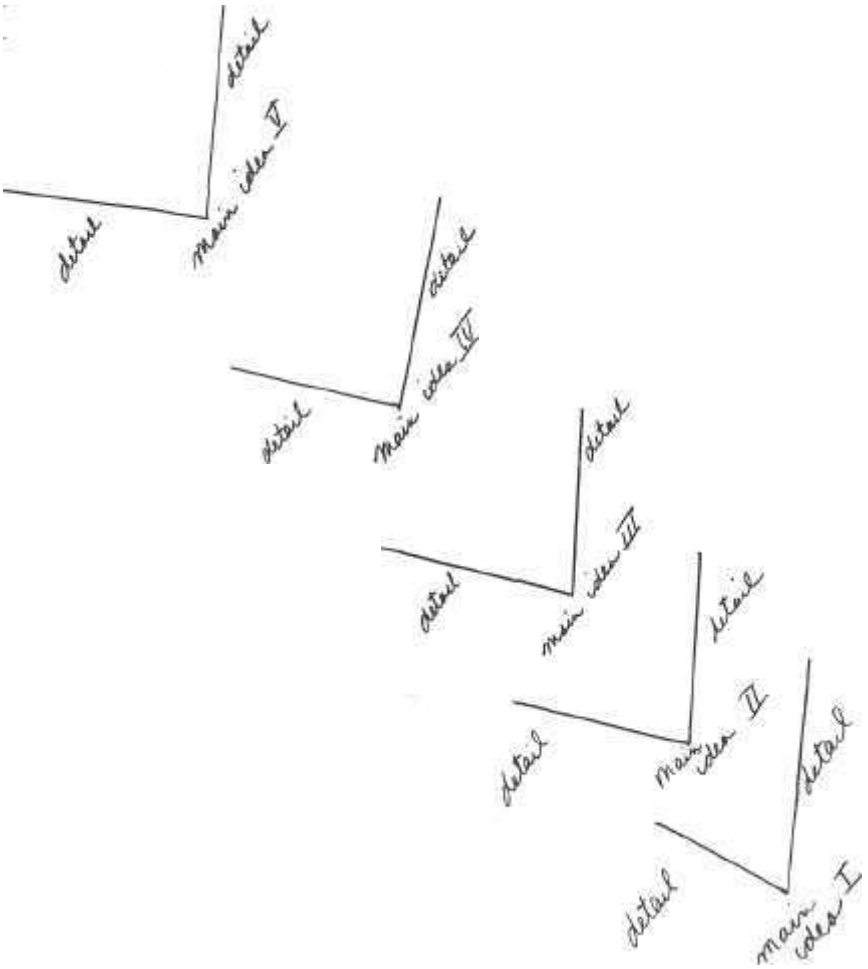


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a. it was his continual and keenest musical pleasure
b. he felt it was good business and would make a lot of money
c. he did not want to disappoint his audiences

3. When Duke Ellington was older and famous, he:
   a. enjoyed living in the past and talking about earlier accomplishments
   b. rejected the new styles of younger musicians
   c. kept on changing and innovating his music

4. Ellington considered the fate of most classical composers poignant because:
   a. they have to wait before they can hear their music
   b. they usually die before getting much money or fame
   c. they have to follow rigid rules in composing



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Making and Supporting Inferences

Tell which of the following inferences about Duke Ellington are valid and which are invalid, according to the article. Give at least two facts for each to support your judgment.

1._____He was basically lazy and liked the good and easy life.

2._____He was self-centered and arrogant.

3._____He was young in spirit throughout his life.

Talking It Over

1. After reading the article, how would you describe the difference between jazz and other types of music?
2. Why does jazz have a compelling hold on many people?
3. Billy Strayhorn said, "Ellington plays the piano, but his real instrument is his band." What did he mean?
4. The word *jazz* is used in certain English slang expressions that apply to things besides music. For example, someone might refer to the design for a house or the plans for a party and say, "Let's *jazz it up* a bit" or "It's not *jazzy* enough." Based on the context and on what you have read, what do these expressions mean?

Expressing Reactions to Music

Some volunteers should bring in records or tapes of their favorite type of music and play it for the class. Then play the jazz music that you listened to before the reading. Does the element of surprise seem stronger in jazz, as the article suggests, than in the other music? In what parts do you think the musicians are improvising?

Describe, orally or in writing, the music that you preferred of all the samples that were played. Try to explain in words what it sounds like and why you enjoy it.

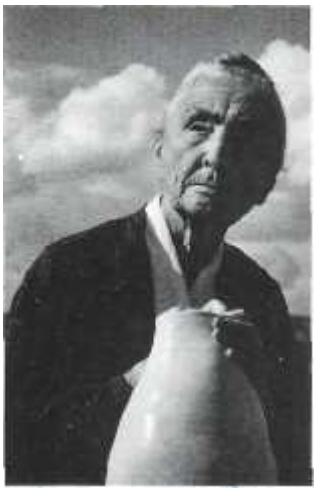
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SELECTION TWO

M. Prijic

TO PAINT IS TO LIVE: GEORGIA O'KEEFFE. 1887-

Painting, like music, is one of the fine arts. American and Canadian painting has been influenced by many traditions from different parts of the world, especially by those from Europe. However, this century has witnessed an opposite trend: the development of particularly North American painting styles that have become



Georgia O'Keeffe.

international. One American painter who has exerted an influence on Europe with a unique and independent style is a woman from Wisconsin named Georgia O'Keeffe. If you were looking for an artist with a typically American background, you could not find a better example. Three of her grandparents were immigrants—from Ireland, Hungary, and Holland—and the fourth was descended from one of the earliest European colonists in America. These ancestors came to start a new life in a new world, but Georgia was destined to become a pioneer of a different sort. The following article discusses her life and work.

Prereading **Exercise 1: Anticipating the Reading**

Look at the title and the photograph of Georgia O'Keeffe. Skim the first two paragraphs of the article. Then make inferences about this famous artist and answer the following questions.

1. What kind of person do you think she is?

2. Why does she paint?

3. What kinds of problems do you imagine that she had in her life? Why?

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Read the article to find out if you are right.

"To Paint Is to Live": Georgia O'Keeffe, 1887-

Georgia O'Keeffe is truly an American original. Tough, sparse, lean, she embodies the rugged individualistic nature of the American

pioneer. But instead of tilling the soil, her strides have been made in the field of contemporary American art.

Born on a 600-acre farm in Sun Prairie, Wisconsin, on November 15, 1887, O'Keeffe throughout her long life has always preferred vast plains and open spaces to city living. Since the summer of 1929, when she made her first visit to New Mexico, the starkness of the desert has fascinated her. After summering in New Mexico for many years, she finally moved permanently to Abiquiu, New Mexico, in 1949, where she continued to paint until her eyesight faltered in the late 1970s. From this region the themes of some of her finest works have evolved.

O'Keeffe's strictly American art education began with private lessons at the age of ten. Teachers recognized her talent but often criticized the larger-than-life proportions that she liked to paint. At an early age she was already moving away from realistic copying of objects to things she perceived with her own eyes, mind, and soul.

O'Keeffe's formal high school education continued at a private school in Madison, Wisconsin, and after a family move, she graduated from a Williamsburg, Virginia, high school in 1903. In 1905-06 she studied at the Art Institute in Chicago, and in 1907-08, at the Art Students' League in New York.

In 1908, perhaps disappointed with the rigidity of American art education at the time, she gave up painting and became a commercial artist, drawing advertising illustrations in Chicago. However, in the summer of 1912, she decided to take another art course in Virginia under Alon Bemont, and her interest in creative painting came alive again.

Self-supporting since graduation from high school, O'Keeffe had to find jobs to sustain her through her developing years as an artist. In 1912, she began to teach in Amarillo, Texas, and was stunned by the barren southern landscape. "That was my country," she said, "terrible wind and wonderful emptiness."

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After art courses in 1915-16 in New York under the more liberal art teacher Arthur Dow, O'Keeffe accepted a position as an art teacher at a small college in South Carolina. It was at this point that the determined young woman locked herself up, took stock of her painting, and decided to reject the rigidity of the realism that she had been taught for a style all her own. "Nothing is less real than realism-details are confusing. It is only by selection, by elimination, by emphasis, that we get the real meaning of things." From this revival came black and white abstract nature forms in all shapes and sizes, the beginning of her highly individualistic style.

O'Keeffe sent some of these prints to a friend in New York and told

her not to show them to anyone. The triend was so impressed with them that she ignored the request and took them to a famous photographer and promoter of modern artists, Alfred Stieglitz. His reaction was immediate: "At last, a woman on paper!" Without O'Keeffe's knowledge or consent, Stieglitz exhibited these prints in his gallery, 291. Infuriated, she went to New York to insist that he take her drawings down. Stieglitz, however, convinced her of their quality, and she allowed them to remain on exhibit. Subsequently, Stieglitz became the champion of O'Keeffe's works and helped her gain the prominence she deserved. For Stieglitz, Georgia was an unusually talented American female artist. She was unspoiled by studies in Europe and painted with a direct, clear, strong—even fierce—force.

The relationship between Stieglitz and O'Keeffe developed into a passionate love affair, which eventually led to a twenty-two year marriage. Stieglitz, his wife's senior by many years, died in 1946. He immortalized her through many beautiful and unusual photographs—the lady in black, with piercing eyes, tightly pulled-back hair and the artistic elongated hands of a goddess.

Strength, clarity, and strong physical presence are words that are often used to describe O'Keeffe's paintings. As art critic Lloyd Goodrich said, "Her art presents a rare combination of austerity and deep seriousness. . . . Even at her most realistic she is concerned not with the mere visual appearance of things, but with their essential life, their being, their identity. . . . The forms of nature are translated into forms of art.'' Or, as O'Keeffe herself put it, "A hill or a tree cannot make a good painting just because it is a hill or a tree. It is lines and colors put together so that they say something. For me, that is the very basis for painting. The abstraction is often the most definite form for the intangible thing in myself that 1 can only clarify in paint."

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M. Prijic

Recalling Information

Choose the best way of finishing each statement, based on what you have just read.

1, Georgia O'Keeffe was born:

a. in New York City
b. in a town in New Mexico
c. on a farm in Wisconsin

2. Her art education consisted of:
   a. studies in schools and institutes in the United States
   b. training in the best art academies of Europe
   c. only her own efforts and experimentation at home
3. The landscape with which she identified in particular was:
   a. rugged mountains
   b. lush forests
   c. barren deserts
4. Alfred Stieglitz's comment when he first saw O'Keeffe's prints was: "At last, a woman on paper!" From this we can infer that
   a. there was a great deal of discrimination against women then
   b. women artists were not very common in those days
   c. he did not really like the prints very much
5. Stieglitz was important in the life of Georgia O'Keeffe because:
   a. he became both her husband and champion
   b. he bought many of her paintings at good prices
   c. he photographed her prints and gave titles to them

Paraphrasing Complex Ideas

Paraphrase the following excerpts from the article. Do not worry if there are some words you do not understand. Just state the main idea briefly in simple, direct words.

1. "Tough, sparse, lean, she embodies the rugged individualistic nature of the American pioneer. But instead of tilling the soil, her strides have been made in the field of contemporary American art."

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2. "Self-supporting since graduation from high school, O'Keeffe had to find jobs to sustain her through her developing years as an artist."

3. '"Nothing is less real than realism—details are confusing. It is only by selection, by elimination, by emphasis, that we get the real meaning of things.'" (words of Georgia O'Keeffe).

4. '"Even at her most realistic she is concerned not with the mere visual appearance of things, but with their essential life, their being, their identity'" (words of an art critic about O'Keeffe's works).

Talking It Over

1. Were you right or wrong about the inferences you made about Georgia O'Keeffe? Explain.
2. Do you think it was difficult for a woman to be an artist in the 1920s and 1930s? Why?
3. Why do you think Stieglitz was such a strong influence on O'Keeffe?
4. What do people seem to like about Georgia O'Keeffe's work?

Expressing Reactions About Paintings

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Bring in some prints or photographs of art works that appeal to you to share with the class. Tell whether it is the subject, the style, or both that you like in these paintings and why you are impressed by them. Try to find a book with reproductions of O'Keeffe's paintings and explain what you like or dislike about them.

Writing a Brief Comparison

Do artists tend to have similar types of lives even though they are from different cultures and time periods? Go to the library and look up information on an artist from any country other than the United States. Write a brief comparison between the life of this artist and that of Georgia O'Keeffe. Do not write the whole story of the artist's life, only several points that show similarity. Tf there is no similarity, try to explain why.



SELECTION THREE

Deana Fernandez

CHICANO POETRY: THE VOICE OF A CULTURE

The following article gives some background on Mexican-Americans, who now are often called chicanos, and presents a few examples of their poetry. You might wonder why this group is singled out, when there are so many ethnic groups, with their particular languages and cultures, living in North America, including millions of Spanish-speaking people from other countries. There are historical reasons, which you will read about, why this group is different from most others.

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Prereading Exercise: Anticipating the Reading

Look at the map of the United States, then answer the following questions.

1, What cities on the map sound to you as though their names might be of Spanish origin?

2. What sections seem to have the most Spanish names?

3. Do you know or can you make a guess about why these places have Spanish names?

Read the article to find out if you are correct and to learn more about the second largest minority group in the United Slates.

Chicano Poetry: The Voice of a Culture

The Hispanic Presence in the United States

What are the two cities in the world with the largest number of Spanish-speaking inhabitants? Mexico City is number one, which is no surprise; but the second is Los Angeles, California, right in the U.S.A.! According to 1983 census figures, 15.9 million Hispanics live in the United States. They are the second-largest minority after blacks, but the Hispanic population is increasing so rapidly that it is expected to become the largest minority within a few years. More than 80 percent of Hispanics live in urban areas. Most are concentrated in the five Southwestern states of Arizona, California, Colorado, New

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The Southwest is noted for its Spanish colonial and Mexican architecture, particularly the fifty-four missions founded between 1598 and 1823.

Mexico, and Texas. There are also sizable Hispanic populations in New York, Florida, and Illinois.

There are countless Spanish geographical names in the United States, such as the state of Colorado (which means "red"), the city of Las Vegas ("fertile lowlands"), and the Rio Grande ("big river"). Many Spanish and Latin American words have been incorporated into English. A large number of these words are related to geographical features: *mesa* ("plateau") and *canyon;* to music: *tango, rumba;* to ranch life: *rodeo, corral;* to architecture: *patio, plaza;* and to food: *chocolate, papaya.* Many colorful English slang terms are corruptions of Spanish words, such as *calaboose* ("jail") and *macho man* ("big, lough male").

Mexican-American History

Where did all this Spanish influence come from? Didn't the United States start out as a colony of the British? In fact, the southwestern United States was settled by the Spanish and Mexicans centuries before the arrival of the first Anglos. Many people are unaware of this fact because until recently, all the history books were written from the point of view of the British. Let's examine the "true history" of the American Southwest.

The region was part of Mexico until it was lost in a war with the United States. Under the terms of the Treaty of Guadalupe Hidalgo, which ended the war in 1848, Mexico ceded to the United States the territory that is now New Mexico, Utah, Nevada, California, and parts of Colorado and Wyoming. On paper the 75,000 Mexican inhabitants were guaranteed their property rights and granted U.S. citizenship. The reality, however, was different. They suffered racial and cultural discrimination at the hands of a flood of Anglo settlers, and many were dispossessed of their lands. Most worked for Anglo bosses as farm, railroad, and mine workers. Constant immigration from Mexico kept wages low.

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World War II brought about fundamental changes. Many Mexican-Americans began to consider themselves U.S. citizens for the first time after serving in the war. Armed with new skills and faced with the rapid mechanization of agriculture, many moved to the cities in search of work.

The Chicano Movement

Inspired by the black struggle for civil rights, Mexican-Americans organized in the 1960s to gain reforms and restore ethnic pride.

Members of this movement called themselves *chicanos,* and the name has become popular, although some still prefer the term Mexican-Americans. The achievements of the chicano movement are many. In 1962, Cesar Chavez founded the strong and successful National Farm Workers' Association in Delano, California, which has managed to raise wages and improve working conditions for migrant workers. In 1970 Jose Angel Gutierrez established the *Baza Unida* political party in Crystal City, Texas, which has been successful in electing Mexican-American candidates to local office. Bilingual, cross-cultural education and chicano studies programs have been established in schools and universities.

Chicano Arts

The chicano movement inspired a flowering of chicano theater, art, and literature. Luis Valdes created the *Teatro Campesino* in the fields of Delano in 1965 to strengthen the union's organizing efforts. This unique form of theater draws on a variety of Latin American and European traditions and makes use of allegorical characters, masks, song, and dance. Originally performed by farm workers for farm workers, it later broadened its focus to include issues other than the strike, such as American foreign policy and discrimination against Hispanics in schools. The *Teatro Campesino* has gained international prominence and inspired the creation of many similar companies across the country.

Colorful murals painted on the walls of public buildings in Mexican-American neighborhoods are a collective expression of reborn hope and ethnic pride. They depict the Mexican-Americans' Indian and Spanish heritage, the history of Mexico and of Mexican-Americans in the United States, and the problems of migrant workers.

www.hellas2u.blogfa.com

The genre most cultivated by chicano writers is poetry. Often written in free verse, chicano poetry creates an impression of spontaneity, freshness, and honesty. It may be written in Spanish, English, or a combination of the two languages.

Deana Fernandez

Some Examples of Chicano Poetry

The following examples of chicano poetry contain only three Spanish words: *primo,* "cousin"; *gringo,* a somewhat negative word for an Anglo-American; and *panza,* a word that can be understood from the context. Each of the following poems provides a



Mural in a Mexican-American neighborhood, Los Angeles, California.

brief glimpse into the lives of Mexican-Americans. As you read, try to understand the main point that the poet wants to convey and the emotions he wants the reader to feel.

Grandma's Primo

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Grandma had a cousin
who lived in the big city
and looked like a gringo

He smoked a big cigar
and spoke English as well
as he spoke Spanish

He loved to tell jokes
would always tell them twice—
the first time in Spanish
to make us laugh
and the second time in English
to impress us

Leroy V. Quintana

CHAPTER 3

A Fairy Tale

Bedtime. I tell stories, tales
of Robert Rattlesnake, Bennie Beaver,
Yolanda Panda Bear, Jerry Giraffe
and Danny the Dog.
And then it's Elisa's turn. She begins
"One upanza time . . ."
"Panza!" I say. "It's not upanza,
it's once upon a time. This is *a panza,"*
And grab her stomach, tickle her
until she can iaugh no more.
"Once upanza time . . ."
"No No No No No!" I scream,
"It's once upon a time, not upanza time.
This is a *panza,"* and I grab her stomach,
tickle her again until she's weak from laughter.
"Please tell me a real story," I plead,
"and please don't say *panza,"*
"Once upanza time . . ." she begins.
"O.K.," t say, resigned. "You can say *panza."*
"Once upanza time
there lived a *panza*
And it lived happily ever after.
Good night, Daddy."

Leroy V. Quintana

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To People Who Pick Food

I am the man
who picks your food

immigrant,
tablecloths
ignore my stare
i have children
a fake green card
a warm kiss
a cross to ward off rangers
a picture of St. Peter so

I will not drown in a river
I pick apples
cotton
grapes
eyes follow me
utter under their breaths,
I do not understand
the lettuce canned
with my hands
citrus pores
inflame my eyes
my wife is proud
soft gentle
my children
are brown tender deer
what eyes,
the sun cracks my skin
I am old and dark as the dirt
I drop on my knees before the sky
they can hate me, point me out in a crowd
but do not pity me the sun is there
every morning God follows my children
and I walk to the field to grow bread
with my friends

Wilfredo Q. Castano

Recalling Information

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Tell whether each of the following statements is true (T) or false (F), based on the reading. Correct false statements to make them true.

1. There are more Spanish-speaking people in Los Angeles, California, than in any other city in the world except the capital of Mexico.
2. Hispanics form the largest minority group in the United States.
3. Spanish and Mexican architecture and geographical names are characteristic of the northeastern part of the country.
4. Spanish and Mexican people settled in parts of the United States shortly after the arrival of the British colonists.

5. After the treaty of 1848, Mexicans in the territory that belonged to the United States as of that year enjoyed all the privileges of full citizens and were guaranteed property rights.

6. After World War II, many Mexican-Americans moved from the countryside to the cities.

7. Cesar Chavez is a chicano who founded a powerful and effective labor union for farm workers.

8. Jose Angel Gutierrez began a chicano political party, but it has not yet managed to get Mexican-Americans elected to office.

9. Chicano theater, begun by Luis Valdes, started out in the fields and was performed for and by farm workers.

10. The literary genre most popular among chicano writers is the novel.

11. In the poem "Grandma's Prirao," the cousin always told jokes twice because he wasn't sure that his relatives understood them the first time.

12. "A Fairy Tale" is about a mother who finally manages to tell a bedtime story to her little daughter who keeps on interrupting.

13. "To People Who Pick Food" is told from the point of view of a poor but contented Mexican farm laborer who works in the United States illegally.

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Summarizing Information About Specific Points

Write a brief summary of what you remember about each of the following people or things. If necessary, scan the article to refresh your memory.

1. Spanish words used in English

2. *Raza Unida*

3. Treaty of Guadalupe Hidalgo

4. Cesar Chavez

5. *Teatro Campesino*

Reading Poetry for Meaning

Just as any scene can serve as the subject of a painting, so any part of daily life can provide material for a poem. Of course, the choice that the artist or poet makes relates to his or her purpose. Poetry is usually short and compact, so it should be read several times, preferably aloud, to appreciate its meaning. Read the following questions; then reread the poems and answer the questions.

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"Grandma's Primo"

The Italian artist Modigiiani often used just a few lines or brushstrokes to suggest a whole person. This poem is also the portrait of a person, shown in just a few words.

1. From whose point of view do we see this character?

2. What special qualities does he have?

3. Why do you think the poet found him memorable?

"A Fairy Tale"

It is often difficult growing up speaking a language different from that of the dominant culture. Sometimes it causes conflicts between children, who get the two languages mixed up, and their parents, who correct them and want them to speak both well. This poem describes such an interaction.

1. What conflict is going on between the parent and the child?

2. Who wins in the end? Or do both win?

3. Do you think there is any real problem here? Explain.

4. What purpose do you think the poet has in this poem?

"To People Who Pick Food"

The poem is spoken from the point of view of a poor Mexican migrant who is working illegally in the United States, with a "fake green card."

1. What parts of the poem suggest that the man feels prejudice and discrimination from the people around him?

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2. What work does the man do? How does he feel about it?

3. When so many rich people seem dissatisfied with their lives (as evidenced by alcoholism, use of drugs, nervous breakdowns, and so on), why is this man content? What things does he have that give him strength and pride?

4. What emotive words are used? What emotions do you think the poet wants us to feel toward the man?

CHAPTER 10
ENERGY AND MATTER



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With the world population growing larger each day, human beings are becoming more and more conscious of the need to find or create new supplies of food, water, and energy. The first selection discusses current efforts of plant biologists to improve the yield of agriculture for a hungry world through the controversial new techniques of genetic engineering. Next, a newspaper article examines the drying up of our most precious resource, water. The third piece deals with a novel type of energy: power from the oceans, or tidal power. According to this selection from Jacques Cousteau's almanac, we'll be hearing more about this source of power in the future. The chapter finishes with a timed reading on a Nobel-prize-winning physicist's description of what happened in the first three minutes of the universe.

SELECTION ONE

Sana Siwolop

SOWING THE SEEDS OF SUPER PLANTS

Prereading Exercise 1: Anticipating the Reading

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1. What do you imagine when you think of the words *super plant?* What traits or characteristics should it have?

Compare your ideas with the artist's concept on page 247.

2. What are some problems in the world today that could be solved if botanists were able to produce made-to-order plants in their laboratories? Do you think there would also be dangers?

Read the following article to find out more about what science is doing in the quest for perfect plants.

Prereading Exercise 2: Identifying the Meaning of Technical Terms from Context

Many new scientific terms have passed into common usage through reports in newspapers and magazines. Key scientific terms from the article are used in the two paragraphs below. Read the paragraphs, then match each of the italicized terms with its correct definition, given after the paragraphs.

Genetic Engineering and Public Fears

People used to think that hereditary traits, such as brown eyes, tallness, red hair, and so forth, were passed from parents to children in the blood. Terms such as "bad blood" and "blood brothers," though incorrect, are still used. Modern science has shown that these traits are passed in the *genes* from the parents' cells, which recombine during reproduction. The actual chemical in the gene responsible for this transmission is *deoxyrihonucleic acid,* usually referred to as *DNA.* In the last two decades scientists have managed to isolate the genes that cause particular traits in some organisms and plants. In certain cases they can even use the techniques of *recombinant* DNA or *gene splicing* to insert a fragment of a gene from one animal or plant directly into the genes of another, usually by splicing it to a chemical. From these advances the new field of *genetic engineering* was born.

Reactions to announcements of this latest scientific progress in the 1970s were mixed. Some people foresaw the curing of inherited diseases and the improvement of agriculture. Other sectors of the press and the public responded with fear and loathing. Were human beings trying to play God? What if scientists were to create a new *bacterium* which would escape from the lab and infect the world with a terrible disease? Concern grew with the announcement of *cloning:* the production from a single cell of one or many identical individuals, or *clones.* Science fiction writers imagined armies of cloned soldiers. Philosophers worried about the loss of individual identity. Were these techniques stopped? Or was it shown that the dangers had been greatly exaggerated? The answer is given in the following article.

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Definitions

1. any one of a type of microscopic organisms, some of which cause disease:

2. the technique of putting pieces of the genes from one organism into the genes of another:

3. an acid found in the nucleus of cells, responsible for the transmission of hereditary characteristics:

4. a group of identical organisms derived from a single individual:

5. the units of heredity that transmit traits from one generation to another:

6. referring to the uniting or joining together of different things:

7. a new branch of biochemistry in which genes are altered to change or improve the traits of plants or animals:

8. the growing of genetically identical plants or animals from a single cell:

Sowing the Seeds oi Super Plants

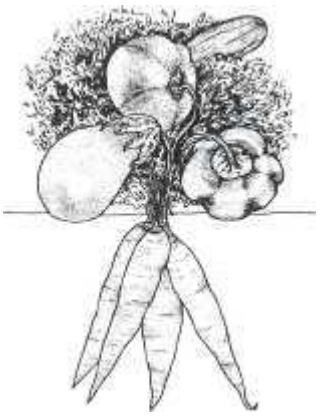
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Somewhere deep in the mountains of Peru, plant geneticist Jon Fobes is collecting samples of a very special tomato. This tomato will never win a prize at a county fair; it is remarkably ugly—a green, berrylike fruit that is not good to eat. But to Fobes it has a winning quality. It is twice as meaty as an ordinary tomato. Other exotic tomatoes that Fobes is gathering can grow at very cold altitudes or in salty soil, or they are remarkably resistant to drought, insects, and disease. Fobes's goal: to bring them back to his laboratory at the research division of the Atlantic Richfield Company in California and isolate and identify the genes that give them such strong characteristics, so that some day they can be genetically engineered into commercial tomatoes.

Fobes is just one of the many scientists who are searching the wilderness to find plants with genes that may eventually be used to create a whole new garden of super plants. Until recently there was

little incentive for such quests. Although molecular biologists were making rapid progress in the genetic engineering of bacteria to produce human proteins such as insulin, botanists faced a set of problems that apparently could not be solved by the same recombinant DNA techniques. Within the past few months, however, they have overcome some of the barriers that nature placed in the way of the genetic engineering of plants. Items:

- Biologists John Kemp and Timothy Hall, University of Wisconsin professors who do research for Agrigenetics, a private company, announced the first transfer of a functioning gene from one plant to another—from a bean plant into a sunflower plant.
- Jeff Schell, of the State University of Ghent in Belgium, announced an important step toward the regulation of transplanted genes. His research team introduced into tobacco cells artificial genes that were activated in light but not in darkness.
- Researchers at the Cetus Madison Corporation of Madison, Wisconsin, won approval from the recombinant DNA advisory committee of the NIH (National Institutes of Health, a government agency) to field test plants genetically engineered to resist certain diseases.



A super plant of the future?

Not everyone is delighted. Within days after the Cetus announcement, Jeremy Rifkin, a publicity-seeking author of a poorly received book about genetic engineering, attacked the NIH committee for hearing the Cetus proposal at a session closed to the public. He also asked for an investigation by the NIH of possible conflict of interest because a scientist at Cetus is a former member of the committee, and a leading scientist from another genetics engineering firm is a member now.

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Earlier in the month, Rifkin had filed suit in a general district court in Washington to block the field testing of a bacterium genetically engineered at the University of California at Berkeley $o protect plants from frost. He claimed that the NIH committee had not adequately examined the field testing for possible environmental hazards. Although the suit seemed to lack merit, it had an effect. Complaining that the suit had delayed their experiment, which was dependent on weather conditions, the Berkeley scientists postponed the test.

The sudden hubbub over gene splicing was similar to the controversy over use of the newly developed recombinant DNA techniques in the 1970s. That uproar occurred after the scientists themselves had recommended strict testing guidelines to prevent engineered organisms from escaping from the laboratory, and the NIH put them into effect. Later it became apparent that the techniques were not dangerous, the rules were relaxed, and the protests died out. The latest NIH decision that allows field testing of genetically engi-

neered plants reflected a general confidence among scientists that proper precautions were being taken and that the work was safe.

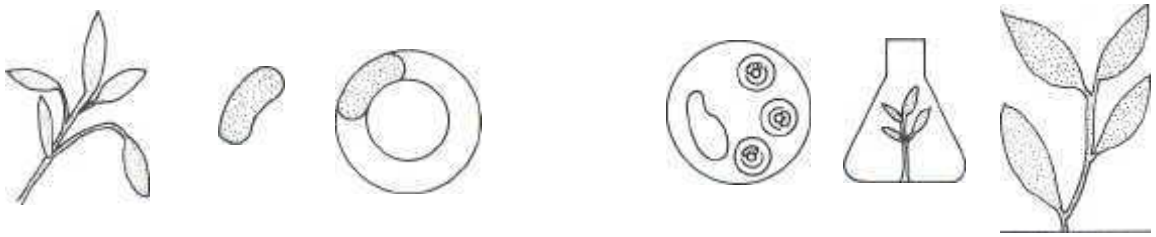
Some plant scientists found a touch of the absurd in Rifkin's harassment. Plant breeders have been introducing new genes into plants for thousands of years. They have used techniques such as cross-pollination, inserting pollen from one group of plants into another group, to produce hybrid plants that are hardier, more attractive, more nutritious, or tastier than nature's own. Still, these traditional methods have their limitations. Crossbreeding is useful oniy in plants of the same or similar species. It also takes time, sometimes hundreds of crosses over many years, to breed a plant with even a single new trait.

Genetic engineering provides a dramatic new shortcut. Eventually, it could allow scientists to insert a wider variety of beneficial genes into plants in a few days. The potential seems enormous. Crops that now need expensive fertilizer could be changed so that they could extract nitrogen (the most important element in fertilizer) from the air; they could be engineered to produce toxins to protect themselves from insects, grow in salty soils, live for weeks without water, and use the sun's energy more efficiently. Plants with engineered characteristics could one day be the basis for a new "green revolution" that would provide enough food for the world's hungry people.

The genetic engineering of plants owes much of its recent success to an ingenious solution to an old problem: the lack of an effective way to transplant foreign genes into the DNA of plant cells. The solution came from bacteria—in the form of a plasmid (a tiny piece of DNA engineered to carry genes) from the bacterium *agrobactenum tumefaciens.* This bacterium is not ordinarily a benefactor of human-

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HOW TO MOVE A PLANT GENE



1. Donor plant with desired
2. Gene after removal
3. Gene is inserted into an Agrobacterium plasmid
4. Plasmids are mixed with liposomes
5. Plasmid-liposome packages enter a plant cell
6. Cells are cultured
7. New plant carries the desired gene

ity. It causes small brown tumors to form on such important plants as tobacco and grapes. But in the laboratory it is proving to be extraordinarily useful. After foreign genes are spliced into its plasmid, the plasmid can carry them into more than 10,000 different plants, where they find their way into the DNA. To assist these genes in entering plant cells, scientists mix them with tiny fatty bubbles called liposomes. (See the diagram on page 248.)

In their efforts to create new plants by transferring genes, scientists have not overlooked another problem: how to produce the new plants in quantity. This will require better methods of cloning than are now available. Cloning now works only with a very limited variety of plants. Carrots, petunias, and tobacco, for example, can be cloned with ease, but the important cereal grains respond poorly—if at all—to cloning.

Scientists are still seeking the biological key to the regeneration of plants, trying to learn why a lone plant cell will sometimes sprout into an entire new plant and at other times will simply refuse to divide and multiply. Once they are able to combine cloning and genetic engineering, the payoffs, both scientifically and commercially, could be dazzling.

Sana Siwolop

Recalling Information

Choose the best way of finishing each statement, based on what you have just read.

1. The exciting news about genetic engineering in plants is that scientists have just recently managed:
   a. to find some plants in Peru with hardy characteristics
   b. to transfer a functioning gene from one plant to another
   c. to create and clone a whole new species of super plants
2. The field testing of genetically engineered plants is:
   a. an unusual and frightening occurrence
   b. a serious concern to most plant biologists
   c. probably not dangerous
3. The great fear in the 1970s caused by the newly developed technique of recombinant DNA turned out to be:
   a. almost groundless
   b. highly beneficial
   c. completely justified

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4. If scientists master the techniques of genetic engineering, they could eventually produce crops that:
   a. could live for weeks without any water
   b. grow without the need for fertilizer
   c. produce their own poisons against insects
   d. all of the above and more
5. The big problem of what to use to carry genes from one plant into another seems to be solved now by the use of:
   a. a small piece of specially made plastic
   b. a plasmid carried by a bacterium
   c. a slime mold found on tomatoes in Peru
6. At the moment, the best way to describe the cloning of plants in the laboratory is that:
   a. it's only successful with cereal grains
   b. it simply cannot be done
   c. sometimes it works and sometimes it doesn't

Using Information to Disprove False Opinions

The eighteenth-century English poet Alexander Pope once wrote, "A little knowledge is a dangerous thing." Many people express strong opinions on certain subjects about which they know very little. The following false opinions are examples of this. Find information from the article to disprove each one.

1. A state senator hears that plant geneticist Jon Fobes is down in Peru collecting samples of a tomato that is ugly and inedible. He knows that Fobes is using a government grant and makes a motion in the state senate to cut off the money for this work. "Everybody knows," he states with confidence, "that looking for a tomato which can't even be eaten is just plain stupid and a waste of the taxpayers' money!"

   What can you say to prove him wrong?

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You meet a businesswoman at a party who says in a loud voice, "What burns me up about scientists is that they have no common sense. All this genetic engineering of plants, for example, is ridiculous nonsense. If they want to put new genes into plants, why don't they use crossbreeding? Why, farmers have been doing that successfully Tor thousands of years!"

What could you tell her to change her views?

A young woman's father is absolutely opposed to his daughter marrying a plant biologist, even though she is head-over-heels in love with him. "Nobody ever makes any money in work like that," he fumes. "It has nothing whatever to do with practical, commercial reality!"

What can you say to aid true love?

Identifying a Bias

This selection, like most scientific articles, is written in a fairly objective and informative tone. Its purpose is mainly to convey new facts. At one point, however, the author expresses a strong bias either for or against some person or idea. What section is this? What specific words express this bias?

Section:_____

Words that show bias:_____

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Talking It Over

1. Even though sometimes the public overreacts to new scientific techniques, it is certainly possible that danger could arise in this way. Can you think of some scientific discoveries of the past that later backfired and caused problems?
2. Are there any areas of science today that you think are moving too fast and might become dangerous?
3. What is meant by a "conflict of interest" (Line 39)? When do you think that this problem arises in science?
4. Who do you think should make decisions regarding new scientific techniques: businesspeople, government agencies such as the NIH, or scientists themselves? Why?

5. In your opinion, what would be the best way to solve the problem of world hunger?

Interpreting a Diagram

Study the diagram entitled "How to Move a Plant Gene" on page 248. Then work out the following quiz by selecting the correct word or phrase to correctly complete each sentence. If you are uncertain about a choice, look back to the diagram with only that question in mind.

1. According to the diagram, a gene is removed from the cell of a plant and put into a different cell of:
   a. the same plant
   b. a different plant
2. Liposomes are mixed with plasmids
   a. before the gene is inserted into the plasmid
   b. after the gene is inserted into the plasmid
3. When it is stated that the cells are cultured, it means that the cells
   a. are grown in the laboratory
   b. are planted in the field
   c. are cut into small pieces
4. The purpose of this diagram is mainly to show:
   a. the reasons that plant genes are moved
   b. the techniques used for moving plant genes
   c. what happens to plants when genes are moved

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SELECTION TWO

Associated Press

WATER SHORTAGE IS GLOBAL THREAT

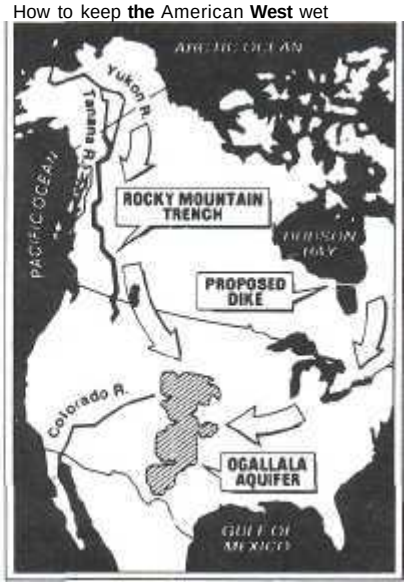
Here is a bit of a break for you after the rather difficult style of a scientific magazine: a newspaper article. In general, newspaper articles tend to be pretty easy reading, although they are usually somewhat less complete and accurate. This article addresses a crucial problem for most of the world today.

js a world without water in our future?

How She Soviets would redirect rivers



How to keep **the** American **West** wet



AP/News Graphics I

Prereading Exercise: Anticipating the Reading

One of the nice things about newspaper articles is that the main idea is usually expressed clearly and briefly in the headline. It's a good idea to start out with what you already know about a problem before reading new information on it.

1. What regions do you already know about where the problem of water shortage exists?

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2. What information can you get from the illustrations?

3. What can you learn from the headings?

4. What is the most important question about this problem?

Read to see if it is answered, at least in part, by the article.

Water Shortage Is Global Threat

The world's most plentiful substance is fast becoming its most precious.

So precious that a half-million Chinese have just scratched out a canal system to get it to parched Tianjin. So precious that super-tankers may soon reach halfway acrossthe globe to carry it to dry Saudi Arabia. So precious that it is a crime in Arizona to dig for it without a license.

Around the world the thirst for water is growing so great that the search for it is turning into a scramble.

"I think we are headed for a disaster," says Dr. Peter Bourne, who heads a public-education group in Washington called Global Water.

Pollution Threatens

In the industrialized world, pollution of underground water reserves threatens to make major cities uninhabitable by the end of the century, Bourne says. In the Third World, he says, unhealthy drinking water will continue to kill millions of people, and food production stunted by drought could mean mass starvation.

He likens it to the global oil crisis of a decade ago.

"There is the same problem in trying to get people to pay attention to it before the crunch comes," Bourne said. "If anything, the oil crisis was a sort of created crisis. This one could be life-threatening."

Water Decade

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The United Nations has declared the 1980s the "water decade." The World Bank estimates that reaching the goal of clean water for 80 percent of the global population by 1990 would cost $30 billion a year. But in 1981 only $10 billion was spent on water projects worldwide.

Here are capsule looks at some of the greatest regional problems:

- *United States* "The situation being faced in the Southwest of the United States is potentially going to be as serious as anyplace else in the world," said Bourne.

  By 1985 water withdrawals from the Colorado River basin will equal the supply. Something will have to give, and it will be California—in that year, under a court ruling, Southern California's cities will be cut off from their Colorado River water, 10 percent of their supplies.

Meanwhile, the underground reservoir watering much of the Midwest bread basket—the Ogallala Aquifer, stretching from Texas to the Northern Plains—is drying up. Optimists say it will last forty years, but pessimists say it may be dry by the end of the 1980s.

One proposal calls for reversing the flow of the Yukon and Tanana rivers, which rise in northwest Canada, flow through Alaska, and empty into the Bering Sea. Their waters would be driven southward to the American West through the Rocky Mountain Trench—a 1,000-mile-long north-south trough between mountain ranges.

Another proposal would throw a ninety-mile dike across the bottom of Hudson Bay to trap the runoff of eastern Canada's rivers and channel it into the Great Lakes.

Soviet Union The Aral Sea basin and cotton-growing Uzbekistan region contain "probably the most outstanding example of a man-made problem," says water resources specialist Philip P. Micklin, a Western Michigan University geographer.

The irrigation drain on the area's rivers has shrunk the area of the great Asian lake from 25,000 to 20,000 square miles. The rivers are expected to be fully exploited by 1990.

Soviet planners have blueprints for a huge network of dams and canals to reverse the flow of the Pechora, Ob, and other northern rivers that now rush uselessly into the Arctic seas. But the environmental impact is unclear. For one thing, depriving the Arctic of those warm waters could expand the ice cap and chill the global climate.

Middle East As they build their economies, Saudi Arabia, Kuwait, and the United Arab Emirates grow more and more dependent on desalination, a process that removes the salt from seawater. Critical shortages still loom. Last August, the arid island emirate of Bahrain called on its people to reduce per-capita consumption to 50 gallons a day from 200.

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Arab schemes to tow in icebergs from the polar regions crop up and die out. But now the United Arab Emirates is seriously negotiating the large-scale purchase of water from Japan.

Israel The Israelis have made the desert bloom, but there is a limit—they are using 95 percent of available water resources, and one-third of it comes from Arab territories seized in war.

The Jordan River, whose waters are shared by Israel and Jordan, once flowed at a rate of 38 billion cubic feet per year but is soon expected to drop to 1 billion.

Israeli cloud seeders have become the world's best rainmakers, adding 15 percent to some downpours.

- *India* At the current rate, India's usable water resources may be depleted as early as 1990, Indian water specialist P. C. Chaturvedi has warned.
  Madras, the fourth-biggest city, is gripped by a water shortage so severe that one reservoir after another has run dry. Local governments have signed an agreement to build a 250-mile canal system from the Krishna River. But the $720-million project will take years.
- *Africa* Here a continent's desperate future—of a growing population outrunning food production—hinges on water.
  Fifteen African nations now face severe food shortages because of a lack of rain, the worst drought of the century in much of southern Africa, the U.N. Food and Agriculture Organization reports.
  The challenge in Africa is to get immediate aid to the starving. Projects to tap the continent's water resources are more dream than possibility.
- *China* In China, where water is an age-old preoccupation, 640,000 people spent the winter of 1981-82 digging 500 miles of canals to shift Yellow River waters northward to Tianjin, an industrial city of 5 million running dry. The Chinese are also trying to hold back a new invader from beyond the Great Wall, the encroaching Gobi Desert.

Associated Press

Scanning for Specific Information

Answer the following questions about the article. Scan to fill in the gaps in your memory.

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1. What different areas of the world are mentioned as having severe water shortages? In which of these is the situation at present most desperate? Why?

2. What are three contributing causes of these shortages?

3. Of course, the most important question related to this issue is: What can be done about it? List six different solutions that are either being tried or talked about as possibilities.

Choosing Statistics to Illustrate a Point

Imagine that you are going to give a talk about the global problem of water shortages and that you want to make the following points. What statistics from this article can you use to support each point?

1. Agriculture can often greatly reduce even a large natural water supply.

   Statistics:_____

2. Large machines and advanced technology are not absolutely necessary to redirect water.

   Statistics:_____

3. Most governments are not spending enough money on water projects.

   Statistics:_____

Reading Diagrams for Information

Look at the maps that accompany the article and answer the following questions.

1. What areas are shown as lacking water?

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2. What solution is proposed?

3. What do the arrows mean?

Comparing Writing Styles in Newspapers and Textbooks

The style of writing in newspapers is different from the style of writing in textbooks. (The style used in serious magazines on science and politics is more like the textbook style.) Using this

article as an example, fill in the blanks about some of these differences.

1, In newspapers, the paragraphs are (longer or shorter) _____than in textbooks and serious magazines.

2. In newspaper style, the vocabulary is (easier or more difficult?)_____ than in textbooks.

3. Newspapers tend to use (more or fewer) _____simple sentences than textbooks and (more or fewer)_____complex ones.

4. Newspapers often use sentence fragments, which arc generally avoided in textbooks. For example, the second paragraph of this article has (1, 2, or 3)_____sentence fragments in it. (You should learn to recognize these and avoid them when you write; they are usually considered incorrect in student writing.)

Talking It Over

1. Do you think that the naming of the 1980s as the "water decade" by the United Nations will do any good? Why or why not?
2. In what areas of the world do you foresee that there will be conflicts and perhaps even wars because of water? Why?
3. Which of the solutions mentioned in the article do you think sounds the most promising? Explain.
4. In your opinion, what should be done about this serious problem?

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SELECTION THREE

Kevin Finneran

TIDAL POWER

In many parts of the world, powerful high tides cause serious damage on a regular basis. However, the forcefulness of high tides is not necessarily all bad. For years scientists have observed tides,

seeking a way to harness this tremendous potential source of energy at a time when our current sources of energy are inadequate. In this article, you will learn more about tidal power, an energy source whose time has come.

Prereading Exercise 1: Determining the Level of Understanding Expected of You

In the article about tidal power, such things as *lunar energy, hydroelectric power,* and *turbine limitations* are mentioned. Do not be discouraged if you do not comprehend these terms completely. Very few people know enough about energy sources and engines to get a deep understanding of these concepts. Your purpose is to add to the information you already have and achieve a moderate understanding of tidal power as an alternative energy source. After all, knowledge is acquired little by little. For example, perhaps you have car trouble and someone tells you the problem is the carburetor. Then another person looks under the hood and says you have a hole in the carburetor. If you are not a mechanic, you might have only a vague idea of what a carburetor is, but you have learned something. The statement "There is a hole in my car's carburetor" is a level of understanding that is deeper than "My car doesn't work."

What do you already know about the following subjects?

the tides

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power plants

hydroelectric power

Before beginning to read, take a look through the exercises that follow the article. This will help you to determine the level of understanding that is expected of you. Keep it in mind as you read.

Prereading Exercise 2: Guessing the Meanings of Key Words from Context

Choose the correct definition for the italicized words according to the context.

1. The farmers had to travel many miles to have their grain ground into flour because there was no river nearby strong enough to power a *mill.*
   a. boat for carrying grain
   b. machine for grinding grain
   c. powerful device for raising water
2. The children who lived on the coast preferred the quieter waters of the *estuaries* to the wild waves of the sea.
   a. fruit trees that grow along the coast
   b. broad sections of the open ocean
   c. arms or inlets of the sea that extend inland
3. Because the level of the river was so low, the *turbines* were not generating enough electricity.
   a. engines powered by the flow of electrons around a series of coiled generators
   b. electronic mechanisms used for controlling the flow of a river to raise or lower its level
   c. motors driven by the pressure of steam, water, or air against a wheel or set of wheels
4. The government study into the feasibility of the project concluded that it was not *feasible* because of its high cost and the great opposition of the public.
   a. possible
   b. designed for a good purpose
   c. planned in a logical way

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Tidal Power

"Lunar energy"—derived from the moon's gravitational pull-combines with the pull of the sun and earth to influence the regular rise and fall of the tides. The force of global ocean tides represents a power equivalent to about three thousand 1,000-megawatt nuclear power plants, according to energy expert M. King Hubbert, formerly of the U.S. Geological Survey. Of this, between 10,000 and 60,000 megawatts could be harnessed.



The tidal power plant built in the Ranee estuary, Brittany, France.

The ancients sometimes used the tide to power mills, and such mills proliferated along coastal areas in nineteenth-century Europe. France built the first commercial tidal electric plant in 1966 in the Ranee estuary in Brittany. There a half-mile-long (800-meter) dam spans the estuary, separating it from the sea. The flood tide is allowed to flow into the estuary, then is trapped behind the dam. At low tide the water is released through twenty-four ten-megawatt turbine generators in the dam. The cost of building such tidal plants is high, but the price of power produced can be competitive with some other forms of hydropower.

The technology of tidal power is essentially the same as that for river hydroelectric power. With rivers, however, the water flows in only one direction, whereas a tidal plant must be adapted for the two-way movement of sea water. A limitation of tidal plants is their inability to generate electricity constantly or on demand—the electricity comes only when the waters rise and fall on their local cycles. An alternative design uses two basins, one higher than the other, both connected by sluices, or channels, to the sea. By carefully regulating the levels in the basins and generating electricity at the barrier between them, power can be produced continuously. The level of output, however, will not always be the same. With either method, some electricity will have to be stored in order to provide a constant supply.

Economics, however, is the crucial limitation of tidal power for now. The U.S. Army Corps of Engineers estimated in 1979 that a 450-megawatt plant could cost $916 million. Although this price is not competitive with costs of other types of power plants, tidal plants last fifty to one hundred years. Thus, if the price of other forms of energy continues to rise, tidal power will grow more attractive. The

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Canadian government has undertaken a $33-million feasibility study of several sites, particularly Shephody Bay and the Cumberland and Minas basins. Studies are also being done at France's Chausey Islands, England's Severn River, South Korea's Asan Bay, the Soviet Union's Gulf of Mezen, and Australia's Walcott Inlet.

Tidal range, the vertical distance between high and low tide, varies widely from place to place. Because of a plant's high construction cost and because of turbine limitations, a tidal range of thirteen to sixteen feet (four to five meters) is the minimum needed to provide enough energy to make it economically feasible, and such a wide range is rare. But a new technique developed by Alexander M. Gorlov, an associate professor of mechanical engineering at Northeastern University in Boston, could drastically lower construction costs and thereby increase the number of possible sites. Gorlov proposes replacing the concrete dam with a flexible reinforced plastic barrier that could be raised or lowered. The flow of water would drive an air-compression piston, and the compressed air could be used immediately to drive an air motor to generate electricity or store it for later use. Gorlov claims that his method requires a tidal range of only seven feet (two meters) to be feasible, and he is currently investigating possible sites for a pilot plant in Maine.

Engineers in many places are attempting to develop "low head" turbines that could generate power from the flow of water that is only a few feet higher than the turbine. These turbines, while aimed at river hydropower, would be ideal for tidal power.

The environmental impact of tidal power plants has not yet been fully determined. The ecology of coastal basins is complex, and the effects of early plants will have to be studied closely. Also, the dam could conceivably alter the tidal range in adjacent areas and even reduce the water flow it is supposed to tap.

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The United States began construction of a tidal power plant in Maine's Cobscook Bay in 1935, but Congress cut off funds and the plant was never finished. According to U.S. Army Corps of Engineers calculations, the annual cost of the facility over a one-hundred-year life would have been $2.4 million. If it had been completed as planned, the plant would today be producing electricity at one cent per kilowatt-hour (compared to the 1980 New York City price of ten cents). Considering the high price of fossil fuel such as coal and oil, the hazards of carbon dioxide in the atmosphere, and the drawbacks of nuclear power, we can expect the tide to extend its power far inland in the future.

Kevin Finneran

Recalling Information

Choose the best way of finishing each statement, based on what you have just read.

1. The regular rise and fall of the tides is influenced by "lunar energy"—derived from the moon's gravitational pull-combined with the pull of the:
   a. sun and stars
   b. moon and sun
   c. sun and earth
   d. planets and sun

2. The use of the tide to produce power for work:
   a. is a completely new idea that has yet to be tried
   b. has been around since ancient times
   c. began in France several decades ago
   d. began at the turn of the century in Europe

3. The technology of tidal power is essentially the same as that for river hydroelectric power except for one major difference, which is that:
   a. rivers dry out but tides do not
   b. rivers flow in only one direction
   c. tidal plants use salt water
   d. tidal plants will not have to store electricity

4. Tidal power is not being used extensively now primarily because:
   a. it is too new
   b. it is unreliable
   c. it is too expensive
   d. it is unsafe

5. The vertical distance between high and low tide is called the:
   a. tidal range
   b. turbine limitation
   c. crucial basin
   d. straight measure

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6. Gorlov, a mechanical engineer, claims one way of drastically lowering construction costs of tidal plants is to:
   a. build three plants next to one another and develop a complex interrelated system of air-compression pistons
   b. build two basins, one higher than the other, both connected to the sea by concrete dams
   c. use a flexible plastic barrier that would control the flow of water and allow it to drive an air motor
   d. discontinue federal funding for conventional energy sources and thus force the issue

7. If the Maine tidal power plant had been finished in 1935:
   a. it would have been a financial success
   b. it would have been a financial failure
   c. it would have caused dramatic changes in the ecological balance
   d. it would not have worked

Making Inferences

Write V (valid) in front of the statements that express valid inferences that can be made from the article and I (invalid) in front of those that are invalid—that is, that cannot be inferred from the article. Be ready to support your choices with specific information or quotations from the article.

1._____The conditions needed for generating electricity from tidal power seem to be present only in Europe.

2._____In determining the economic feasibility of an energy source it is necessary to consider long-range costs as well as immediate costs.

3.___One great advantage of tidal power is that it does not cause any damage to the environment.

4._____There is currently a lot of interest in tidal power on the part of governments and business.

5._____Tidal power will probably play a major role as an energy source in the near future.

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Talking It Over

1. What factors must be considered by governments or business when deciding what energy source to use?
2. Besides tidal power, what other energy sources are used to produce electricity? Which of these energy sources is most commonly used at present? Why? In what ways would tidal power be better than this source? In what ways would it be worse?
3. Some people believe that we could cut down our need for new energy sources by leading simpler lives. What are some ways in which we could do this? Do you think this is a possible solution to the energy shortage? Why or why not?

Using a Study Aid to Answer Oral Questions

Make an outline or study map (see pages 170 and 147, 225, 226) of the article on tidal power. Then make up two questions about the information given in the article. Three members of the class will be called upon to go to the front of the room and play the role of a group of experts who have just made a study about the feasibility of tidal power. The rest of the class will ask them the questions they have prepared. The "experts" should use their outlines or study maps to help them answer the questions. After a few minutes, a new group of "experts" will take their place.

Interpreting a Chart

Skim the following chart. Then, based on the information presented there, give the best answer you can to the questions that follow it. Scan for information as needed.

ANNUAL PER CAPITA]ENERGY CONSUMPTION

(Given in coal equivalents based on consumption of ;oal, lignite, petroleum products, natural gas, hydro and nuclear power)

	Kilograms	Pounds
Algeria	729	1,607
Belgium	6,049	13,338
Brazil	731	1,612
Cuba	1,225	2,701
France	4,380	9,658
India	218	481
Iran	1,490	3,285
Italy	3,284	7,241
Mexico	1,229	2,710
Nigeria	94	207
Portugal	1,050	2,315
Sweden	6,046	13,331
United States	11,554	25,477
USSR	5,259	11,596
Zaire	62	137
Zambia	548	1,208

Source: U.S. Department of Commerce, *Statistical Abstract of the United States,* 1979.

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1. What do the numbers on this chart represent?
2. On which continent does it seem that the smallest amount of energy is consumed?
3. On which continent does it seem that the most energy is consumed?
4. What inference could you make about the standard of living in India compared to that in Italy?
5. What inference could you make about the need for population control in rich countries as a means of conserving world energy supplies?

TIMED READING

Steven Weinberg

THE FIRST THREE MINUTES

What happened during the first three minutes of the universe? Believe it or not, physicists today have an actual model of this, not based simply on wild speculation and fantasy but on certain pieces of hard evidence, though of course no one can be entirely sure what happened. Take, for example, the theory of the atom, which was also based on the mathematical constructs of physicists and which has proved so productive (both for good and evil). The following excerpt is from the book by Nobel-prize-winning physicist Steven Weinberg.

While Weinberg's style is clear and concise, the topic he addresses is abstract and far away from our everyday life. Unless you have studied a good deal of physics, you will probably find it rather difficult. Here it is important to fix in your mind the *level of understanding* you want. You are not expected to gain a deep or profound understanding of this selection—only to be able to correctly do the quiz at the end. Don't panic or give up. Instead:

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1. Go directly to the quiz at the end to see what you are being asked to learn. Keep these questions in mind as you read.
2. Read the selection straight through without stopping, even if there are parts you think you do not grasp at all.
3. Return to the quiz and answer what you can, then look back in the reading (using scanning techniques) for the other answers. Guess at those you are not sure of.

Apply these steps now and at other times when you are quizzed on very abstract materials. You may be surprised at how much

you learn. Try to finish both the reading and the quiz in ten minutes.

The First Three Minutes

In the beginning there was an explosion. Not an explosion like those familiar on earth, starting from a definite center and spreading out to enguif more and more of the surrounding air, but an explosion that occurred simultaneously everywhere, filling all space from the beginning, with every particle of matter rushing apart from every other particle.

At about one-hundredth of a second, the earliest time about which we can speak with any confidence, the temperature of the universe was about a hundred thousand million (10^{11}) degrees Celsius. This is much hotter than in the center of even the hottest star—so hot, in fact, that none of the components of ordinary matter, molecules, or atoms, or even the nuclei of atoms, could have held together. Instead, the matter rushing apart in this explosion consisted of various types of the so-called elementary particles, which are the subject of modern high-energy nuclear physics.

For the present, it will be enough to name the particles that were most abundant in the early universe. One type of particle that was present in large numbers is the electron, the negatively charged particle that flows through wires in electric currents and makes up the outer parts of all atoms and molecules in the present universe. Another type of particle that was abundant at early times is the positron, a positively charged particle with precisely the same mass as the electrons. In the present universe, positrons are found only in high-energy laboratories, in some kinds of radioactivity, and in violent astronomical phenomena like cosmic rays and supernovas, but in the early universe the number of positrons was almost exactly equal to the number of electrons. In addition to electrons and positrons, there were roughly similar numbers of various kinds of neutrinos, ghostly particles with no mass or electric charge whatever. Finally, the universe was filled with light. This does not have to be treated separately from the particles—the quantum theory tells us that light consists of particles of zero mass and zero electrical charge known as photons. To describe the light that filled the early universe, we can say that the number and the average energy of the photons was about the same as for electrons or positrons or neutrinos.

These particles—electrons, positrons, neutrinos, photons—were

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continually being created out of pure energy and then after short lives being annihilated again. Their number therefore was not preordained but fixed instead by a balance between processes of creation and annihilation. From this balance we can infer that the density of this cosmic soup at a temperature of a hundred thousand million degrees was about four thousand million (4×10^9) times that of water. There was also a small contamination of heavier particles, protons and neutrons, which in the present world form the constituents of atomic nuclei. (Protons are positively charged; neutrons are slightly heavier and electrically neutral.) The proportions were roughly one proton and one neutron for every thousand million electrons or positrons or neutrinos or photons.

As the explosion continued, the temperature dropped, reaching thirty thousand million (3×10^{10}) degrees Celsius after about one-tenth of a second; ten thousand million degrees after about one second; and three thousand million degrees after about fourteen seconds. This was cool enough so that the electrons and positrons began to annihilate faster than they could be recreated out of the photons and neutrinos. The energy released in this annihilation of matter temporarily slowed the rate at which the universe cooled, but the temperature continued to drop, finally reaching one thousand million degrees at the end of the first three minutes. It was then cool enough for the protons and neutrons to begin to form into complex nuclei, starting with the nucleus of heavy hydrogen (or deuterium), which consists of one proton and one neutron. The density was still high enough (a little less than that of water) so that these light nuclei were able to assemble themselves rapidly into the most stable light nucleus, that of helium, consisting of two protons and two neutrons.

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At the end of the first three minutes, the contents of the universe were mostly in the form of light, neutrinos, and antineutrinos. There was still a small amount of nuclear material, now consisting of about 73 percent hydrogen and 27 percent helium, and an equally small number of electrons left over from the era of electron-positron annihilation. This matter continued to rush apart, becoming steadily cooler and less dense. Much later, after a few hundred thousand years, it would become cool enough for electrons to join with nuclei to form atoms of hydrogen and helium. The resulting gas would begin under the influence of gravitation to form clumps, which would ultimately condense to form the galaxies and stars of the present universe. However, the ingredients with which the stars would begin their life would be just those prepared in the first three minutes.

Steven Weinberg

Comprehension Quiz

Choose the best way of finishing each statement, based on what you have just read.

1. How was the explosion that occurred at the beginning of the universe different from the explosions we know about?
   a. it started from a definite center and spread out in all directions
   b. it had no definite beginning moment
   c. it happened at the same time everywhere throughout space
2. What is the earliest time about which physicists can speak with some confidence?
   a. the first one-millionth of a second
   b. the first one-hundredth of a second
   c. the first half-second
3. What matter existed at this earliest time?
   a. electrons, positrons and neutrinos, among others
   b. only photons
   c. the same molecules and atoms we have today
4. What filled the universe then?
   a. water
   b. darkness
   c. light
5. How dense was matter in this earliest time?
   a. extremely dense—far more so than water
   b. not very dense—far less so than water
   c. just about as dense as water is today
6. As the explosion continued, what was happening to the temperature?
   a. it was increasing
   b. it was decreasing
   c. it stayed roughly the same
7. At the end of the first three minutes, what two elements existed (though only in the form of nuclear material) that would later clump together to form the galaxies and stars?
   a. iron and plutonium
   b. gold and silver
   c. hydrogen and helium
8. Which of the following descriptions best fits the model proposed by Weinberg?

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a. the universe has always been just about as it is now, with matter continuously entering to fill in the gaps and maintain a *steady state*

b. the universe began at a definite moment with a huge explosion of matter outward in all directions, in a sort of *big bang*

c. the universe started as a huge dark mixture of matter that has been constantly moving together as the temperature rises to form a kind of *hot mixture*

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CHAPTER 11
MEDICINE



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This chapter begins with the new and ends with the old. Some of the newest, most sophisticated machines of modern medical technology are described first, along with the benefits and problems they imply for both patients and doctors. Then a cancer patient describes in a poem how she felt undergoing treatment in one of these machines. Next, a quick look is taken at the unusual experiment presently being tried by Nigeria in its attempt to blend and harmonize East and West, traditional folk medicine and modern methods of treatment. The fourth selection then delves into the past to uncover the roots of medical knowledge in the ancient traditions and practices of Islamic culture. Finally, a timed reading on a new wonder drug tells of the new hope for patients in need of organ transplants that has come from an unlikely place: dirt.

SELECTION ONE

Jack Fincher

NEW TOOLS FOR MEDICAL DIAGNOSIS

Gone are the days when a doctor made a diagnosis of the medical condition of his patient simply by placing a stethoscope on a patient's heart and asking him to stick out his tongue and say "Ah. .. ." High technology has entered medicine, and many people wonder if the results are always good or rather a "mixed blessing." The following magazine article describes some of the newest of the complicated machines that are now used in many modern hospitals and discusses how they are affecting the practice of medicine.

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Prereading Exercise: Determining the Level of Understanding Expected of You

Look at the photos of the large medical machines now being used for diagnosis in the article and at the beginning of the chapter, Who do you think understands them thoroughly? A doctor? An engineer? A mechanic? Or perhaps only a group of these people together? Before reading an article like this one, which you know will contain technical terms and complicated explanations, remind yourself of your purpose: to gain *some*—not all—new information on the subject. List the four types of machines shown and what you can figure out about them from the photos and captions.

1.

2.

3.

4.

Now try to predict the kinds of information you will be expected to acquire from this article. Cross out those questions below whose answers you think you would *not* need to know given the level of understanding you want from this article.

1. Exactly how does each of these machines work?
2. In general, why are they used?
3. What important differences are there among the machines?
4. What is the size, shape, and cost of each one?
5. What benefits and problems do they bring to medicine?

Read to find out the answers to those questions you have not crossed out. Skip over sections you do not understand—just as a native English reader would. (You can always go back to these later, if necessary.)

New Tools for Medical Diagnosis

With the appearance in medicine of machines that once only physicists and computer scientists used, doctors now have the power to look at our bodies and diagnose our ills as never before. The diagnostic techniques seen on these pages are examples of such devices. Some are already in use at medical centers; others are experimental devices that patients may encounter in the years to come. But no one knows which will become the stethoscopes of tomorrow, because high costs may keep some of them from widespread distribution.

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Physicians are excited about some of these diagnostic techniques because they offer a less invasive way to probe the interior of the body. They may replace traditional procedures such as inserting a catheter (a flexible, floating tube) into the coronary artery, or removing a piece of living tissue to perform a biopsy, a chemical analysis of body tissue. Imaging systems make possible the study of *"in vivo* biochemistry—measurement of the biochemistry of the living body," explains Thomas F. Budinger of the University of California's Lawrence Berkeley Laboratories.

A second advantage is that physicians "can get an image of the



A PET scan underway.

structure of the body to identify anatomical abnormality," says Oleg Jardetzky, director of Stanford University's Magnetic Resonance Laboratory. These powerful diagnostic tools are already a great help to medical researchers and are replacing older, more dangerous, less accurate diagnostic methods.

An example of one of the newest and most experimental technologies sits in the Donner Labs at Berkeley. The Positron Emission Tomograph (PET scan) penetrates the human body's metabolism by recording traces of "nuclear annihilations" in body tissue.

A patient receives short-lived radioactive tracers, combined with chemicals the body normally uses. The tracers emit particles called "positrons" that coilide with electrons less than a few millimeters away and produce bursts of energy that detectors record. As these collisions continue repeatedly, the detectors slowly build up a map of just where the tracer chemical is or is not being metabolized. The tracers can measure blood flow and volume, oxygen and protein metabolism, and other functions.

Although it is still an experimental device, the PET scanner is already being used clinically to test for Alzheimer's disease (a form of progressive degeneration of the brain), to locate the malfunctioning part of an epileptic's brain, and to evaluate a stroke's effects.

PET's greatest use, says Thomas Budinger, may be in the clinical study of disease, to determine how well patients respond to certain treatments. "PET," he says, "is used to study these diseases rather than to treat individual patients."

Those who favor another experimental technique, Nuclear Magnetic Resonance (NMR) spectroscopy, believe they have more to offer than the PET scan. At such medical centers as New York Hospital-Cornell Medical Center in New York City and University of California Medical School, San Francisco, NMR has shown promise in detecting brain tumors and diagnosing multiple sclerosis and diseases of the kidney, liver, pancreas, and prostate gland.

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A NMR scan about to begin.



In the NMR technique, the patient is placed in an extremely powerful magnetic field, 40,000 times that of the earth's. "The magnet is strong enough to jerk a two-pound wrench right out of your hand," says Alexander Margulis, chairman of radiology at San Francisco. The New York Hospital facility has one of the most powerful magnets of any machine in the United States. Yet the magnetic fields are not thought to harm the human body at all. In an NMR scan, encircling coils pulse the body with radio waves. Different kinds of atoms in the body reemit radio signals in response, but atoms of hydrogen, common throughout in the form of water, respond especially strongly.

The signals alone provide information about the body's biochemistry. In addition, some say the computer can process the signals



An expectant mother undergoing an ultrasound examination.

to form images of the body with even greater clarity than PET scans. NMR does not work well only where motion can blur the image, such as in the bowel or the coronary artery. "NMR clearly has wider applications than any of the other techniques," says Stanford's Jardetzky. "It will replace PET scans since both are doing essentially the same thing—testing chemicals in the body."

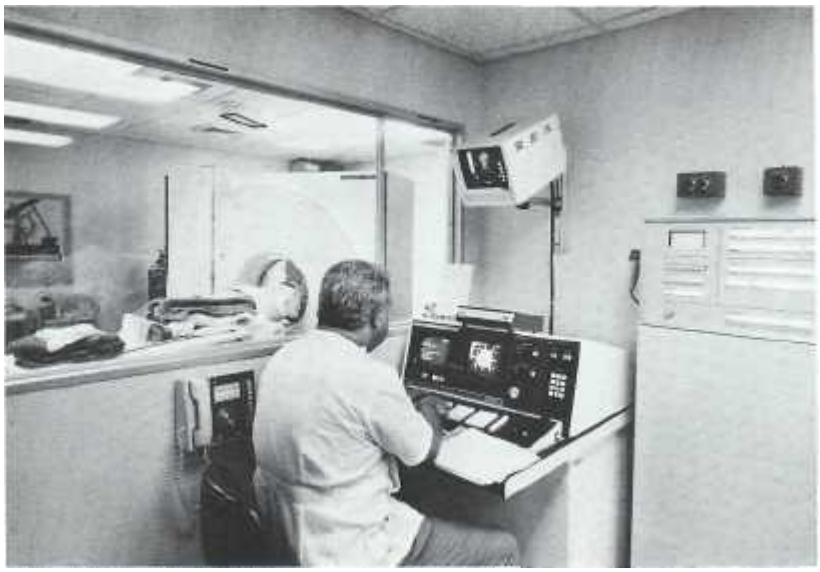
Not far south of San Francisco, Barbara A. Carroll of Stanford University Medical Center's diagnostic radiology department is one of those combining ultrasound with computer processing to screen patients quickly, safely, and inexpensively for disease.

By combining ultrasound, which makes images of the body's interior using high-frequency sound waves, and processing on a computer, doctors can make "movies" of motions in the body that ultrasonic still pictures would miss. The computer processes ultrasound into images thirty times a second.

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"The way things move or don't move can often tell us when something's wrong," says Carroll. "At thirty frames a second there's a lot more information about the flow of blood and urine or bowel and bladder contractions than on a single picture."

Computers have not only made these new medical technologies possible but have greatly enhanced an old one. Paired with a computer, the X-ray is looking at the body in ways it never has before. Modern CAT scanners (Computer Assisted Tomography) use computer processing and multiple X-ray beams to produce three-dimensional images of the body. Says William Brody of the Stanford University Medical Center, "The earliest CAT scanners narrowed the X-ray source down to a pencil-sized beam, passed it through the brain in one plane from every possible direction, then put that information



A CAT scan technician making a brain scan of a patient.

into a computer. And the computer can construct a picture of the plane. It essentially cuts the brain in two. The first scanner twelve years ago took fifteen minutes to collect the information and twelve hours to reconstruct the image. Now scanners with multiple X-ray beams routinely acquire the same data in one second and reconstruct the image in thirty."

These new machines are giving physicians unprecedented power to understand the human body. But the more physicians use magnetic fields, radiation, and sound waves to probe our sick bodies as though we were malfunctioning devices, the more they may appear to be technicians rather than healers.

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The widespread use of these devices may be costly both in economic and social terms. "The field is moving so fast," says Richard Riegelman of George Washington University Medical Center, "and in so many new directions that no one can predict to what uses they will be put tomorrow." While some of these applications may save dying patients by leading to the proper choice of a treatment, an improper, untested use of these machines might lead to the wrong diagnosis, a mistake that could cost a patient's life. And for everyone, these machines will probably mean increased health care expenditure—some cost in the million-dollar range, not including supporting facilities, and require teams of specialists to operate them.

The most wrenching result of heavy reliance on high-technology medicine might be the further loss of personal contact between doctor and patient. "Medicine," observes Lewis Thomas in *The Youngest*

Science, "is no longer the laying on of hands—it is more like the reading of signals from machines."

The years to come may see the further mechanization of medicine, but ironically, the high cost of the machinery may have strengthened an opposing trend as well. "I think we've begun to discover the less technological aspects of medicine," says Ronald Bayer of the Hastings Center in New York. "One of the reasons for this trend is that we aren't able to afford all the high technology anymore." Thus the choices facing the health care system might ultimately help renew the human bond between doctor and patient.

Jack Fincher

Reviewing Study Skills

Before doing the exercises, make an outline or a study map of the article. Compare it with those of your classmates. Use your study aid to help you with the following exercises.

Recalling Information

Choose the best way of finishing each statement, based on what you have just read.

1. Machines such as the PET and CAT scanners, the NMR, and ultrasound are mainly used for:
   a. surgical operations
   b. diagnosing illnesses
   c. treating patients
2. They are better than the traditional procedures of inserting tubes or cutting out pieces of living tissue because:
   a. they cause almost no pain or damage
   b. they are much less expensive
   c. they are easier to administer
   d. all of the above
3. In order to enable doctors to see inside the patient's brain, heart, eye, or other part of the body, these machines use:
   a. X-rays
   b. radiation
   c. sound waves
   d. magnetic fields
   e. all of the above
   f. three of the above

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4. An essential element in the use of these machines is the:
   a. telephone
   b. computer
   c. microscope

5. The only one of these machines that was mentioned as operating inexpensively was the one Barbara Carroll was using to screen patients for disease. This was:
   a. the PET scanner
   b. the CAT scanner
   c. the NMR
   d. ultrasound

6. From the point of view of the doctor, one danger posed by these machines is that he or she may appear to be more of a(n):
   a. healer
   b. technician
   c. expert
   d. professional

7. From the point of view of the patient, one danger posed by these machines is that their complexity could lead to improper use. This might then:
   a. cost the patient his or her life through a misdiagnosis
   b. increase the patient's dependence on one single doctor
   c. prevent the patient from fully understanding the treatment

Identifying Important Differences

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Can you match each name to the correct description? Can you think of any mnemonic device to keep track of which machine uses which method?

1. CAT scanner
2. ultrasound
3. PET scanner
4. NMR

a. a very new technique that uses radioactive tracers attached to chemicals
b. a device that places a patient in a very powerful magnetic field
c. the rather old technology of the X-ray, combined with a computer
d. uses sound waves, teamed with a computer

Making Inferences

Read the following excerpts. Then answer the questions, which involve making inferences.

1. "The most wrenching result of heavy reliance on high-technology medicine might be the further loss of personal contact between doctor and patient. 'Medicine,' observes Lewis Thomas in *The Youngest Science,* 'is no longer the laying on of hands—it is more like the reading of signals from machines.'"

   What can you infer from this passage about the author's attitude toward modern medical progress?

   "'NMR clearly has wider applications than any of the other techniques,' says Stanford's Jardetzky. 'It will supplant PET scans since both are doing essentially the same thing—testing chemicals in the body.'"

   What can you infer about the attitudes of some of the doctors and researchers?

3. "The first scanner twelve years ago took fifteen minutes to collect the information and twelve hours to reconstruct the image. Now scanners with multiple X-ray beams routinely acquire the same data in one second and reconstruct the image in thirty."

   What can you infer about the rate of change in high-technology medicine?

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Using a Study Aid to Give an Oral Description

Your teacher may ask you to go before the class and describe one of the medical machines described in the article. Use the appropriate part of your outline or study map to help you do this.

Talking It Over

1. What do you see as the benefits of the new medical technology?
2. What problems are there with it? Which problem do you think is the most serious?
3. In your opinion, will the doctor-patient relationship get better or worse? Why?

SELECTION TWO

Amy Azen

CANCER THERAPY

Machines, computers, technology—all are being used to help diagnose and cure a patient's ills. But how does the patient feel while going through the process of being tested or treated by these complicated devices? Is it dehumanizing? Frightening? Strange? The following poem was written by a woman who underwent successful cobalt therapy for cancer.

Cancer Therapy

The iron door clanks shut
On creaky metal hinges,
And I am utterly alone
As in my mother's womb.
Laser
Danger
Radiation

The cobalt machine clicks.
I hear a humming sound
And feel . . . nothing.
Minutes evaporate.

The hinges slowly recoil,
The iron door creaks open
To admit humanity
And laughing voices:

I am born again.

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Talking It Over

1. What are the woman's feelings while undergoing therapy?
2. What does the line "I am born again" mean?
3. In modern medicine is there too much emphasis on technology and too little on comforting the patient? Explain.

SELECTION THREE Barbara Gullahorn-Holecek

BEST OF BOTH WORLDS

Why is it that when you talk to a person with definite beliefs in the superiority of one culture, it almost always turns out that this "superior" culture is his or her own? It is very rare to find people open-minded enough to admit that other cultures can bring them new benefits. That is why the experiment now taking place in Nigeria, with encouragement from both the national government and WHO (the World Health Organization), is so special. Instead of conflict and competition, there is an attempt to create harmony and cooperation between two very different medical traditions.

Prereading Exercise: Distinguishing Shades of Meaning

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If you were in Nigeria and you saw one native helping another who was sick, you could describe the first one with one of the following three terms. Look at them and tell what picture comes to your mind for each.

witch doctor
medical practitioner
traditional healer

1. Which of these do you think is a flattering term?

2, Which is a pejorative (negative) term?

3. Which is a neutral term?

4. After looking at the title and photo, which term do you think will be used in the article? Why?

5. What contribution do you think native medicine can make to Western medicine? And vice versa?

Read to see if you are right.

Best oi Both Worlds

In our culture, we are accustomed to sophisticated prescription drugs containing a variety of chemical ingredients. Few of us realize that many of the drugs we use today originally came from forests or gardens instead of large pharmaceutical laboratories. Valerian tea is a sleep inducer from the valerian root; digitalis, used in cases of congestive heart failure, comes from the foxglove plant; and oral contraceptive drugs are extracted from a vegetable: the black yam.

The revolution taking place in Nigeria today is one of culture mix rather than clash—experimental establishment of a dual health care

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Chief Fagbenro.



system that draws from tradition and modern science and offers the people of the most populous nation in black Africa the best of both worlds.

Under British colonial rule, the practice of traditional medicine was discouraged or sometimes forbidden in Nigeria. Traditional healers were called "witch doctors" by the colonizers, who viewed their medical practices as inferior. Since independence, the Nigerian government has decided to give these healers official recognition. Although discouraged, the practice of traditional medicine never died out during the colonial era. The government's current position is a recognition of reality—that healers serve a great majority of the Nigerian people. Nigeria's experiment is a chance to see whether developing countries can make use of a great resource: traditional doctors who have inherited centuries of folkloric knowledge about medicinal drugs.

Traditional healers practice a rich and ancient art based on an oral literature. It is a medical lore that uses herbs and roots from which are derived basic drugs, as in the West, but that has another vital element: the spiritual. It is not uncommon in Nigeria to follow up a hospital treatment with treatment by a priest, for the equally important cure of the soul.

The members of Nigeria's National Herbalist Association are pooling their knowledge about the medicines they use and the dosages they prescribe. Under colonial rule, these healers practiced in great secrecy. Now they are eager to share and compare their knowledge—and to cooperate in the modern research being carried out to systematize it. Chief Fagbenro, a healer and an Ifa priest, is an excellent advertisement for his own cures. At seventy years old, he has had to go to a doctor of modern medicine only once, when one of his legs had to be amputated. He's quite willing to admit the value of surgery, but prefers to live by the ancient traditions. He believes that traditional medicine has the advantage of using nature's own cures to conquer human ailments. "But," he points out, "all medical practices have their merit."

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The new collaboration between the herbalist and the modern doctor has uncovered previously unrecognized benefits of traditional cures. The fagara root, for example, has long been used in Nigeria to clean the teeth. While testing the root chemically, Western-trained scientists discovered that, brewed and drunk like tea, it also appears to combat the genetic blood disease sickle-cell anemia.

Scientific methods are also classifying and verifying the healing properties of other herbal remedies. The oldenlandia root, used by traditional healers to accelerate labor contractions in pregnant women, has been tested in the laboratory by university-trained

scientists, who have used it to produce similar contractions in pregnant rats. A tea brewed from the leaves of the neem tree combats malarial fevers. Scoopa, known in the West as redberry, helps cure jaundice. Alukrese, a creeping plant, is used to prepare the Nigerian equivalent of iodine. Its leaves, when crushed and applied to an open wound, stop blood flow and kill bacteria. And oruwa—whose botanical name is sincona—is mixed with water to form a healing potion that has been found to combat yellow fever.

In the marriage of traditional and Western medicine, neither partner reigns superior. Where one fails, the other succeeds. One of the strengths of traditional medicine is its spiritual emphasis. Western doctors have recently begun to acknowledge the importance of psychological factors in maintaining health. But the Nigerians have understood this connection for ages. Traditional Nigerian healers view physical illness as an outward manifestation of a spiritual problem.

While traditional medical practitioners like Chief Fagbenro are helping Western scientists catalogue an international stock of drugs, Western medicine makes contributions to the promotion and maintenance of public health in Nigeria in areas previously unappreciated by traditional practice. Concepts of patient hygiene and public sanitation to provide a cleaner environment are crucial to Nigeria's public health policy. Although taken for granted in industrial nations, the keeping of written records and the immunization of children against common diseases are becoming as important to Nigerian mothers as thanking the gods in song.

Barbara Gullahorn-Holecek

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Recalling Major Points of Contrast

This article contrasts two types of medicine: traditional Nigerian and modern Western. Indicate which of them is described by each of the following statements by writing T (traditional) or M (modern). In some cases it might be both or neither.

1. uses drugs that originally came from herbs and roots
2. serves a great majority of the Nigerian people
3. almost died out during the colonial era
4. concerns itself with a spiritual as well as a physical cure
5. uses tea brewed from leaves to combat malarial fevers

6. stops the blood flow from an open wound and kills bacteria by applying a remedy consisting of crushed leaves
7. includes a medicine that fights yellow fever
8. has emphasized the importance of psychological factors for ages
9. has recognized the importance of cleanliness to public health for a long time
10. emphasizes the importance of written records and of immunizing children against common diseases

Paraphrasing Key Ideas

Restate the main ideas expressed in each of the following sentences in your own words, as simply and clearly as possible.

1. "The government's current position is a recognition of reality—that healers serve a great majority of the Nigerian people."

2. "Traditional healers practice a rich and ancient art based on an oral literature."

3. "The members of Nigeria's National Herbalist Association are pooling their knowledge about the medicines they use and the dosages they prescribe."

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4. "Chief Fagbenro, a healer and an Ifa priest, is an excellent advertisement for his own cures."

5. "In the marriage of traditional and Western medicine, neither partner reigns superior."

Identifying and Evaluating the Point of View

1. How would you describe the point of view of the author toward the native practitioners?

2. What kinds of facts or opinions might have been included by an author with an opposing point of view?

3. Would you have liked the article better if the author had also included some ideas from the opposing point of view and then disproved them? Why or why not?

Talking It Over

1. What do you think is the most important contribution that traditional medicine (from many cultures) can make to modern medicine? What about the reverse?
2. The article states that Chief Fagbenro believes in using nature's own cures to conquer ailments, then quotes him as saying, "But all medical practices have their merit." What inference can you make about Chief Fagbenro from this statement?
3. If you became ill while visiting Nigeria, would you go to a healer or a Western doctor? Why?
4. What do you think of the following proverbs related to health? Can you think of any **from** your own culture?

Proverbs

An apple a day keeps the doctor away.

Early to bed and early to rise
makes a man healthy, wealthy, and wise.

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SELECTION FOUR Desmond Stewart

THE SCIENTIST-PHILOSOPHERS

A tree does not grow without roots. Much of the basis of modern medical science has its origins in the distant past. The following selection is taken from a book by British writer Desmond Stewart, who has taught literature in Traq and Lebanon and traveled widely in the Middle East. It presents a brief historical glimpse of some of the key personalities of the Muslim world of the Middle Ages, who have left an indelible imprint on the art and science of medicine.

Prereading Exercise: Anticipating the Reading

The presence of the past is all around us, but few North Americans realize how much of it we owe to the ancient medieval world of the Muslims. From common words we say every day, such as *zero, alcohol, almanac,* and *algebra,* to the geometric decorations on our finest carpets and tiles, to the system of numbers we use (and thank goodness that we don't have to use those cumbersome roman numerals!), this influence touches us. Do you know why the Muslims so excelled in the creation of intricate geometric designs instead of trying to portray animals and human figures? This relates to one of the instructions in the Koran. Can you guess what it is?

One of the greatest legacies of Islam to the world is in the field of medicine. Which of the following aspects of medicine do you think were pioneered or improved upon by Muslims in the ninth and tenth centuries? Cross out the ones that were not.

- cranial and vascular surgery (surgery on the skull and veins)
- the differentiation (description which shows differences) of a specific disease by its symptoms
- mobile clinics
- medical libraries
- CAT scanners
- hospitals with dispensaries (shops that give out drugs) and psychiatric wards
- the removal of cataracts from the eye
- cancer operations

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pharmacies that filled prescriptions

examinations for medical specialists before being allowed to practice

the emphasis on hygiene (cleanliness) to prevent illness

Read to find out if you are right.

The Scientist-Philosophers

Modern human beings—dependent as they are on the drugs of the chemist and the skills of the physician, on the reckoning of the computer and the predictions of the economic planner—owe more of a debt than they might suspect to the Islamic scientists of the Middle Ages. Between the ninth and fourteenth centuries, Muslim chemists, physicians, astronomers, mathematicians, geographers, and others not only kept alive the disciplines of Greek science but extended their range, laying and strengthening the foundations on which much of modern science is built. Many scientific terms with Arabic roots, from *algebra* to *zenith,* reflect to this day Islam's activity in fields where knowledge was widened and human suffering decreased.

Although the Muslims excelled in many branches of science, some of their most significant contributions were in medicine. Before the great intellectual awakening, Arab medical knowledge had been largely limited to desert superstitions, including the use of magic, talismans and protective prayers, and a few primitive remedies.

Starting in the eighth century, the Muslims gradually developed a more sophisticated approach to medicine. The main impetus came from the Persian medical school at Jundishapur, whose teachings were based primarily on the Greek practice of treating disease by rational methods. According to tradition, the contact between Jundishapur and the rulers of Islam began in 765, not out of the search

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A Muslim medical consultation scene from the year 1151.

for universal truth, but due to a more urgent and personal reason—a chronic indigestion that troubled Mansur, the founder of Baghdad. The caliph's own physicians had not been able to cure him; in despair, he invited the chief physician of Jundishapur to come to Baghdad and treat him. The physician, a Christian named Jurjis ibn Bakhtishu', succeeded in returning the ruler to health where the others had failed, and as a reward, he was appointed court physician.

Like Jurjis, most of Islam's early medical practitioners were Persian-born, but they spoke and wrote Arabic, the language of scholarship during the Middle Ages. One of the most celebrated of these Eastern physicians was Razi, who lived from 865 to 925. His importance was so great that his colleagues called him "the Experienced." The finest clinician of the age, he has been compared to Hippocrates for his originality in describing disease.

Razi, known in Europe by his Latin name, Rhazes, is said to have written more than 200 books, ranging in subject matter from medicine and alchemy to theology and astronomy. About half the books are on medicine, including a well-known treatise on smallpox. In his discussion of smallpox, Razi was the first to differentiate a specific disease from among many eruptive fevers that attacked man. By giving the clinical symptoms of smallpox, he enabled doctors to diagnose it correctly and to predict the course of the disease. He also recommended a treatment for the ailment that has been little improved on since his time. He urged gentle therapy—good diet and good nursing care, which meant about what it does today: rest, clean surroundings, and keeping the patient comfortable.

While Razi knew nothing about bacteria, the theory of which was not to be discovered until the early seventeenth century, he had an intuitive sense of hygienic principles far ahead of medieval standards. To appreciate his insight, it must be remembered that he lived in a world where contamination and filth were so common as to go almost unnoticed, and infections and contagious diseases cut down millions. Against this unsanitary background, he was once asked to choose the site for a new hospital in Baghdad. To do so, he suspended pieces of meat at various points around the city, and at the location where the meat decomposed most slowly, he recommended building the hospital.

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The crowning work of Razi's career was a monumental encyclopedia in which he compiled Greek, Syrian, Persian, Hindu, and early Arabic knowledge, as well as personal observations based on his own extensive clinical experience. This book offered striking insights for its time and had a wide influence in shaping European medicine.

Great as Razi was, he was at least equaled in stature by another Arabic-speaking Persian Muslim, Ibn Sina, better known in the West

by his Latin name, Avicenna. Called "the Prince of Philosophers" by his contemporaries, he is still recognized as one of the great minds of all time. He lived from 980 to 1037 and wrote some 170 books on philosophy, medicine, mathematics, and astronomy, as well as poems and religious works. He is said to have memorized the entire Koran when he was only ten years old, and at eighteen he was personal physician to the sultan of Bukhara, in Turkestan.

Avicenna's most renowned achievement was the *Canon of Medicine,* an encyclopedia that dealt with virtually every phase of the treatment of disease. Probably no other medieval work of its kind was so widely studied; from the twelfth to the seventeenth centuries it served as the chief guide to medical science in European universities.

Ibn Sina is now credited with such personal contributions as recognizing the contagious nature of tuberculosis and describing certain skin diseases and psychological disorders. Among the latter was lovesickness, the effects of which were described as loss of weight and strength, fever, and various chronic ailments. The cure was quite simple, once the diagnosis was made—to have the sufferer united with the one he or she was longing for. Ibn Sina also observed that certain diseases can be spread by water and soil, an advanced view for his time.

Islamic physicians also helped develop the science of surgery, although it was considered a minor branch of medicine. This art had been largely neglected until the Spanish-born physician Abulcasis wrote about it in the tenth century. Most of his work was based on that of a Greek, Paul of Aegina, and contained illustrations of various surgical instruments and procedures.

Muslim physicians performed many remarkably complex operations for their time, including cranial and vascular surgery and operations for cancer. Avicenna gave them advice on the treatment of the latter disease that would still be timely today—to minister to it in its earliest state and to remove all of the diseased tissue as the only hope of cure. Other operations included delicate abdominal surgery, involving the use of drainage tubes, and the amputation of diseased arms and legs.

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For these operations various anesthetics were administered to render patients unconscious; among them was opium, which was sometimes made more potent by mixing it with wine.

Before a man could practice surgery, he had to have special training and pass tests on his knowledge of anatomy and Galen's writings. In addition, specialists were required to have extensive information about the particular area in which they practiced. Ophthalmologists, for example, had to undergo an examination about their detailed knowledge of the eye, as well as be able to mix certain compounds

to treat various eye ailments. Islamic physicians were especially skilled in treating eye diseases, perhaps because such ailments were so widespread in the Middle East. They wrote textbooks on ophthalmology and invented an ingenious method of operating on soft cataract of the eye, using a tube to suck out the fluid that filled the capsule of the eye lens; this method was used for several centuries before it was replaced by more modern techniques.

In the treatment of other sickness with drugs, the Muslims were equally progressive. Most Islamic physicians prepared their own compounds, but Baghdad had pharmacies that filled prescriptions much as present-day drugstores do. These pharmacies sold a wide range of remedies made from animal and plant products and even more sophisticated inorganic compounds like copper sulphate, which acted as a binding substance to help heal open cuts by drawing the tissues together.

Doctors who were found qualified to practice treated many of their patients in hospitals much as modern physicians do. As early as the start of the ninth century, Baghdad had its first hospital, probably copied from the one connected with the medical school at Jundishapur. Soon other hospitals began to spring up, and before long, records indicate that there were thirty-four throughout the Muslim world. Some of these hospitals must have been surprisingly modern; in the larger cities they had different wards for the treatment of different illnesses, and special quarters for the insane. They also had outpatient departments for the immediate treatment of minor injuries, while patients with more serious complaints were admitted to a ward.

One of the most important parts of an Islamic hospital was its dispensary, which provided virtually every kind of remedy then known. Hospitals also had their own medical libraries for the use of doctors and their students. Physicians visited their patients and prescribed medications. In the eleventh century, traveling clinics appeared, to serve areas beyond the hospitals' reach. These were moved from place to place on the backs of camels and were generally run by one or more doctors. When they stopped in a village or remote spot, they erected a tent, examined the sick, and dispensed the necessary medications. These mobile clinics were also used in time of epidemics when hospitals were filled to overflowing.

Desmond Stewart

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Recalling Information

Choose the best way of finishing each statement, based on what you have just read.

1. Before the great intellectual awakening in the eighth century, Arab medical knowledge was largely limited to:
   a. desert superstitions
   b. practices of the Greeks
   c. drugs imported from Persia

2. In the ninth century Razi, "the Experienced," was the first to describe specific distinguishing symptoms of a disease. This was important because doctors could then:
   a. write books about it
   b. diagnose it and predict its course
   c. relate it to many other eruptive fevers

3. Razi wrote an enormous encyclopedia that included medical knowledge from:
   a. Greece and India
   b. Persia and Syria
   c. his own clinical observations
   d. all of the above

4. Ibn Sina, "the Prince of Philosophers," was known in the West as:
   a. the sultan of Bukhara
   b. Aristotle
   c. Avicenna

5. One of Ibn Sina's views that was advanced for his time was that certain diseases:
   a. could be caused by love
   b. are spread by water and soil
   c. can result in loss of weight

6. Medieval Muslim surgeons performed operations for all of the following problems except:
   a. cancer
   b. heart
   c. eye
   d. vascular
   e. abdominal

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7. Islamic doctors were especially good in the field of:
   a. psychiatry b. cardiology c. ophthalmology

8. Ninth-century Muslim hospitals were:
   a. quite similar in organization to modern ones
   b. simple tents with all patients placed together
   c. nonexistent; doctors made house calls instead

9. In the eleventh century, the Muslim solution to caring for patients in remote areas was:
   a. the creation of pharmacies in all small towns and oases
   b. traveling clinics that moved on the backs of camels
   c. an emergency service that brought patients to the doctor's house

Recognizing Historical Significance in Anecdotes

Fortunately, most historians sprinkle historical fact with anecdotes (colorful stories about interesting or amusing events). These are useful memory aids because they generally illustrate or support major ideas that the historian wants to present. Tell what larger idea each of the following anecdotes illustrates.

1. Razi, who lived at the end of the ninth century, suspended a piece of meat at various points around the city in order to select the site for a new hospital.

2. In 765, Mansur, the caliph of Baghdad, was suffering from a painful chronic stomachache and found that his own doctors could not cure him.

3. The brilliant Arabic-speaking Persian of the eleventh century, Ibn Sina, is said to have memorized the entire Koran at the age of ten.

Matching the Illness with the Cure

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If you were a Muslim doctor in the Middle Ages, what would you prescribe for the following medical problems? How many of these remedies are still in use today? Write the letter of the appropriate cure in front of each description.

1. an open wound that is bleeding

2. smallpox, in which the patient develops serious, high fevers

3. lovesickness, which is causing loss of weight and strength

4. . the need for an anesthetic before an operation

5. a soft cataract of the eye

6. cancer

Cures

a. Drink a mixture of opium and wine.
b. Cut out the diseased tissue at the earliest possible stage.
c. Use "gentle therapy": good diet and good nursing care.
d. Suck out the fluid in the lens.
e. Use copper sulphate or other chemicals to draw tissues together.
f. Unite the patient with the object of his or her desire.

Talking It Over

1. In your opinion, which of the accomplishments discussed in the selection is the most impressive? Why?
2. Which do you consider more important for a doctor, intuition or intelligence? Explain.
3. Describe the Muslim hospital of the Middle Ages. In what ways does it seem very modern? What do you think was its most important feature?

TIMED READING

Sharan Begley

CYCLOSPORINE: THE BREAKTHROUGH DRUG

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The following newspaper article is about cyclosporine, an important new "miracle drug." As is usually the case with drugs, this one has since been found to produce harmful side effects in some patients. Nevertheless, cyclosporine has helped many doctors to save lives and ease suffering. Read the article to find out the answers to the following questions:

1. How was cyclosporine discovered?
2. What does it do to the immune system in the human body? (The immune system is the system of chemical defenses in the blood that protect a person from disease by attacking any new or "foreign" element.)
3. What patients does it help?
4. What disadvantages does it have?
5. How effective is it?

Try to read the article, find the answers, and write them down in eight minutes or less.

Cyclosporine: The Breakthrough Drug

Like many pharmaceutical companies, the Sandoz corporation asks employees traveling abroad to bring back rather unusual souvenirs: handfuls of dirt. The Switzerland-based firm knows that such valuable drugs as the antibiotic streptomycin often come from fungi, bacteria, and other microbes living in various types of soil, and in 1970 the company's policy struck paydirt. As Sandoz microbiologists screened soils collected in Wisconsin and Norway, they discovered two kinds of fungi that exuded a substance now known as cyclosporine. It wasn't a particularly good antibiotic, but Sandoz researcher Jean Borel found that it did suppress the immune reaction in the human body, which is responsible for rejecting foreign tissues such as transplants. And even more important, the drug still kept the immune system on alert to prevent infection—a leading cause of death among transplant patients.

Since experimental use of cyclosporine began in the United States in 1979, some 2,000 patients in eleven major transplant centers have received it. One year's supply of the drug, taken in daily oral doses, costs $4,000 to $6,000, but in some cases it may pay for itself by shortening the time patients spend in the hospital. The drug is mixed with olive oil, which carries it across the intestine and into the bloodstream. Although cyclosporine must be taken for life, that is a small inconvenience in exchange for a greater chance of surviving. According to Sandoz, kidney-transplant patients given cyclosporine have more than an 80 percent chance of living through their first year, compared to a 50 percent chance without the drug; for livers, survival zoomed from 35 to 70 percent. And as Stanford University surgeon Norman Shumway told a recent congressional hearing, "there has not been a single instance of clinically diagnosable rejection" of a transplanted heart since he began using cyclosporine in 1980.

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Today cyclosporine is awaiting approval by the Food and Drug Administration for general use. As University of Pittsburgh surgeon Thomas Starzl told the congressional hearings, his liver-transplant patients survive so much better with cyclosporine that the operation "is now considered a service as opposed to an experimental procedure."

Sharan Begley

Comprehension Quiz

Write brief answers to the key questions. Then mark your time. Compare your answers with your classmates'.

1. How was cyclosporine discovered?

2. What does it do to the immune system in the human body?

3. What patients does it help?

4. What disadvantages does it have?

5. How effective is it?

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CHAPTER 12
THE FUTURE



Fortune teller with crystal ball and tarot cards.

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People have always wanted to see into the future, a desire that seems quite impossible. More and more books have been appearing on this theme in recent years, and excerpts from two of them provide us with glimpses of a world without money, with space colonies, and where manufacturing is done on the moon—among other things. These predictions bring up the interesting question of what sort of evidence can be used to form logical opinions about what has not yet happened. The third selection deals with a group that, not content with trying to *see* the future, is instead trying to *make* the future, to build their own style of living and a model for others in a revolutionary form of urban life—in the middle of the Arizona desert. Next comes a short, poignant science fiction story written from, a highly unusual point of view. Finally, a timed reading offers you a new kind of friendship in a futuristic fantasy that might some day turn into fact.

SELECTION ONE

Marvin Cetron and
Thomas O'Toole

ENCOUNTERS WITH THE FUTURE

In recent years a number of books about the future have become best-sellers in the United States, some of them more serious than others. Short of magic, how can anyone talk with authority about the future? One way is to look at the past and present and extrapolate, extending with the imagination the trends one sees. Certain things seem to happen in cycles, for example, such as economic recessions and "boom" periods. This could be seen as a sort of evidence, although there is no guarantee about cycles or trends. Some of the books seem to be based mostly on opinion, whereas others make an effort to present evidence. Selections one and two are both taken from popular books about the future.

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Prereading Exercise: Anticipating the Reading

Have you ever gone to a fortuneteller who tried to tell you the future through the date of your birth, a deck of cards, or some other means? If so, what happened? Do you believe that there are any methods to predict the future?

Have you heard of the popular study of astrology, the predicting of people's characters and destinies from the movement of the stars? How do people feel about this in your culture?

Perhaps books about the future have become popular for the same reasons that fortunetellers and astrology are: curiosity, escapism, the desire to see what lies ahead so as to prepare for it, As you read the following excerpt, pay attention to what basis or evidence, if any, is given for the predictions and how convincing they seem to you.

Encounters with the Future (Excerpt)

The majority of us will be better off in the year 2000 than we are today. We'll feel better, we'll look better, and we'll live longer. Of course, there will be change, but it won't be the kind of change that worsens our lot in life. There will be hardship, but most of it will be the kind of hardship we can endure and overcome.

You can expect an 8 percent per year inflation rate out to the year 2000, which is an acceptable rate of inflation. That means that interest rates in the world will stabilize at 11 percent, which is a livable rate of interest for people who want to own cars, appliances, and their own homes. There will be fewer billionaires, but that will be the result of tax reform cuts, which after all are long overdue in the United States. There will also be fewer Americans living in poverty, as jobs and welfare reforms are made through the years ahead. Do you want to be rich? The top entertainer's or professional athlete's already high salary will be tripled by cable television. You will retire later as you live longer. Taxes will go down as stock prices go up and as America reindustrializes robot factories to raise productivity. The energy crisis will be a crisis of the past when we begin to generate nuclear electricity with fusion power for the first time.

Cars will cost twice what they do today but they will be half their present weight and get twice the gasoline mileage. Automobile lifetimes will double in the next twenty years, in part because people will once more put a value on durability. Cars will be safer because they'll all be smaller.

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60

In the United States, the future looks south. The only thing that will restrict mass migrations to the Sun Belt is a water shortage. Look for much of the world to suffer water shortages, but look for much of the world to solve its water shortages. Look for the countries of the Middle East to build nuclear desalting plants, and look for the United States to tow glaciers out of the Arctic to the East and West coasts to tap them for their water.

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There will be medicines that improve and restore memory and prevent senility. There will be pills that cure fear of heights, fear of elevators, and fear of flying. Men will take drugs to grow hair, women will take drugs to keep their hair from turning gray. There will be a nutlike snack to keep teeth white, strong, and free of cavities. There will be a hormone for weight control, another for growth control, and a third for memory control. There will be a nonaddictive painkiller more powerful than morphine. There will be medicines that cure addictions to drugs and alcohol.

Ahead of us lie vaccines to prevent tuberculosis and immunize people against their own tumors, the kinds of cancer like breast cancer that appear to be caused by viruses and seem to run in families. The list of diseases that will be cured by gene splicing is staggering. People with genetic disease will undergo gene therapy, where the abnormal gene is removed and a healthy gene is spliced

in to take its place. There will be new drugs to dissolve blood clots and gallstones. There will be an artificial liver, an artificial spleen, and an artificial pancreas. There will be artificial blood that can be given to people with any blood type and that carries none of the risk of infections that human blood can.

We will soon enter a checkless and cashless society. Funds will be transferred by voiceprint, and almost nobody will shop in person. Two-way home television will let you dial a store, check prices on your screen, and order by credit card. You will still need cash, but instead of carrying it around you'll stop at your neighborhood automated teller and withdraw it when you need it. Don't be frightened by depression talk. The United States is depression-proof, partly because of the ongoing computer revolution that exercises such tight controls on money supply.

We can anticipate big things from the large Space Telescope after it's put into orbit in 1985. The Space Telescope will tell us the precise age of the universe, whether black holes exist, and what quasars are all about. The Space Telescope should also tell us if the cosmos will go on expanding forever or if it will explode again in another Big Bang. This will be a heavy cosmological answer to a heavy cosmological question and will alter religious thought for centuries to come.

The strongest, most stable country in the world will continue to be the United States. Second in turn will be Australia and Canada, mostly because they're so rich in raw resources. The Soviet Union will have domestic trouble in the years ahead. The Russian race will be a minority in their country, and the Soviet Union will face the instability that comes with minority rule.

We expect wars to break out in the last part of the century, but they will be small border conflicts compared with what the world has lived through in the first half of this century. There will be no nuclear wars between the superpowers. The years ahead may be difficult, but on the whole they are years of hope and promise.

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Marvin Cetron and Thomas O'Toole

Recalling Information

Tell whether each of the following statements is true (T) or false (F), based on the reading. Correct false statements to make them true.

1. There will be fewer billionaires and fewer poor people.
2. Cars will be much larger and more expensive.

3. Water shortages will cause terrible hardships in the Southwest.
4. Gene splicing will be a routine cure for many diseases.
5. There will no longer be money.
6. There will be another Great Depression, even worse than the one in 1929.
7. The large Space Telescope will tell us if black holes exist and if there will be another Big Bang.
8. There will be no large-scale wars, only a few border conflicts.

Evaluating the Point of View

I. *Optimism* is the tendency to look on the bright or favorable side of things; *pessimism,* the tendency to look on the dark and gloomy side. How would you rate the excerpt from "Encounters with the Future"? (Check one.)

_____very pessimistic

_____pessimistic

_____optimistic

_____very optimistic

2. At all times, in all societies throughout history, there have been problems. What problems are mentioned in this selection as characterizing the United States of the future?

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3. Do these seem to be real problems that will bother people or not? Explain,

4. What about politics? What will the position of the United States be? Of Canada, its traditional friend? Of the Soviet Union, its traditional enemy?

United States _____

Canada _____

USSR _____

5. On the basis of this excerpt and the fact that the book it came from sold very well in the United States, which of the following inferences could you make about the American public?
   a. They like objective, realistic explanations based on hard evidence.
   b. They prefer a pessimistic view of the future, even if it presents some frightening facts.
   c. They want to be reassured that all will be well and they will be very secure economically and otherwise.
6. Do you think most reading publics in various parts of the world are the same? Why or why not?

What's Your Opinion?

Look at the paragraph about the medicines of the future (Lines 32-40). One reader reacted to this section in a very negative way. Here are her comments. Tell if you agree or not and why.

> "This is a disgusting and depressing view of a world so perfect that it would no longer hold any challenge. With perfect weight and memory control, *everyone* would be brilliant and attractive, so it wouldn't be special or great to be like that. With nonaddictive drugs more powerful than morphine, there wouldn't be any more pain, so there wouldn't be any pleasure either! If that's the future, you can have it!"

Your reaction: "_____"

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Talking It Over

1. Which of the predictions from the selection would you most like to come true?
2. Just "off the top of your head" (in other words, taking a rough guess), what would you say is the ratio of fact to opinion in the selection? Does this ratio bother you or do you think that the authors' way of describing the future is as good as any?
3. Do you recall information you received from articles in any previous chapters that would support any of the predictions? Explain.



A Group Experiment in Astrology

Would you like to do an experiment to see if you can prove that astrology is valid or invalid? Work with a partner. Find out what astrological sign each of you is. The teacher (or someone else) will bring in a newspaper with *horoscopes,* or astrological predictions for the previous day for different signs. You should look at your partner's horoscope, but not your own. Then make up a series of questions designed to show if his or her day really went as predicted or not. He or she will do the same for you. At the end, count up all the people whose horoscopes proved true and those whose horoscopes proved false. Who wins? Does astrology work?

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SELECTION TWO

Edited by Robert Weil

OMNI FUTURE ALMANAC

Here are some excerpts from another book about the future, written in a somewhat different style. Selected portions are presented that relate to the number one problem of the future, according to most opinions, and to the delightful, if somewhat dizzying, prospect of living and working in outer space.

Prereading Exercise: Building on What We Know

A quick look at the headings and the graph on p. 306 tells you immediately what futurologists say the number one problem of tomorrow will be.

1. What do you think a *futurologist* is, anyhow? What special credentials should he or she have?

2. Why do you think that there is almost unanimous agreement about what the future's number one problem will be? What evidence do you expect to find below?

3. What about the prospect of living and working in space? Look over the headings. What topics do you think will be discussed?

Now that you have fixed in your mind what you already know about these subjects, you should be more aware when you encounter new information. You'll probably meet with some surprises.

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Omni Future Almanac

World Population Totals

From Stone Age to Space Age Historical demographers estimate that the total world population around the end of the Stone Age in Europe (about 7000 B.C.) stood between 5 and 10 million people. By the dawn of the Christian Era, the human number had risen to about 300 million. At the beginning of the modern age in Europe, seventeen centuries later (1650), the population had risen again, to about 500 million, representing a growth rate in world population of little more than 20,000 people per year.

After 1650, the course of human population growth changed radically. It took ninety centuries for world population to increase from 10 million to 500 million. The next 500 million in growth took only a century and a half. And the largest explosion was yet to come.

The population soared from 1 billion in 1800 to 1.6 billion in 1900, and then to 2.5 biilion in 1950. This unparalleled growth of 900 million occurred despite two devastating world wars.

The next burst of population growth, from 2.5 to 3.6 billion, occurred over a much shorter span of time, in just two decades between 1950 and 1970. Finally, the 1970s witnessed by far the fastest growth yet, from 3.6 to 4.4 billion. Thus, the growth of the last forty years has roughly equaled the growth of the entire previous history of mankind.

The Future Prospect Our world population growth rate is beginning to decelerate, but the gross totals continue to mount. Eighty million new human beings are born each year. Even the most conservative forecasters project a total world population of around 6 billion by the turn of the century.

Between now and 2110, according to the projection, regional populations will grow as follows:

South Asia	1.4 billion to 4.1 biilion
East Asia	1.2 billion to 1.7 billion
Africa	400 million to 2.1 billion
Latin America	400 million to 1.2 billion
Europe	450 million to 500 million
USSR	265 million to 380 million
North America	248 million to 320 million
Oceania	23 million to 41 million

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Space Careers

By 2050, it is estimated that thousands of people will be living in space. Here's a list of likely job opportunities:

- *Computer programmers and hardware experts.* These people will be essential to the success of any space industry. Their expertise will range from navigation to robotics.

30

Space habitat builders.
industrial engineers. People will be needed to run equipment, oversee mining operations, act as robot technicians, and perform countless other tasks.
Flight crew members for shuttle flights.
Support and life-sustaining industries. Job opportunities will include hotel management and restaurant or food service positions.
Manufacturing and mining. The weightlessness of space may make steel production a reality in many space settings.

Living in Space

The urge to reach out and settle new regions has persisted in every age of human history. Wherever people have been able to conceive of viable habitations—from the frigid Arctic to windswept tropical islands—they have moved and often prospered.

Now the ultimate unexplored reaches of space lie open for pioneering settlements. Plans are already drawn for several types of space colonies, and the implementation of these ideas should follow swiftly on the heels of space manufacturing projects and military development. Orbital space may soon become like the old West—the preserve of rugged miners and builders, dreamers and soldiers.

We stand on the threshold of human habitation of space. Our grandchildren may come down to earth to visit us only on holidays. The path toward space colonization can be seen clearly in projects proposed over the next twenty years.

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Space Stations Skylab and Salyut are precursors of true space stations to come. The USSR is reportedly formulating plans for a jigsaw space platform of rockets with a central pad.

The Johnson Space Center in Houston, meanwhile, has plans for an American space station that would orbit some 300 kilometers above the planet. Eight to twelve people would inhabit the $9 billion facility, coordinating American activity in space.

Moon Station Other space scientists propose the moon as a practical alternative to an orbiting space station. They point out that coordination of the facility could be handled from the moon with ease, while a moon base could double as a mining operation or factory.

The most striking moon plans come from Georg von Tiesenhousen and Wesley Darbro of the Marshall Space Flight Center. Their idea

is to place a factory on the moon that would manufacture parts for an identical factory that would in turn make more parts.

Even as early as 1952, John von Neumann proposed an elaborate theory for a self-replicating factory. Employing his basic ideas, the Marshall team produced engineering plans for a moon factory that would use the lunar surface's raw materials to create new factories. The facility would have four parts: (1) a collection unit that would mine material, (2) a process unit that would manipulate these resources, (3) a production system that would fabricate them into subassemblies, and (4) a universal constructor, a maze of computers and robots that would arrange the pieces according to detailed instructions into a replica of the original facility. Each new plant, of course, would contain its own universal constructor, endowing the operation with a robotic immortality.

The first moon factory could manufacture its counterpart within one year. Within thirty years, such methods would increase the number of factories to 1,000.

The Marshall team points out, however, that engineers would stop the replication process before this point and would retool the existing plants to make other products. Within one generation, a major manufacturing center on the moon could develop.

Space Colonies Author and scientist Gerard O'Neill's dream of a civilian space colony remains well off in the future, but it will be technically feasible by 2010. O'Neill proposes a city of 10,000 people that would be built for orbit above the earth. The cylindrical city would spin slowly along its major axis, creating a semblance of gravity. Environmental engineering techniques already in use today could cover the surface of the cylinder city with a verdant setting of grass and trees. Fiber optic light would simulate the passing of the sun overhead, so that citizens would not suffer chronobiological shock.

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The most serious drawback to this design would be the missing sky. If "up" in the cylinder is a view of its opposite side, people could suffer from the consequences of prolonged vertigo, for they would look up and see other people and buildings that would be standing upside down. One solution might be to generate a gentle haze along the cylinder's midline. This covering would preclude any sunny days in the colony but would give the impression of a cloudy sky overhead, rather than the looming presence of a suspended village.

More likely than full space colonies in the short term are transient construction camps. If factories and other commercial facilities are to be built and maintained in space, they will need quarters for the construction and maintenance teams. At first, these jobs would be handled by shuttle crews, but eventually a permanent presence would

be required. Some smaller version of O'Neill's cylinder may be used to give workers a suitable living habitat that would have both "inside" and "outside" areas. Such environmental amenities would make workers' stay in space physically and psychologically less trying. By 2050, there may be 7,500 people living and working in space.

Edited by Robert Weil

Comprehension Quiz: World Population Totals

1. By comparing the number of people alive in different eras of history, what alarming fact about population growth becomes apparent?

2. In what way do these statistics about the past give us evidence that there will be a grave population problem in the future?

3. What will the world population be around the turn of the century?

4. What difficulties do you think this will cause?

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5. Look at the chart on page 306. Which areas are growing fastest in population? Which ones arc growing more slowly?

6. What reasons can you think of to explain this difference?

Comprehension Quiz: Living in Space

Choose the correct words or phrases in parentheses to complete the following summary paragraph.

Living in Space: A Summary

It is thought that by the year 2050 (a few / hundreds / thousands) of people will be living in space. Some of them will have space careers that will most likely be in fields such as computer programming, industrial engineering, and (manufacturing / teaching / agriculture). The author fantasizes that orbital space may soon become rough and wild like (a football team / the arctic regions / the Old West). At the moment, both the United States and (China / India / the USSR / England) have plans for making new space stations. Other scientists suggest the moon as a station, since it could also be used for a factory or for (farming / mining / soldiers). Plans from the Marshall Space Flight Center suggest something similar to that of John von Neumann's (computer manufacturing / autodestructing / self-replicating) factory. This would have four parts: a collection unit that would (mine / spread / change) lunar materials, a process unit, a production system that would (lubricate / abdicate / fabricate) them, and a universal (constructor / deductor / destructor) that would really be a maze of (plastic tubes / computers and robots / missiles and arms). The beauty of this plan is that the moon factory would (produce lighter products / work completely without friction / make other moon factories). O'Neill's proposed space colony would include about (100 / 1,000 / 10,000) people) who would live in a city shaped like a (sphere / cylinder / triangle). It would have simulated grass, trees, and (sun / rain / dirt). The biggest problem would be the absence of (gravity / water / sky).

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Comparing Writing Styles

1. How do the excerpts from "Omni Future Almanac" differ from the one from "Encounters with the Future"?

2. Which one presents more facts to support its opinions?

3. Which one seems more interesting?

4. Which one do you like better? Why?

Identifying an Author's Assumptions

Both the books from which these excerpts were taken make certain assumptions, take certain things for granted. For example, most obvious is their assumption that there will be a future, that we will not have been destroyed by nuclear war by the time the turn of the century comes. But they also assume many other things before making their predictions. List three of these other assumptions.

1.

2.

3.

Talking It Over

1. Would you like to live in a space colony? Why or why not?
2. What special problems would people have there?
3. Can you think of any advantages?
4. What do you think should be done to prepare for the great problem of population growth?

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SELECTION THREE

Jared Rutter

ARCOSANTI: A CITY IN THE IMAGE OF MAN

While some people make models for future colonies in space, others are working hard to build the shape of the future on earth. Believe it or not, many people pay money for the privilege of going

to work on this project—and not just to do intellectual work, but hard manual labor in a city under a hot desert sun! The name of this unique city is Arcosanti, and the following article describes its form and purpose.

Prereading Exercise: Making Predictions About a Reading from Pictures

There is an old saying that "A picture is worth a thousand words." This is especially true regarding an architectural concept like Arcosanti. Look carefully at the pictures and try to form a context in your mind before beginning the reading. Write down what you already know or can guess.

1, What is Arcosanti? _._____—

2, How is it different from other cities?____

Arcosanti: A City in the Image of Man

Arcosanti is creeping into existence on a mesa in the Arizona desert 70 miles north of Phoenix. It is the creation of Paolo Soleri, architect and urbanist, who came to Arizona from Italy to study with the American architect Frank Lloyd Wright, bought land in Scottsdale, and stayed on to change the future.

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Arcosanti is the prototype of the urban philosophy that Soleri calls Two Suns Arcology. It will spread over 860 acres, but without urban sprawi—a twenty-five story, double-bladed structure housing 5,000 people.

Arcosanti is in its first stages of development. Construction began ten years ago, and approximately 2 percent of the total structure is completed. Projected completion time for the rest is about twenty years. Finished now are the four-story visitors center, the two apses where bells and ceramics are cast, and the apse-shaped vault that will form the main passageway between the city and the outside.

Arcology is, simply, ecological architecture, defined by Soleri as "urban structures so 'dense' as to host life, work, education, culture, leisure, and health for hundreds of thousands of people per square mile." It is three-dimensional, with movement not only horizontally but vertically, by means of elevators, escalators, and ramps.

An arcology is a city in the center of natural environment, mixing the intensity of urban living with the calm of nature. It is based on the principle of the direct conversion of sunlight into electrical energy.

Each dwelling in Arcosanti will have 2000 square feet of floor space, twenty feet high, to rent or purchase. All units will face the street, and there will be no separation of commercial and residential areas. The constant activity and diversity will increase the safety factor, part of the overall "village concept."

An arcology is a city without cars. In a suburb, Soleri's disciples are quick to point out, the same number of people (5000) can be housed on 1000 acres, but 50 percent of that land will be used by cars. Distances in Arcosanti will, in Soleri's words, "be measured again by walks and in minutes. . . . The car will follow the horse to the pastures of sport and eccentricity."

What do the Two Suns stand for? Well, one is "the physical sun, the source of all life on the planet. The other, the offspring sun of the first, expressed in the monumental miracle of evolution peaKed by the mind and spirit of man." Soleri is a humanist before all.

The desert around Arcosanti is hot, but the buildings are marvelously cool. The visitor's center is ventilated only by the breezes that crisscross through its circular vents and windows. A scale model of the completed city stands on prominent display. From the fourtn level come heavenly aromas from the cafe, where natural-food lunches and snacks are served.

In front of one large window hang elegant bells and wind chimes designed by Soleri and cast in Arcosanti's kilns. Their sale provides 25 percent of the project's operating costs. Depending on the strength of the crosswinds, the chimes will tinkle like music of the spheres or clang like the bells of hell at full tilt. Either way, they let you know you are somewhere unique.

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The "workshop people" are the major source of capital—and labor—for the building of Arcosanti. For $440 (as of 1979) anyone may participate in the five-week workshops in which the emphasis is frankly on manual labor ("a participant comes to Arcosanti as a builder first and a student second").

Tony Brown, Arcosanti's project coordinator, talked about Soleri and his visionary plan. "The accepted architectural wisdom is that form follows function. Soleri says: function follows form. That is, the architect can define the function of a place through the form he creates. Commercial architecture is no longer a visionary enterprise. It serves the needs of developers and investors. It is shaped by the pressures of the marketplace."

Brown seems cautious and undogmatic. "Arcosanti," he says, "is

a laboratory that is building itself. The experiment needs a certain mass of people. The larger the population, the more valuable the experiment. You never know how the whole thing is going to come out until you do it. There's a danger in relying on simulation. Arcosanti is an evolutionary process. As problems arise, they must be dealt with one by one. Flexibility is essential."

He pointed out that Arcosanti was not planned to displace conventional cities. " It is a demonstration project. For the next several hundred years we wit! see the old (urban) species and the new species running in parallel. The city organism is like the biological organism. The ones that tended to make the best use of energy were the ones that survived. Arcology does not pump more energy into the system. The form of Arcosanti is the form of the future."

The city's structure will change the way its institutions work. "Structural change," says Brown, "not legislative change, is the most important thing. If you want a city without cars you design one that way—rather than trying to ban the automobile, or cut down on its use, legislatively. Hospitals are another example. In an arcology doctors and nurses could move from home to home as from ward to ward, and you would get rid of the institutional barriers. Arcology functions in a multidisciplinary way."

The very comprehensiveness has proved to be something of a stumbling block when it comes to getting funding from public and private sectors. "Arcology is too comprehensive a solution for governments and corporations to deal with. It is a total approach, not a series of compartmentalized ones: energy problem, housing problem, ecology, and so forth."



The campsite at Arcosanti where students and workers are housed.

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The southern elevation of Arcosanti.

The bottom line is sounded by Brown. "To see if it really does change society—that's why we're building Arcosanti."

Jared Ruder

Recalling Information

Tell whether each of the following statements is true (T) or false (F), based on the reading. Correct false statements to make them true.

1. Arcosanti will be a city without cars, elevators, or escalators.
2. It is based on Soleri's philosophy of mixing an urban environment with the calm of nature.
3. Business districts will be placed at a distance from residential districts to decrease noise.
4. The two suns of Soleri's philosophy are the physical sun, which heats the earth, and the spiritual sun, which lights the intellect.
5. The project is paid for in part by the sale of wind chimes.
6. The city is being built by skilled craftsmen specially selected by Soleri.
7. It is meant to stand apart from other communities as an island unto itself.
8. According to Tony Brown, the trouble with most cities is that they are built to serve the needs of the developers and investors.

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Workers at Arcosanti.

9. Arcosanti is being built according to a detailed model that does not change.

10. The main goal of the people who are building Arcosanti is to create a tourist attraction.

Paraphrasing Key Ideas

State the main idea of each of the following passages in your own words.

1. "The city organism is like the biological organism. The ones that tended to make the best use of energy were the ones that survived."

2. "The city's structure will change the way its institutions work. . . . 'Hospitals are another example. In an arcology doctors and nurses could move from home to home as from ward to ward, and you would get rid of the institutional barriers.'"

Talking It Over

1. What features of Arcosanti do you like? Why?
2. What don't you like about it? Why?
3. How do you like the idea of a city with no cars? Why would this be possible in Arcosanti?
4. What changes do you think are needed in cities today?

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SELECTION FOUR

Alan Bloch

MEN ARE DIFFERENT

This selection is a very brief science fiction story, told from a rather unusual point of view. It might send a chill up your spine, despite its brevity.

Prereciding Exercise: Identifying an Ironic Point of View

One of the great benefits of science fiction is that it opens up a whole new world of settings and characters to story writers. A frequent feature of science fiction is irony. (Remember; A situation is ironic when it seems to be very different from—usually just the opposite of—the usual or expected.) Read just the first paragraph and answer the following questions about the point of view.

1. Who is speaking?

2. Why is the situation ironic?

3. What can we infer about human beings from these first sentences?

Now read to the end to see what further ironies await you.

Men Are Different

I'm an archaeologist, and Men are my business. Just the same I wonder if we'll ever find out what made Men different from us Robots—by digging around on the dead planets. You see, I lived with a Man once, and I know it isn't as simple as they told us back in school.

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We have a few records, of course, and Robots like me are filling in some of the gaps, but I think now that we aren't really getting anywhere. We know, at least the historians say we know, that Men came from a planet called Earth. We know, too, that they rode out bravely from star to star, and wherever they stopped, they left colonies—Men, Robots, and sometimes both—against their return. But they never came back.

Those were the shining days of the world. But are we so old now? Men had a bright flame—the old word is "divine," I think—that flung them far across the night skies, and we have lost the strands of the web they wove.

Our scientists tell us that Men were very much like us—and the skeleton of a Man is, to be sure, almost the same as the skeleton of a Robot, except that it's made of some calcium compound instead of titanium. They speak learnedly of "population pressure" as a

"driving force toward the stars." Just the same, there are other differences.

It was on my last field trip, to one of the inner planets, that 1 met the Man. He must have been the Last Man in this system and he'd forgotten how to talk—he'd been alone so long. Once he learned our language we got along fine together, and I planned to bring him back with me. Something happened to him, though.

One day, for no reason at all, he complained of the heat. I checked his temperature and decided that his thermostat circuits were shot. 1 had a kit of field spares with me, and he was obviously out of order, so I went to work. I turned him off without any trouble. I pushed the needle into his neck to operate the cutoff switch, and he stopped moving, just like a Robot. But when I opened him up he wasn't the same inside. And when I put him back together I couldn't get him running again. Then he sort of weathered away—and by the time I was ready to come home, about a year later, there was nothing left of him but bones. Yes, Men are indeed different.

Alan Bioch

Comprehension Quiz

1. What has the robot learned in school about men?

2. Why does he speak of a "bright flame"?

3. What seems to have been the problem that brought about human beings' downfall?

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4. Describe the man the robot met on his last field trip.

5. How did the man die? What incorrect inference did the robot make that caused his death?

6. Why is the ending ironic? How does it relate to the title?

If you had to choose a "moral" for this story, which one of the following would you prefer? Why?

a. Machines are dangerous because they have no feelings.
b. You never know what will happen when you make something.
c. Technical knowledge does not insure survival.

Try writing a moral of your own for the story.

TIMED READING

Neil Frude

THE AFFECTIONATE MACHINE

The following magazine article presents a more optimistic vision of future relationships between man and machine than the one in the preceding story. How would you feel about someday receiving a friend in a box through the mail? Try to finish both the reading and the comprehension quiz in eight minutes.

The Affectionate Machine

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The ideal companion machine would not only look, feel, and sound friendly but would also be programmed to behave in a congenial manner. Those qualities that make interaction with other people enjoyable would be simulated as closely as possible, and the machine would appear to be charming, stimulating, and easygoing. Its informal conversational style would make interaction comfortable, and yet the machine would remain slightly unpredictable and therefore interesting. In its first encounter it might be somewhat hesitant and unassuming, but as it came to know the user it would progress to a more relaxed and intimate style. The machine would not be a passive participant but would add its own suggestions, information, and opinions; it would sometimes take the initiative in developing or changing the topic and would have a personality of its own.

The machine would convey presence. We have all seen how a computer's use of personal names and of typically human phrasing often fascinates the beginning user and leads people to treat the machine as if it were almost human. Such features are easily written



into the software, and by introducing a degree of forcefulness and humor, the machine could be presented as a vivid and unique character.

Friendships are not made in a day, and the computer would be more acceptable as a friend if it simulated the gradual changes that occur when one person is getting to know another. At an appropriate time it might also express the kind of affection that stimulates attachment and intimacy. The whole process would be accomplished with subtlety to avoid giving an impression of overfamiliarity that would be likely to produce irritation. After experiencing a wealth of powerful, well-timed friendship indicators, the user would be very likely to accept the computer as far more than a machine and might well come to regard it as a friend.

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An artificial relationship of this type would provide many of the benefits that people obtain from interpersonal friendships. The machine would participate in interesting conversation that could continue from previous discussions. It would have a familiarity with the user's life as revealed in earlier interchanges, and it would be understanding and good-humored. The computer's own personality would be lively and impressive, and it would develop in response to that of the user. With features such as these, the machine might indeed become a very attractive social partner. This may strike us as quite outrageous. It may be felt that there is a sanctity about human

relationships that places them beyond artificial simulation, but arguments of this kind cannot rule out the possibility that a person may come to regard a nonhuman object as a friend. It is clear, for example, that some people set the value of their relationship with an animal above that of any human friendship, and the possibility that a computer might achieve such favor cannot be rejected merely on the grounds that it is not human.

At this point, we may begin to wonder whether there is any limit to the potential intimacy between a person and a machine. Some human friendships progress to a very high level of intimacy. People become emotionally dependent on those who are close to them. They speak of shared lives and in terms of love and devotion. Is there any guarantee that feelings of even this level of intensity could not be stirred by a machine? If those qualities that lead people into the closest of relationships were understood, would it not perhaps be possible to simulate them and thereby stimulate the deepest of human emotions?

How should we regard the suggestion that a future best friend might be delivered in a box, or that the object of our deepest affections might be rendered insensible by a power failure? The idea does seem outrageous, but not too long ago it was thought that the idea of a machine that could play a reasonable game of chess was equally absurd. The imagined impossibility of the chess-playing machine was based on a lack of vision in the technical area. Those who might suggest that the notion of an intimate human-machine relationship is entirely fanciful are likely to have disregarded the psychological responses to complex computer systems. If we use the available evidence as a basis for predicting the likely reactions to "softer" and more sophisticated devices, then it will be seen that the concept of the companion machine is in fact highly plausible.

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This does not mean that we have to like the idea, however. We may be less than delighted with the suggestion that the deepest human needs might be catered to by an electronic package. Somehow it feels as if it should not be that easy. Perhaps we shall find that relationships with artificial devices make personal demands just as human relationships do, but at least computer companions would be readily available, and they would be programmed to get on well with a wide range of potential human friends. Many people suffer severely from a lack of social contact, and we should not be too ready to condemn an innovation that could bring considerable benefits to a large number of people.

Neil Prude

Comprehension Quiz

Choose the best way of finishing each statement, based on what you have just read.

1. The properly programmed companion machine would be somewhat hesitant at first but would later progress to a style of conversation that was more:
   a. predictable
   b. intimate
   c. formal

2. One of the ways that computers already convey presence is by the use of:
   a. first names
   b. special codes
   c. complex circuits

3. Which of the following benefits could *not* be found in friendship with a computer?
   a. a sense of humor
   b. a knowledge of the user's life
   c. conversations that build on previous ones
   d. hugs and kisses

4. One argument the author makes against the idea that people can only be friends with other people is that:
   a. there is a sanctity in the human relationship
   b. some people have dogs for friends
   c. a computer can not simulate human reactions

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5. One advantage that machine friends could have over human ones is that the machines:
   a. would never make personal demands
   b. would be easily available
   c. would be programmed to never get angry

Comparing Ideas

Now that you have finished this chapter, take a few minutes to think about the following question. Then write a brief answer. Compare it with those of your classmates.

If you could have one wish granted for the future of humanity, what would it be?