

Definition



A definition can set limits or expand them. An objective definition may settle an argument; a subjective definition can provoke one. In either case, they answer the definer's fundamental question, What is X? The photograph above of the couple in the kitchen, for instance, might be interpreted as a visual definition of "love," "marriage," "domesticity," "home office," "sex roles," "materialism," "technology," "cleanliness," "wealth," or "the good life," among many possibilities. The easiest way to define something is to identify it as a member of a class and then specify the characteristics that make it distinctive from all the other members of that class. You could define yourself as a "student," but that wouldn't be sufficient to discriminate between you as a college undergraduate and pupils in kindergarten, elementary, junior high, or high school, graduate students, or, for that matter, a person independently studying aardvarks, gourmet cooking, or the nature of the universe.

As you make any kind of writing more specific, you lower the level of abstraction, usually a good idea in definition. So you could identify—and thereby define—yourself by specifying "college student," or more specifically yet, your class status, "first-year college student," or "freshman." That might be sufficient for some contexts, such as filling out an application

blank. Or you might need to indicate where you go to school “at Cuyahoga Community College” or “Michigan State University.” (Initials won’t always work—readers might think MSU means Memphis State, or Mississippi, or Montana.)

But if you’re writing an entire essay devoted to defining exactly what kind of student you are, a phrase or sentence will be insufficient, even if expanded to include “a computer science major” or “a business major with an accounting specialty, and a varsity diver.” Although the details of that definition would separate and thereby distinguish you from, certainly, most other members of your class, they wouldn’t convey the essence of what you as a person are like in your student role.

You could consider that sentence your core definition, and expand each key word into a separate paragraph to create an essay-length definition that could include “college student,” “accounting major,” and “varsity diver.” But that still might not cover it. You could approach the subject through considering *cause-and-effect*. Why did you decide to go to college? Because you love to learn? Because you need to get specialized training for your chosen career? To get away from home? What have been the short-term effects of your decision to attend college? What are the long-term effects likely to be—on yourself, on your chosen field, perhaps on the world?

Or you might define yourself as a college student by *comparing and contrasting* your current life with that of a friend still in high school, or with someone who hasn’t gone to college, or with a person you admire who has already graduated. If you work part- or full-time while attending college, you could write an *analysis* of its effect on your studying; or an *argument*, using yourself as an *extended example*, stating why it’s desirable (or undesirable) for college students to work. Or, among many other possibilities, you could write a *narrative* of a typical week or semester at college. Each of these modes of writing could be an essay of definition. Each could be only partial, unless you wrote a book, for every definition is, by definition, selective. But each would serve your intended purpose. Each essay in this section represents a different common type of definition, but most use other types as well.

Definition According to Purpose. A definition according to purpose specifies the fundamental qualities an object, principle or policy, role, or literary or artistic work has—or should have—in order to fulfill its potential. Thus, such a definition might explicitly answer such questions as, What is the purpose of X? (“A parable is a simple story designed to teach a moral truth.”) What is X for? (“Horror movies exist to scare the spectators.”) What does X do? What is the role of X?

Descriptive Definition. A descriptive definition identifies the distinctive characteristics of an individual or group that set it apart from others. Thus a descriptive definition may begin by *naming* something, answering the

330 *Definition*

question, What is X called? A possible answer might be Eudora Welty (unique among all other women); a walnut (as opposed to all other species of nuts); or *The Sound and the Fury* (and no other novel by William Faulkner). A descriptive definition may also *specify the relationship among the parts of a unit or group*, responding to the questions, What is the structure of X? How is X organized? How is X put together or constituted—as in the periodic table or a diagram of the body, an engine, or any other mechanical device? Lynda Barry's "Common Scents" (354–63) also, through a series of cartoon panels, offers many combinations of smells, "mint, tangerines, and library books," "fried smelt, garlic, onions; 9,000 cigarettes; ½ a can of Adorne hair spray"; Jade East aftershave" and more. . . . She uses these to evoke people's reactions both to the smells themselves and to the cultures and people who either denigrate or appreciate them, concluding, "Our house smelled like grease and fish and cigs, like Jade East and pork and dogs, like all the wild food my grandma boiled and fried. And if they could get *that* into a spray can, I'd buy it." The literal, descriptive definition might be, "You are what you smell like," but the connotative definition would depend not only on what the definers thought of the smells, but also on their opinions of the culture associated with that particular combination of odors.

Logical Definitions. Logical definitions answer two related questions: Into what general category does X fall? and How does it differ from all other members of that category? ("A porpoise is a marine mammal but differs from whales, seals, dolphins, and the others in its. . . .") Logical definitions are often used in scientific and philosophical writing, and indeed form the basis for the functional definition Howard Gardner presents in "Who Owns Intelligence?" (342–52).

There are five key principles for writing logical definitions:

1. For economy's sake, use the most specific category to which the item to be defined belongs, rather than broader categories. Thus Gardner confines his discussion to human beings, not animals nor even all primates.
2. Any division of a class must include all members of that class. *Negative definitions* explain what is excluded from a given classification and what is not.
3. Subdivisions must be smaller than the class divided. Intelligence, says Gardner, can be divided into various functional categories: "linguistic and logical-mathematical, musical, spatial, bodily-kinesthetic, naturalist, interpersonal, and intrapersonal."
4. Categories should be mutually exclusive; they should not overlap.
5. The basis for subdividing categories must be consistent throughout each stage of subdivision. Thus, claiming that Daniel Goleman, in his "otherwise admirable *Emotional Intelligence*," confuses emotional intelligence with "certain preferred patterns of behavior," Gardner prefers

the term “emotional sensitivity” because this includes both “interpersonal and intrapersonal intelligences” and therefore applies to “people who are sensitive to emotions in themselves and in others.”

Essential or Existential Definition. An essential definition might be considered a variation of a descriptive definition as it answers the question, “What is the essence, the fundamental nature of X?”—love, beauty, truth, justice, for instance. An existential definition presents the essence of its subject by answering the question, “What does it mean to be X?” or “What does it mean to live as an X” or “in a state of X?”—perhaps Chinese, supremely happy, married (or not), an AIDS victim.

In “Together in the Old Square Print, 1976” Jenny Spinner explores what it means not only to be a twin, but an identical twin, and, in “In Search of Our Past,” adopted twins, as well, and thus each other’s only known blood relative when they were growing up. As Spinner shows us through the examples in her poem and in her creative nonfiction essay, the definition of *twin* depends a great deal on its context as well as on who’s doing the defining. The biological definition is unvarying, but the social definition is shifting and complicated and as unique as each pair of twins or as its individual members—for Jenny and Jackie do not think alike. Indeed, their significance to one another changes and deepens through time, understanding, maturity—and independence from each other, though still intertwined, convinced that “no one, that nothing, can destroy us.” They mean one set of things to their adoptive parents, and perhaps to their brother. They mean something else to acquaintances, who respond essentially to their identical appearance or to the label “twin.” What *twin* means to their biological parents, the sisters choose never to know, as “together, separately we live.”

Process Definitions. These are concerned with how things or phenomena get to be the way they are. How is X produced? What causes X? How does it work? What does it do, or not do? With what effects? How does change affect X itself? Such questions are often the basis for scientific definitions, as Charles Darwin’s “Understanding Natural Selection” (335–40) illustrates. Darwin’s definition is composed of a series of illustrations of natural phenomena and processes (such as stags’ horns, cocks’ spurs, lions’ manes, male peacocks’ plumage) that lead to demonstrable effects, such as the propagation and survival of the species, as depicted in the photograph of the cape gannet pairs on page 337. The two essays on “Code Blue” provide very different definitions of a dramatic medical process. In “Code Blue: The Process” (365–69), Jasmine Innerarity carefully explains, from her experience as a pediatric oncology nurse, the conditions for calling a “Code Blue,” “the alert signal for a patient who has stopped breathing or whose heart has stopped.” She identifies the medical personnel summoned in the process, the equipment needed, the processes involved (“sedating and

332 *Definition*

intubating the patient”), the speed required, the decisions to be made (to take a patient to the operating room, or off a respirator), and the likely outcomes. Innerarity’s language, precise and careful, identifies medical crises and explains the medical team’s appropriate reactions—definition in the abstract. “Code Blue: The Story” (370–72), Dr. Abraham Verghese’s fast-paced narrative, takes readers into the emergency room for a breathless reenactment of the race to snatch life from death—definition in action.

Ultimately, when you’re writing an extended definition, you’ll need to make it as clear, real, and understandable as possible. You could define a dog as “a clawed, domesticated, carnivorous mammal, *Canis familiaris*.” But would that abstract, technical definition get at your intended focus on working dogs (for instance, sheepherding border collies or seeing-eye German shepherds), or convey the essence of the family setter, Serendipity, who rescued you from drowning when you were five and has been your security blanket ever since? Your choices of specific details, illustrations, analogies, anecdotes, and the like will enable your readers to accept your definition, the ways you see the subject, the boundaries you set.

STRATEGIES FOR WRITING— DEFINITION

1. What is the purpose of the definition (or definitions) I’m writing about? Do I want to explain the subject’s particular characteristics? Identify its nature? Persuade readers of my interpretation of its meaning? Entertain readers with a novel, bizarre, or highly personal meaning? How long will my essay be? (A short essay will require a restricted subject that you can cover in the limited space.)
2. For whom am I providing the definition? Why are they reading it? Do they know enough about the background of the subject to enable me to deal with it in a fairly technical way? Or must I stick to the basics—or at least begin there? If I wish to persuade or entertain my readers, can I count on them to have a pre-existing definition in mind against which I can match my own?
3. Will my entire essay be a definition, or will I incorporate definition(s) as part of a different type of essay? What proportion of my essay will be devoted to definition? Where will I include definitions? As I introduce new terms or concepts? Where else, if at all?
4. What techniques of definition will I use: naming; providing examples, brief or extended; comparing and contrasting; considering cause and effect; analysis; argument; narrative; analogy; or a mixture? Will I employ primarily positive or negative means (i.e., X is, or X is not)?
5. How much denotative (objective) definition will I use in my essay? How much connotative (subjective) definition? Will my tone be serious? Authoritative? Entertaining? Sarcastic? Or otherwise?

JENNY SPINNER

Spinner (born 1970) grew up in Decatur, Illinois, a sprawling factory town on the central Illinois prairie. She earned a BA at Millikin University (1992), an MFA in nonfiction writing at Pennsylvania State University (1995), and an MA (1999) and PhD at the University of Connecticut (2004). She is currently Assistant Professor of English at St. Joseph's University in Philadelphia. Spinner's dissertation focused on women essayists. Her essays, often about her sister and her family in Illinois, have appeared in the *Washington Post* and on National Public Radio. "Together in the Old Square Print, 1976" and "In Search of Our Past" (374–79), both written when Spinner was a doctoral student, address her profound and intimate relationship with Jackie, her identical twin sister—and, until she became a mother, her only known blood relative, since the twins were adopted at birth.

Spinner explains the genesis of the poem: "In a creative writing class several semesters ago, I asked my students . . . to write a poem based on a photograph of themselves as children. I decided to give the assignment a whirl myself. I have scores of photographs of my twin sister Jackie and me from when we were children. Every year, on the first day of school, my mom would pose us in front of the wooden French doors that lead to our kitchen. The photograph upon which this poem is based was taken in 1976, the day we began first grade. I knew as soon as I touched it that this photo contained a poem. I remember vividly that traumatic day, the first day I was separated from my beloved sister and forced to make my way in the world as an individual. The poem attempts to describe what anyone looking at the picture can see—two look-alike little girls dressed in matching outfits, holding hands, posed and poised. It also attempts to fill in what is beyond the physical edges of the photograph, the narrative of our first day of school. Finally, the poem brings in the seer, the adult poet who reflects on what she sees and emerges with some sort of truth. In this case, the truth is that I love(d) being a twin as much as I love(d) my sister. It made me feel unique, but that uniqueness, perhaps ironically, was bound to another. I was the first-born, scrambling out of the womb two minutes before my sister. Yet, I am the one who looked back, who was afraid to make her way in the world without her sister. Writing this poem taught me something I'd never before been able to articulate. It was a powerful, personal discovery."

❁ *Together in the Old Square Print, 1976*

Summer-brown, armed against
 our inaugural day of first grade,
 we are so alike in our *dernier cri*:
 knee-high gingham dresses—
 hers red, mine blue—
 with coordinating tights
 and brass-buckled Mary Janes.

334 *Definition*

10 Framed by the sleek pectinate line of our bangs,
 our identical faces sprout, determined,
 from our lace-ringed necks.
 On the french doors behind us,
 the camera flash forms a bright cross,
 each of our heads hanging off an arm.
 15 In just one hour, we will be led
 into different classrooms,
 our first separation since birth.
 I will suffer through introductions
 alone, hardly knowing
 20 who I am without her,
 and then I will cry.
 And I won't stop until Mrs. Parnell
 drags me across the hall
 into the other first grade.
 When my sister sees me
 25 standing in the doorway, eyes aflame,
 she looks up bewildered,
 only then recognizing my absence.
 For the rest of the day, I share
 her small seat, drying my tears
 30 in the heat of her body.
 I don't feel shame, only
 love bound back together.

 But in the old print, all is yet to come.
 At ease in our symmetry,
 35 puffed sleeve against puffed sleeve,
 we look out into the deceptive morning
 that arrives with vague hints
 of promises and premonitions:
 Without her, I would be ordinary.
 40 Afraid—and ordinary.

CHARLES DARWIN

Darwin (1809–1882) descended from a distinguished British scientific family; his father was a physician, and his grandfather was the renowned Erasmus Darwin, amateur naturalist. As a youth Darwin was most alert when studying natural phenomena, particularly beetles, even popping a rare specimen into his mouth to preserve it when his hands were full of other newly collected insects. So, despite his lackadaisical study of medicine at Edinburgh University (1825–1828) and equally indifferent preparation

for the clergy at Cambridge (BA, 1831), he shipped aboard the HMS *Beagle* on a scientific expedition around South America, 1831–1836. As the ship’s naturalist, he recorded careful observations of plants, animals, and human behavior that were published in *The Voyage of the Beagle* (1839), and eventually led to his theories of natural selection (roughly translated as “the survival of the fittest”) and evolution. The publication of the earthshaking *On the Origin of Species by Means of Natural Selection, or the Preservation of Favored Races in the Struggle for Life* (1859) was based on his painstaking observations of animals and plants, on land and sea and in the air.

“Understanding Natural Selection,” a small portion of this work, contains the essence of Darwin’s best-known and most revolutionary principles, that in natural selection those variations, “infinitesimally small inherited modifications,” endure if they aid in survival. The claim that these modifications occur gradually, rather than being produced at a single stroke by a divine creator, is the basis for Darwin’s theory of evolution, extended to humans in *The Descent of Man* (1871). Darwin’s theories provoked the enormous controversy between theologians and scientists that continues to this day—as Gould’s “Evolution as Fact and Theory” (404–11) makes clear.

Darwin’s work continues to be read, as much for its clear and elegant literary style as for its content. Using the techniques of popular literature to explain sophisticated scientific concepts and to present mountains of detailed information, Darwin is a highly engaging writer. He uses the first person, metaphors, anecdotes, and numerous illustrations that overlap and reinforce one another—here as ways to define his subject. Because he is explaining a theory and concepts totally new to his audience, he has to ground them in the reality of numerous natural phenomena that can be seen and studied.

Understanding Natural Selection

It may be said that natural selection is daily and hourly scrutinizing, 1
throughout the world, every variation, even the slightest; rejecting that which is bad, preserving and adding up all that is good; silently and insensibly working, whenever and wherever opportunity offers, at the improvement of each organic being in relation to its organic and inorganic conditions of life. We see nothing of these slow changes in progress, until the hand of time has marked the long lapses of ages, and then so imperfect is our view into long past geological ages, that we only see that the forms of life are now different from what they formerly were.

Although natural selection can act only through and for the good of 2
each being, yet characters and structures, which we are apt to consider as of very trifling importance, may thus be acted on. When we see leaf-eating insects green, and bark-feeders mottled-grey; the alpine ptarmigan white in winter, the red-grouse the color of heather, and the black-grouse that of peaty earth, we must believe that these tints are of service to these birds and insects in preserving them from danger. Grouse, if not destroyed at some period of their lives, would increase in countless numbers; they are known

336 *Definition*

to suffer largely from birds of prey; and hawks are guided by eyesight to their prey—so much so, that on parts of the Continent persons are warned not to keep white pigeons, as being the most liable to destruction. Hence I can see no reason to doubt that natural selection might be most effective in giving the proper color to each kind of grouse, and in keeping that color, when once acquired, true and constant. Nor ought we to think that the occasional destruction of an animal of any particular color would produce little effect: we should remember how essential it is in a flock of white sheep to destroy every lamb with the faintest trace of black. In plants the down on the fruit and the color of the flesh are considered by botanists as characters of the most trifling importance: yet we hear from an excellent horticulturist, Downing, that in the United States smooth-skinned fruits suffer far more from a beetle, a *curculio*, than those with down; that purple plums suffer far more from a certain disease than yellow plums; whereas another disease attacks yellow-fleshed peaches far more than those with other colored flesh. If, with all the aids of art, these slight differences make a great difference in cultivating the several varieties, assuredly, in a state of nature, where the trees would have to struggle with other trees and with a host of enemies, such differences would effectually settle which variety, whether a smooth or downy, a yellow or purple fleshed fruit, should succeed.

3 In looking at many small points of difference between species, which, as far as our ignorance permits us to judge, seem to be quite unimportant, we must not forget that climate, food, and so on probably produce some slight and direct effect. It is, however, far more necessary to bear in mind that there are many unknown laws of correlation to growth, which, when one part of the organization is modified through variation, and the modifications are accumulated by natural selection for the good of the being, will cause other modifications, often of the most unexpected nature.

4 As we see that those variations which under domestication appear at any particular period of life, tend to reappear in the offspring of the same period; for instance, in the seeds of the many varieties of our culinary and agricultural plants; in the caterpillar and cocoon stages of the varieties of the silkworm; in the eggs of poultry, and in the color of the down of their chickens; in the horns of our sheep and cattle when nearly adult; so in a state of nature, natural selection will be enabled to act on and modify organic beings at any age, by the accumulation of profitable variations at that age, and by their inheritance at a corresponding age. If it profit a plant to have its seeds more and more widely disseminated by the wind, I can see no greater difficulty in this being effected through natural selection, than in the cotton-planter increasing and improving by selection the down in the pods on his cotton-trees. Natural selection may modify and adapt the larva of an insect to a score of contingencies, wholly different from those which concern the mature insect. These modifications will no doubt affect, through the laws of correlation, the structure of the adult; and probably in the case of those insects which live only for a few hours, and which never



What Darwinian observations or principles does this photograph illustrate? Does each species, whose members bear a strong family resemblance, have ways of detecting individuals that members of other species are unaware of? How does this detection—and pairing—contribute to their survival?

feed, a large part of their structure is merely the correlated result of successive changes in the structure of their larvae. So, conversely, modifications in the adult will probably often affect the structure of the larva; but in all cases natural selection will ensure that modifications consequent on other modifications at a different period of life, shall not be in the least degree injurious: for if they became so, they would cause the extinction of the species.

Natural selection will modify the structure of the young in relation 5 to the parent, and of the parent in relation to the young. In social animals it will adapt the structure of each individual for the benefit of the community; if each in consequence profits by the selected change. What natural selection cannot do, is to modify the structure of one species, without giving it any advantage, for the good of another species; and though statements to this effect may be found in works of natural history, I cannot find one case which will bear investigation. A structure used only once in an animal's whole life, if of high importance to it, might be modified to any extent by natural selection; for instance, the great jaws possessed by certain insects, and used exclusively for opening the cocoon—or the hard tip to the beak of nestling birds, used for breaking the egg. It has been asserted, that of the best short-beaked tumbler pigeons more perish in the egg than are able to get out of it; so that fanciers assist in the act of hatching. Now, if nature had to make the beak of a full-grown pigeon very short for the

338 *Definition*

bird's own advantage, the process of modification would be very slow, and there would be simultaneously the most rigorous selection of the young birds within the egg, which had the most powerful and hardest beaks, for all with weak beaks would inevitably perish: or, more delicate and more easily broken shells might be selected, the thickness of the shell being known to vary like every other structure.

Sexual Selection

- 6 Inasmuch as peculiarities often appear under domestication in one sex and become hereditarily attached to that sex, the same fact probably occurs under nature, and if so, natural selection will be able to modify one sex in its functional relations to the other sex, or in relation to wholly different habits of life in the two sexes, as is sometimes the case with insects. And this leads me to say a few words on what I call sexual selection. This depends, not on a struggle for existence, but on a struggle between the males for possession of the females; the result is not death to the unsuccessful competitor, but few or no offspring. Sexual selection is, therefore, less rigorous than natural selection. Generally, the most vigorous males, those which are best fitted for their places in nature, will leave most progeny. But in many cases, victory will depend not on general vigor, but on having special weapons, confined to the male sex. A hornless stag or spurless cock would have a poor chance of leaving offspring. Sexual selection by always allowing the victor to breed might surely give indomitable courage, length to the spur, and strength to the wing to strike in the spurred leg, as well as the brutal cock-fighter, who knows well that he can improve his breed by careful selection of the best cocks. How low in the scale of nature this law of battle descends, I know not; male alligators have been described as fighting, bellowing, and whirling round, like Indians in a war dance, for the possession of the females; male salmons have been seen fighting all day long; male stag-beetles often bear wounds from the huge mandibles of other males. The war is, perhaps, severest between the males of polygamous animals, and these seem oftenest provided with special weapons. The males of carnivorous animals are already well armed; though to them and to others, special means of defence may be given through means of sexual selection, as the mane to the lion, the shoulder-pad to the boar, and the hooked jaw to the male salmon, for the shield may be as important for victory, as the sword or spear.
- 7 Amongst birds, the contest is often of a more peaceful character. All those who have attended to the subject, believe that there is the severest rivalry between the males of many species to attract by singing the females. The rock-thrush of Guiana, birds of Paradise, and some others, congregate; and successive males display their gorgeous plumage and perform strange antics before the females, which standing by as spectators, at last choose the most attractive partner. Those who have closely attended to birds in confinement well know that they often take individual preferences and

dislikes: thus Sir R. Heron has described how one pied peacock was eminently attractive to all his hen birds. It may appear childish to attribute any effect to such apparently weak means: I cannot here enter on the details necessary to support this view; but if man can in a short time give elegant carriage and beauty to his bantams, according to his standard of beauty, I can see no good reason to doubt that female birds, by selecting, during thousands of generations, the most melodious or beautiful males, according to their standard of beauty, might produce a marked effect. I strongly suspect that some well-known laws with respect to the plumage of male and female birds, in comparison with the plumage of the young, can be explained on the view of plumage having been chiefly modified by sexual selection, acting when the birds have come to the breeding age or during the breeding season; the modifications thus produced being inherited at corresponding ages or seasons, either by the males alone, or by the males and females; but I have not space here to enter on this subject.

Thus it is, as I believe, that when the males and females of any animal have the same general habits of life, but differ in structure, color, or ornament, such differences have been mainly caused by sexual selection; that is, individual males have had, in successive generations, some slight advantage over other males, in their weapons, means of defence, or charms; and have transmitted these advantages to their male offspring. Yet, I would not wish to attribute all such sexual differences to this agency: for we see peculiarities arising and becoming attached to the male sex in our domestic animals (as the wattle in male carriers, horn-like protuberances in the cocks of certain fowls, and so on), which we cannot believe to be either useful to the males in battle, or attractive to the females. We see analogous cases under nature, for instance, the tuft of hair on the breast of the turkey-cock, which can hardly be either useful or ornamental to this bird; indeed, had the tuft appeared under domestication, it would have been called a monstrosity.

Illustration of the Action of Natural Selection

. . . Let us take the case of a wolf, which preys on various animals, securing some by craft, some by strength, and some by fleetness; and let us suppose that the fleetest prey, a deer for instance, had from any change in the country increased in numbers, or that other prey had decreased in numbers, during that season of the year when the wolf is hardest pressed for food. I can under such circumstances see no reason to doubt that the swiftest and slimmest wolves would have the best chance of surviving, and so be preserved or selected—provided always that they retain strength to master their prey at this or at some other period of the year, when they might be compelled to prey on other animals. I can see no more reason to doubt this, than that man can improve the fleetness of his greyhounds by careful and methodical selection, or by that unconscious selection which results from each man trying to keep the best dogs without any thought of modifying the breed.

340 *Definition*

10 Even without any change in the proportional numbers of the animals on which our wolf preyed, a cub might be born with an innate tendency to pursue certain kinds of prey. Nor can this be thought very improbable; for we often observe great differences in the natural tendencies of our domestic animals; one cat, for instance, taking to catch rats, another mice; one cat . . . bringing home winged game, another hares or rabbits, and another hunting on marshy ground and almost nightly catching woodcocks or snipes. The tendency to catch rats rather than mice is known to be inherited. Now, if any slight innate change of habit or of structure benefited an individual wolf, it would have the best chance of surviving and of leaving offspring. Some of its young would probably inherit the same habits or structure, and by the repetition of this process, a new variety might be formed which would either supplant or coexist with the parent-form of wolf. Or, again, the wolves inhabiting a mountainous district, and those frequenting the lowlands, would naturally be forced to hunt different prey; and from the continued preservation of the individuals best fitted for the two sites, two varieties might slowly be formed. These varieties would cross and blend where they met; but to this subject of intercrossing we shall soon have to return. I may add, that . . . there are two varieties of the wolf inhabiting the Catskill Mountains in the United States, one with a light greyhoundlike form, which pursues deer, and the other more bulky, with shorter legs, which more frequently attacks the shepherd's flocks.

Content

1. What does Darwin mean by "natural selection" (§s 1–5)? How does "natural selection" differ from "sexual selection" (§s 6–8)?
2. Although Darwin doesn't use the term "evolution," this piece clearly illustrates that concept. Define that term, using some of Darwin's illustrations. Does your definition anticipate creationists' objections? Should it? If you believe in creationism, how does this belief influence the way you define "evolution"?
3. Distinguish between theory, opinion, and fact in Darwin's presentation of the concepts of natural selection (§s 1–5, 9–10).

Strategies/Structures/Language

4. Darwin offers arguments on behalf of both natural selection and sexual selection. Which argument has the better supporting evidence? Which argument makes its case more compellingly? Why?
5. Darwin builds his case for the existence of natural selection by using numerous illustrations. Identify some. Explain how an argument can also, as in this case, be a definition.
6. What kind of authorial persona does Darwin present? In what ways is this "scientist figure" familiar today? How does this persona differ from the stereotype of the "mad scientist"?

7. Is Darwin writing for an audience of other scientists? For a general readership? Or for both? What aspects of his language (choice of vocabulary, familiar or unfamiliar language and illustrations), tone, and sentence structure reinforce your answer?

For Writing

8. Either by yourself or in collaboration with a partner or team, write a definition of something (a natural phenomenon, human or animal behavior you have observed carefully over time) for an audience of nonscientists. If you are writing about the behavior of college students in a particular type of situation—for example, some aspect(s) of test-taking, dating, dressing, eating—record your observations in as objective and “scientific” a manner as you can. Each team member could conduct the research for a particular characteristic.

9. Every definition is an argument, overt or implied, for the definer’s particular way of looking at the subject (for example, see Gould’s “Evolution as Fact and Theory” [404–11]). For readers who might disagree with you, write a controversial definition of a subject about which you feel passionate—friendship, love, marriage, violence, war, an ideal—you name it (place to live, job to have, family life, public policy). If you are dealing in abstractions, as you are likely to do in an extended definition, you will need to shore up your generalizations with specific information and illustrations.



For comprehension, writing, and research activities and resources, please visit the companion website at <college.hmco.com/english>.

HOWARD GARDNER

Gardner (born 1943) studied cognitive and social psychology at Harvard (BA, 1965, PhD, 1971) and became codirector of Project Zero at the Harvard Graduate School of Education, studying the ways children and adults learn. He is currently the Hobbs Professor in Cognition and Education at Harvard and an adjunct research professor of neurology at Boston University School of Medicine. Gardner has written over twenty books and hundreds of articles, most of them focusing on creativity and intelligence. His most recent work is *Changing Minds: The Art and Science of Changing Our Own and Other People’s Minds* (2004).

In his best-known book, *Frames of Mind: The Theory of Multiple Intelligences* (1983), he postulates that there are seven distinct cognitive realms in the human brain and that each governs a particular kind of intelligence. Those intelligences most commonly considered—and tested—by the American educational establishment are *linguistic*, the ability to communicate through language, and *logical-mathematical*, the ability to come up with and use abstract concepts. To these Gardner adds five other intelligences: *spatial*, the ability to perceive and reimage the physical world;

342 Definition

bodily-kinesthetic, the ability to use the body in skilled or creative ways; *musical*, the ability to distinguish, remember, and manipulate tone, melody, and rhythm; *interpersonal*, the ability to understand other people; and *intrapersonal*, the ability to understand one's self and have a conscious awareness of one's emotions. A decade later Gardner added an eighth intelligence: *naturalist*, the ability to have an intuitive understanding about plants and animals. Despite criticism from people who say Gardner's multiple intelligences are really talents (something we can get along without, as opposed to traditionally defined intelligence, which is indispensable) and that they can't be easily measured, to many educators he evokes "the reverence teenagers lavish on a rock star." "Who Owns Intelligence?" first published in the *Atlantic Monthly* in February 1999, addresses these issues in attempting, once again, to pin down intelligence and who owns it—a particularly significant issue as the twenty-first century grapples with expanding concepts of intellectual property, ranging from book manuscripts, musical compositions, and mechanical inventions to websites, applications of gene therapy, and esoteric chemical and technical processes.

Who Owns Intelligence?

- A**lmost a century ago Alfred Binet, a gifted psychologist, was asked by the French Ministry of Education to help determine who would experience difficulty in school. Given the influx of provincials to the capital, along with immigrants of uncertain stock, Parisian officials believed they needed to know who might not advance smoothly through the system. Proceeding in an empirical manner, Binet posed many questions to youngsters of different ages. He ascertained which questions when answered correctly predicted success in school, and which questions when answered incorrectly foretold school difficulties. The items that discriminated most clearly between the two groups became, in effect, the first test of intelligence.
- Binet is a hero to many psychologists. He was a keen observer, a careful scholar, an inventive technologist. Perhaps even more important for his followers, he devised the instrument that is often considered psychology's greatest success story. Millions of people who have never heard Binet's name have had aspects of their fate influenced by instrumentation that the French psychologist inspired. And thousands of psychometricians—specialists in the measurement of psychological variables—earn their living courtesy of Binet's invention.
- Although it has prevailed over the long run, the psychologists' version of intelligence is now facing its biggest threat. Many scholars and observers—and even some iconoclastic psychologists—feel that intelligence is too important to be left to the psychometricians. Experts are extending the breadth of the concept—proposing many intelligences, including emotional intelligence and moral intelligence. They are experimenting with new methods of ascertaining intelligence, including some that avoid tests altogether in favor of direct measures of brain activity. They are forcing citizens

everywhere to confront a number of questions: What is intelligence? How ought it to be assessed? And how do our notions of intelligence fit with what we value about human beings? In short, experts are competing for the “ownership” of intelligence in the next century.

The outline of the psychometricians’ success story is well known. Binet’s 4 colleagues in England and Germany contributed to the conceptualization and instrumentation of intelligence testing—which soon became known as IQ tests. (An IQ, or intelligence quotient, designates the ratio between mental age and chronological age. Clearly we’d prefer that a child in our care have an IQ of 120, being smarter than average for his or her years, than an IQ of 80, being older than average for his or her intelligence). Like other Parisian fashions of the period, the intelligence test migrated easily to the United States. First used to determine who was “feeble-minded,” it was soon used to assess “normal” children, to identify the “gifted,” and to determine who was fit to serve in the Army. By the 1920s the intelligence test had become a fixture in educational practice in the United States and much of Western Europe.

Early intelligence tests were not without their critics. Many enduring 5 concerns were first raised by the influential journalist Walter Lippmann, in a series of published debates with Lewis Terman, of Stanford University, the father of IQ testing in America. Lippmann pointed out the superficiality of the questions, their possible cultural biases, and the risks of trying to determine a person’s intellectual potential with a brief oral or paper-and-pencil measure.

Perhaps surprisingly, the conceptualization of intelligence did not 6 advance much in the decades following Binet’s and Terman’s pioneering contributions. Intelligence tests came to be seen, rightly or wrongly, as primarily a tool for selecting people to fill academic or vocational niches. In one of the most famous—if irritating—remarks about intelligence testing, the influential Harvard psychologist E. G. Boring declared, “Intelligence is what the tests test.” So long as these tests did what they were supposed to do (that is, give some indication of school success), it did not seem necessary or prudent to probe too deeply into their meaning or to explore alternative views of the human intellect.

Psychologists who study intelligence have argued chiefly about three 7 questions. The first: Is intelligence singular, or does it consist of various more or less independent intellectual faculties? The purists—ranging from the turn-of-the-century English psychologist Charles Spearman to his latter-day disciples Richard J. Herrnstein and Charles Murray (of *The Bell Curve* fame)—defend the notion of a single overarching “g,” or general intelligence. The pluralists—ranging from L. L. Thurstone, of the University of Chicago, who posited seven vectors of the mind, to J. P. Guilford, of the University of Southern California, who discerned 150 factors of the intellect—construe intelligence as composed of some or even many dissociable components. In his much cited *The Mismeasure of Man* (1981) the paleontologist Stephen Jay

344 *Definition*

Could argued that the conflicting conclusions reached on this issue reflect alternative assumptions about statistical procedures rather than the way the mind is. Still, psychologists continue the debate, with a majority sympathetic to the general-intelligence perspective.

- 8 The public is more interested in the second question: Is intelligence (or are intelligences) largely inherited? This is by and large a Western question. In the Confucian societies of East Asia individual differences in endowment are assumed to be modest, and differences in achievement are thought to be due largely to effort. In the West, however, many students of the subject sympathize with the view—defended within psychology by Lewis Terman, among others—that intelligence is inborn and one can do little to alter one’s intellectual birthright.
- 9 Studies of identical twins reared apart provide surprisingly strong support for the “heritability” of psychometric intelligence. That is, if one wants to predict someone’s score on an intelligence test, the scores of the biological parents (even if the child has not had appreciable contact with them) are more likely to prove relevant than the scores of the adoptive parents. By the same token, the IQs of identical twins are more similar than the IQs of fraternal twins. And, contrary to common sense (and political correctness), the IQs of biologically related people grow closer in the later years of life. Still, because of the intricacies of behavioral genetics and the difficulties of conducting valid experiments with human child-rearing, a few defend the proposition that intelligence is largely environmental rather than heritable, and some believe that we cannot answer the question at all.
- 10 Most scholars agree that even if psychometric intelligence is largely inherited, it is not possible to pinpoint the sources of differences in average IQ between groups, such as the fifteen-point difference typically observed between African-American and white populations. That is because in our society the contemporary—let alone the historical—experiences of these two groups cannot be equated. One could ferret out the differences (if any) between black and white populations only in a society that was truly color-blind.
- 11 One other question has intrigued laypeople and psychologists: Are intelligence tests biased? Cultural assumptions are evident in early intelligence tests. Some class biases are obvious—who except the wealthy could readily answer a question about polo? Others are more subtle. Suppose the question is what one should do with money found on the street. Although ordinarily one might turn it over to the police, what if one had a hungry child? Or what if the police force were known to be hostile to members of one’s ethnic group? Only the canonical response to such a question would be scored as correct.
- 12 Psychometricians have striven to remove the obviously biased items from such measures. But biases that are built into the test situation itself are far more difficult to deal with. For example, a person’s background affects his or her reaction to being placed in an unfamiliar locale, being instructed

by someone dressed in a certain way, and having a printed test booklet thrust into his or her hands. And as the psychologist Claude M. Steele has argued in these pages (see "Race and the Schooling of Black Americans," April, 1992), the biases prove even more acute when people know that their academic potential is being measured and that their racial or ethnic group is widely considered to be less intelligent than the dominant social group. . . .

Paradoxically, one of the clearest signs of the success of intelligence tests is that they are no longer widely administered. In the wake of legal cases about the propriety of making consequential decisions about education on the basis of IQ scores, many public school officials have become test-shy. By and large, the testing of IQ in the schools is restricted to cases involving a recognized problem (such as a learning disability) or a selection procedure (determining eligibility for a program that serves gifted children).

Despite this apparent setback, intelligence testing and the line of thinking that underlies it have actually triumphed. Many widely used scholastic measures, chief among them the SAT (renamed the Scholastic Assessment Test a few years ago), are thinly disguised intelligence tests that correlate highly with scores on standard psychometric instruments. Virtually no one raised in the developed world today has gone untouched by Binet's seemingly simple invention of a century ago.

Multiple Intelligences

The concept of intelligence has in recent years undergone its most robust challenge since the days of Walter Lippmann. Some who are informed by psychology but not bound by the assumptions of the psychometricians have invaded this formerly sacrosanct territory. They have put forth their own ideas of what intelligence is, how (and whether) it should be measured, and which values should be invoked in considerations of the human intellect. For the first time in many years the intelligence establishment is clearly on the defensive—and the new century seems likely to usher in quite different ways of thinking about intelligence.

One evident factor in the rethinking of intelligence is the perspective introduced by scholars who are not psychologists. Anthropologists have commented on the parochialism of the Western view of intelligence. Some cultures do not even have a concept called intelligence, and others define intelligence in terms of traits that we in the West might consider odd—obedience, good listening skills, or moral fiber, for example. Neuroscientists are skeptical that the highly differentiated and modular structure of the brain is consistent with a unitary form of intelligence. Computer scientists have devised programs deemed intelligent; these programs often go about problem-solving in ways quite different from those embraced by human beings or other animals.

Even within the field of psychology the natives have been getting restless. Probably the most restless is the Yale psychologist Robert J. Sternberg. A

346 Definition

prodigious scholar, Sternberg, who is forty-nine, has written dozens of books and hundreds of articles, the majority of them focusing in one or another way on intelligence. Sternberg began with the strategic goal of understanding the actual mental processes mobilized by standard test items, such as the solving of analogies. But he soon went beyond standard intelligence testing by insisting on two hitherto neglected forms of intelligence: the “practical” ability to adapt to varying contexts (as we all must in these days of divorcing and downsizing), and the capacity to automate familiar activities so that we can deal effectively with novelty and display “creative” intelligence.

18 Sternberg has gone to greater pains than many other critics of standard intelligence testing to measure these forms of intelligence with the paper-and-pencil laboratory methods favored by the profession. And he has found that a person’s ability to adapt to diverse contexts or to deal with novel information can be differentiated from success at standard IQ-test problems. . . .

19 The psychologist and journalist Daniel Goleman has achieved worldwide success with his book *Emotional Intelligence* (1995). Contending that this new concept (sometimes nicknamed EQ) may matter as much as or more than IQ, Goleman draws attention to such pivotal human abilities as controlling one’s emotional reactions and “reading” the signals of others. In the view of the noted psychiatrist Robert Coles, author of *The Moral Intelligence of Children* (1997), among many other books, we should prize character over intellect. He decries the amorality of our families, hence our children; he shows how we might cultivate human beings with a strong sense of right and wrong, who are willing to act on that sense even when it runs counter to self-interest. Other, frankly popular accounts deal with leadership intelligence (LQ), executive intelligence (EQ or ExQ), and even financial intelligence.

20 Like Coles’s and Goleman’s efforts, my work on “multiple intelligences” eschews the psychologists’ credo of operationalization and test-making. I began by asking two questions: How did the human mind and brain evolve over millions of years? and How can we account for the diversity of skills and capacities that are or have been valued in different communities around the world?

21 Armed with these questions and a set of eight criteria, I have concluded that all human beings possess at least eight intelligences: linguistic and logical-mathematical (the two most prized in school and the ones central to success on standard intelligence tests), musical, spatial, bodily-kinesthetic, naturalist, interpersonal, and intrapersonal.

22 I make two complementary claims about intelligence. The first is universal. We all possess these eight intelligences—and possibly more. Indeed, rather than seeing us as “rational animals,” I offer a new definition of what it means to be a human being, cognitively speaking: *Homo sapiens sapiens* is the animal that possesses these eight forms of mental representation.

23 My second claim concerns individual differences. Owing to the accidents of heredity, environment, and their interactions, no two of us exhibit

the same intelligences in precisely the same proportions. Our “profiles of intelligence” differ from one another. This fact poses intriguing challenges and opportunities for our education system. We can ignore these differences and pretend that we are all the same; historically, that is what most education systems have done. Or we can fashion an education system that tries to exploit these differences, individualizing instruction and assessment as much as possible.

Intelligence and Morality

As the century of Binet and his successors draws to a close, we’d be wise to take stock of, and to anticipate, the course of thinking about intelligence. Although my crystal ball is no clearer than anyone else’s (the species may lack “future intelligence”), it seems safe to predict that interest in intelligence will not go away.

To begin with, the psychometric community has scarcely laid down its arms. New versions of the standard tests continue to be created, and occasionally new tests surface as well. Researchers in the psychometric tradition churn out fresh evidence of the predictive power of their instruments and the correlations between measured intelligence and one’s life chances. And some in the psychometric tradition are searching for the biological basis of intelligence: the gene or complex of genes that may affect intelligence, and neural structures that are crucial for intelligence, or tell-tale brain-wave patterns that distinguish the bright from the less bright.

Beyond various psychometric twists, interest in intelligence is likely to grow in other ways. It will be fed by the creation of machines that display intelligence and by the specific intelligence or intelligences. Moreover, observers as diverse as Richard Herrnstein and Robert B. Reich, President Clinton’s first Secretary of Labor, have agreed that in coming years a large proportion of society’s rewards will go to those people who are skilled symbol analysts—who can sit at a computer screen (or its technological successor), manipulate numbers and other kinds of symbols, and use the results of their operations to contrive plans, tactics, and strategies for enterprises ranging from business to science to war games. These people may well color how intelligence is conceived in decades to come—just as the need to provide good middle-level bureaucrats to run an empire served as a primary mold of intelligence tests in the early years of the century.

Surveying the landscape of intelligence, I discern three struggles between opposing forces. The extent to which, and the manner in which, these various struggles are resolved will influence the lives of millions of people. I believe that the three struggles are interrelated; that the first struggle provides the key to the other two; and that the ensemble of struggles can be resolved in an optimal way.

The first struggle concerns the breadth of our definition of intelligence. One camp consists of the purists, who believe in a single form of intelligence—one that basically predicts success in school and in school-like

348 *Definition*

activities. Arrayed against the purists are the progressive pluralists, who believe that many forms of intelligence exist. Some of these pluralists would like to broaden the definition of intelligence considerably, to include the abilities to create, to lead, and to stand out in terms of emotional sensitivity or moral excellence.

29 The second struggle concerns the assessment of intelligence. Again, one readily encounters a traditional position. Once chiefly concerned with paper-and-pencil tests, the traditionally oriented practitioner is now likely to use computers to provide the same information more quickly and more accurately. But other positions abound. Purists disdain psychological tasks of any complexity, preferring to look instead at reaction time, brain waves, and other physiological measures of intellect. In contrast, simulators favor measures closely resembling the actual abilities that are prized. And skeptics warn against the continued expansion of testing. They emphasize the damage often done to individual life chances and self-esteem by a regimen of psychological testing, and call for less technocratic, more humane methods—ranging from self-assessment to the examination of portfolios of student work to selection in the service of social equity.

30 The final struggle concerns the relationship between intelligence and the qualities we value in human beings. Although no one would baldly equate intellect and human worth, nuanced positions have emerged on this issue. Some (in the *Bell Curve* mold) see intelligence as closely related to a person's ethics and values; they believe that brighter people are more likely to appreciate moral complexity and to behave judiciously. Some call for a sharp distinction between the realm of intellect on the one hand, and character, morality, or ethics on the other. Society's ambivalence on this issue can be discerned in the figures that become the culture's heroes. For every Albert Einstein or Bobby Fischer who is celebrated for his intellect, there is a Forrest Gump or a Chauncey Gardiner who is celebrated for human—and humane—traits that would never be captured on any kind of intelligence test. . . .

The Borders of Intelligence

31 Writing as a scholar rather than as a layperson, I see two problems with the notion of emotional intelligence. First, unlike language or space, the emotions are not contents to be processed; rather, cognition has evolved so that we can make sense of human beings (self and others) that possess and experience emotions. Emotions are part and parcel of all cognition, though they may well prove more salient at certain times or under certain circumstances: they accompany our interactions with others, our listening to great music, our feelings when we solve—or fail to solve—a difficult mathematical problem. If one calls some intelligences emotional, one suggests that other intelligences are not—and that implication flies in the face of experience and empirical data.

The second problem is the conflation of emotional intelligence and a certain preferred pattern of behavior. This is the trap that Daniel Goleman sometimes falls into in his otherwise admirable *Emotional Intelligence*. Goleman singles out as emotionally intelligent those people who use their understanding of emotions to make others feel better, to solve conflicts, or to cooperate in home or work situations. No one would dispute that such people are wanted. However, people who understand emotion may not necessarily use their skills for the benefit of society.

For this reason I prefer the term “emotional sensitivity”—a term (encompassing my interpersonal and intrapersonal intelligences) that could apply to people who are sensitive to emotions in themselves and in others. Presumably, clinicians and salespeople excel in sensitivity to others, poets and mystics in sensitivity to themselves. And some autistic or psychopathological people seem completely insensitive to the emotional realm. I would insist, however, on a strict distinction between emotional sensitivity and being a “good” or “moral” person. A person may be sensitive to the emotions of others but use that sensitivity to manipulate or to deceive them, or to create hatred.

I call, then, for a delineation of intelligence that includes the full range of contents to which human beings are sensitive, but at the same time designates as off limits such valued but separate human traits as creativity, morality, and emotional appropriateness. I believe that such a delineation makes scientific and epistemological sense. It reinvigorates the elastic band without stretching it to the breaking point. It helps to resolve the two remaining struggles: how to assess, and what kinds of human beings to admire.

Once we decide to restrict intelligence to human information-processing and product-making capacities, we can make use of the established technology of assessment. That is, we can continue to use paper-and-pencil or computer-adapted testing techniques while looking at a broader range of capacities, such as musical sensitivity and empathy with others. And we can avoid ticklish and possibly unresolvable questions about the assessment of values and morality that may well be restricted to a particular culture and that may well change over time.

Still, even with a limited perspective on intelligence, important questions remain about which assessment path to follow—that of the purist, the simulator, or the skeptic. Here I have strong views. I question the wisdom of searching for a “pure” intelligence—be it general intelligence, musical intelligence, or interpersonal intelligence. I do not believe that such alchemical intellectual essences actually exist; they are a product of our penchant for creating terminology rather than determinable and measurable entities. Moreover, the correlations that have thus far been found between supposedly pure measures and the skills that we actually value in the world are too modest to be useful.

What does exist is the use of intelligences, individually and in concert, to carry out tasks that are valued by a society. Accordingly, we should be

350 *Definition*

assessing the extent to which human beings succeed in carrying out tasks of consequence that presumably involve certain intelligences. To be concrete, we should not test musical intelligence by looking at the ability to discriminate between two tones or timbres; rather, we should be teaching people to sing songs or play instruments or transform melodies and seeing how readily they master such feats. At the same time, we should abjure a search for pure emotional sensitivity—for example, a test that matches facial expressions to galvanic skin response. Rather, we should place (or observe) people in situations that call for them to be sensitive to the aspirations and motives of others. For example, we could see how they handle a situation in which they and colleagues have to break up a fight between two teenagers, or persuade a boss to change a policy of which they do not approve.

38 Here powerful new simulations can be invoked. We are now in a position to draw on technologies that can deliver realistic situations or problems and also record the success of subjects in dealing with them. A student can be presented with an unfamiliar tune on a computer and asked to learn that tune, transpose it, orchestrate it, and the like. Such exercises would reveal much about the student's intelligence in musical matters.

39 Turning to the social (or human, if you prefer) realm, subjects can be presented with simulated interactions and asked to judge the shifting motivations of each actor. Or they can be asked to work in an interactive hypermedia production with unfamiliar people who are trying to accomplish some sort of goal, and to respond to their various moves and countermoves. The program can alter responses in light of the moves of the subject. Like a high-stakes poker game, such a measure should reveal much about the interpersonal or emotional sensitivity of a subject.

40 A significant increase in the breadth—the elasticity—of our concept of intelligence, then, should open the possibility for innovative forms of assessment far more realistic than the classic short-answer examinations. Why settle for an IQ or an SAT test, in which the items are at best remote proxies for the ability to design experiments, write essays, critique musical performances, and so forth? Why not instead ask people actually (or virtually) to carry out such tasks? And yet by not opening up the Pandora's box of values and subjectivity, one can continue to make judicious use of the insights and technologies achieved by those who have devoted decades to perfecting mental measurement.

41 To be sure, one can create a psychometric instrument for any conceivable human virtue, including morality, creativity, and emotional intelligence in its several senses. Indeed, since the publication of Daniel Goleman's book dozens of efforts have been made to create tests for emotional intelligence. The resulting instruments are not, however, necessarily useful. Such instruments are far more likely to satisfy the test maker's desire for reliability (a subject gets roughly the same score on two separate administrations of the test) than the need for validity (the test measures the trait that it purports to measure).

Such instruments-on-demand prove dubious for two reasons. First, beyond some platitudes, few can agree on what it means to be moral, ethical, a good person: consider the differing values of Jesse Helms and Jesse Jackson, Margaret Thatcher and Margaret Mead. Second, scores on such tests are much more likely to reveal test-taking savvy (skills in language and logic) than fundamental character.

In speaking about character, I turn to a final concern: the relationship between intelligence and what I will call virtue—those qualities that we admire and wish to hold up as examples for our children. No doubt the desire to expand intelligence to encompass ethics and character represents a direct response to the general feeling that our society is lacking in these dimensions; the expansionist view of intelligence reflects the hope that if we transmit the technology of intelligence to these virtues, we might in the end secure a more virtuous population.

I have already indicated my strong reservations about trying to make the word “intelligence” all things to all people—the psychometric equivalent of the true, the beautiful, and the good. Yet the problem remains: how, in a post-Aristotelian, post-Confucian era in which psychometrics looms large, do we think about the virtuous human being?

My analysis suggests one promising approach. We should recognize that intelligences, creativity, and morality—to mention just three desiderata—are separate. Each may require its own form of measurement or assessment, and some will prove far easier to assess objectively than others. Indeed, with respect to creativity and morality, we are more likely to rely on overall judgments by experts than on any putative test battery. At the same time, nothing prevents us from looking for people who combine several of these attributes—who have musical and interpersonal intelligence, who are psychometrically intelligent and creative in the arts, who combine emotional sensitivity and a high standard of moral conduct.

Let me introduce another analogy at this point. In college admissions much attention is paid to scholastic performance, as measured by College Board examinations and grades. However, other features are also weighed, and sometimes a person with lower test scores is admitted if he or she proves exemplary in terms of citizenship or athletics or motivation. Admissions officers do not confound these virtues (indeed, they may use different scales and issue different grades), but they recognize the attractiveness of candidates who exemplify two or more desirable traits.

We have left the Eden of classical times, in which various intellectual and ethical values necessarily commingled, and we are unlikely ever to re-create it. We should recognize that these virtues can be separate and will often prove to be remote from one another. When we attempt to aggregate them, through phrases like “emotional intelligence,” “creative intelligence,” and “moral intelligence,” we should realize that we are expressing a wish rather than denoting a necessary or even a likely coupling.

We have an aid in converting this wish to reality: the existence of powerful examples—people who succeed in exemplifying two or more

352 *Definition*

cardinal human virtues. To name names is risky—particularly when one generation’s heroes can become the subject of the next generation’s pathographies. Even so, I can without apology mention Niels Bohr, George C. Marshall, Rachel Carson, Arthur Ashe, Louis Armstrong, Pablo Casals, Ella Fitzgerald.

49 In studying the lives of such people, we discover human possibilities. Young human beings learn primarily from the examples of powerful adults around them—those who are admirable and also those who are simply glamorous. Sustained attention to admirable examples may well increase the future incidence of people who actually do yoke capacities that are scientifically and epistemologically separate.

50 In one of the most evocative phrases of the century the British novelist E. M. Forster counseled us, “Only connect.” I believe that some expansionists in the territory of intelligence, though well motivated, have prematurely asserted connections that do not exist. But I also believe that as human beings, we can help to forge connections that may be important for our physical and psychic survival.

51 Just how the precise borders of intelligence are drawn is a question we can leave to scholars. But the imperative to broaden our definition of intelligence in a responsible way goes well beyond the academy. Who “owns” intelligence promises to be an issue even more critical in the next century than it has been in this era of the IQ test.

Content

1. What is intelligence? Compare and contrast some of the types Gardner refers to, which may be divided into two groups, the sort that “predicts success in school and in school-like activities” (§s 4–10, 28) and all other kinds, including “the abilities to create, to lead, and to stand out in terms of emotional sensitivity or moral excellence” (§ 28).

2. How can intelligence of a particular sort best be measured?

3. Who owns intelligence? The people who possess it? The society or social subgroup that determines what sorts of intelligence are valuable, necessary, appreciated—and those that aren’t? The testers? How does Gardner’s essay address this issue?

Strategies/Structures/Language

4. Find examples in Gardner’s essay of the following common techniques of definition, and comment on their effectiveness in conveying one or more meanings of intelligence:

- a. Illustration
- b. Comparison and contrast
- c. Negation (saying what something is not)
- d. Analysis
- e. Explanation of a process (how something is measured or works)
- f. Identification of causes or effects

- g. Simile, metaphor, or analogy
 - h. Reference to authority or the writer's own expertise
 - i. Reference to the writer's or others' personal experience or observation
5. Gardner's essay is full of arguments: for his definition of intelligence, against competing definitions; for various practical ways of measuring intelligence, against particular sorts of testing. Identify some of the assertions and evidence he uses to support his claims. Are they credible?
6. Does Gardner believe it's possible to expand the definition of *intelligence* to include virtue (§ 43), to make it encompass qualities he'd like it to have?
7. Can people change definitions of words to make them mean what they want them to mean? Or does every term have a border around it (§ 50)? If so, who creates and enforces the boundaries?

For Writing

8. Write your own definition either of *intelligence* in general or of a specific type of intelligence such as one that Gardner discusses in his essay. You may need to define some of these yourself or consult other sources for the intelligences Gardner only touches on: a. psychometric intelligence (§s 4–10); b. the “‘practical’” ability to adapt to varying contexts (§ 17); the “ability to deal with novel information” (§ 18); emotional intelligence (§s 19, 31–33); moral intelligence (§s 19, 41–45); or creativity (§s 41–45). Or define a form of intelligence on Gardner's personal list that includes “linguistic, logical-mathematical, musical, spatial, bodily-kinesthetic, naturalist, interpersonal, and intrapersonal.” (See Gardner's book *Frames of Mind* [1983] or any other of Gardner's numerous writings on the subject.) Use one or more techniques of definition identified in Strategies above, and, assuming that you yourself fulfill your own definition of *intelligent*, supplement your more general definition with a specific firsthand example, and abundant illustrations, verbal and graphic.

9. Write a definition of an abstract concept for readers who may not have thought much about it—such as *love, truth, beauty, justice, greed, pride, or the good life*—but who have probably used it often in everyday life, something intangible that can be identified in terms of its effects, causes, manifestations, or other nonphysical properties. Use one or more techniques of definition identified above and illustrate your definition with one or two specific examples with which you are familiar. Then use the examples as a basis for making generalizations that apply to other aspects of the concept.



For comprehension, writing, and research activities and resources, please visit the companion website at <college.hmco.com/english>.

LYNDA BARRY

Lynda Barry (born 1956), daughter of a Filipino mother and an American father, grew up in an interracial neighborhood in Seattle. When she began Evergreen State College Barry “wanted to be a fine artist.” “Cartoons to me were really base.” Then she realized that her drawings could make her friends laugh, and shortly after she graduated, in 1978, she created “Ernie

Pook's Comeek," a wry, witty, and feminist strip now syndicated in over sixty newspapers in the United States, Canada, Russia, and Hungary. Barry's eighth comic collection is *It's So Magic* (1994); her second novel is *Cruddy* (1998). *One! Hundred! Demons!*, her autobiography in graphic novel format, was published in 2003.

"Common Scents" (from *One! Hundred! Demons!*) illustrates what Barry told an interviewer, "There was always a lot of commotion in the house, mostly in the kitchen. We didn't have a set dinner or lunch or breakfast time; when we wanted to eat there was always food on the stove. . . . At the time it was a little frustrating for me, because I looked to all the world like a regular little white American kid, but at home we were eating real different food and there was sometimes octopus in the refrigerator and stuff that was scary looking to my friends. . . . We ate with our hands, and when you say that, people think that you're also squatting on the floor . . . but it wasn't like that. There's a whole etiquette to the way that you eat with your hands, just like you hold a fork. And it was lively and unusual, an atmosphere where I . . . could pretty much do whatever I wanted to do."

Common Scents

1



2



3



5



4



7



6





10

SHE HAD THOSE CAR FRESHENER CHRISTMAS TREE THINGS HANGING EVERYWHERE. EVEN THE MARSHMALLOW TREATS SHE MADE HAD A FRESH PINE-SPRAY FLAVOR. SHE WAS FREE WITH HER OBSERVATIONS ABOUT THE SMELL OF OTHERS.



YOUR ORIENTALS HAVE AN ARRAY, WITH YOUR CHINESE SMELLING STRONGER THAN YOUR JAPANESE AND YOUR KOREANS FALLING SOMEWHERE IN THE MIDDLE AND DON'T GET ME STARTED ON YOUR FILIPINOS.

11

SHE DETAILED THE SMELLS OF BLACKS, MEXICANS, ITALIANS, SOME PEOPLE I NEVER HEARD OF CALLED "BO-HUNKS" AND THE DIFFERENCE IT MADE IF THEY WERE WET OR DRY, FAT OR SKINNY. NATURALLY I BROUGHT THIS INFORMATION HOME.



AIE N'AKO! WHITE LADIES SMELL BAD TOO, NAMAN! SHE NEVER WASH HER POOKIE! HER KILI-KILI ALWAYS SWEAT-SWEATING! THE OLD ONES SMELL LIKE E-HEE! THAT LADY IS TUNG-AH!

13



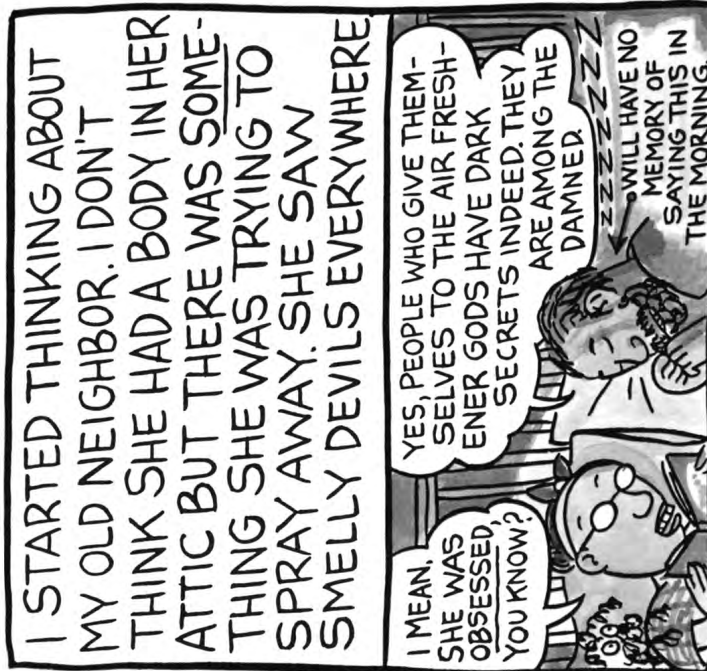
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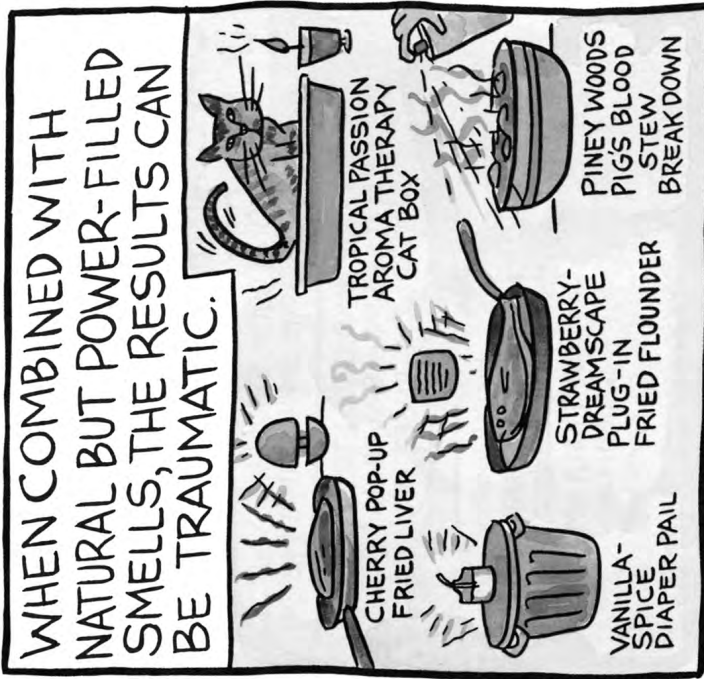
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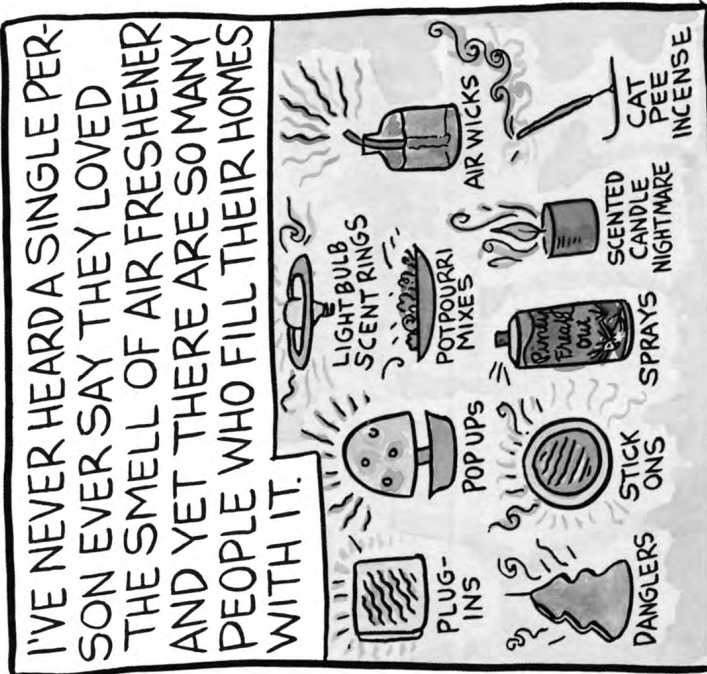
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19



Content

1. Good works of visual art, like good essays or stories, stand up to careful rereading; they can't be entirely taken in or understood at a single glance. Skim "Common Scents" and then go back and review it carefully. What topics and meanings come into sharp focus on the second reading?

2. Explain the meaning of the caption of panel 7: "I probably had the strongest-smelling house in the neighborhood except for the bleach people, but I had no idea what it smelled like to others until I heard a comment about it." Can you identify some of the more exotic smells, such as "pigs blood stew" (panel 8) and duran (panel 19)?

Strategies/Structures/Language

3. None of Barry's characters look very attractive—in fact, by some criteria they'd be considered ugly. In what respects are they sympathetic or unsympathetic—just as characters are in a totally verbal story? In what ways does their appearance reinforce Barry's point?

4. What latitude does Barry have in using drawings with dialogue that she wouldn't have if the story were told entirely in writing?

For Writing/Drawing

5. If you're artistically inclined, tell a story that presents a social commentary through a series of six to eight pictures (or more, if you get carried away) with captions that reinforce the pictures and perhaps explain them. If your artistic abilities are limited, either work with a partner who can draw or use someone else's cartoons or drawings and substitute your own captions. In either case, write an analysis of what you've done, and why, to show how the illustrations and the text reinforce one another.

6. "Common Scents" obliges readers to think about smells—of people (and ethnic stereotypes of their smells), of food, of environments: "[The air freshener lady] detailed the smells of blacks, Mexicans, Italians . . . 'bo-hunks' and the difference it made if they were wet or dry, fat or skinny" (panel 11)—and to examine their prejudices concerning these smells. In fact, American culture in general may be prejudiced against most odors, given the fact that in the United States many people try to remove all odors except those of some flowers and some foods. Explain why this is so. In what ways have Barry's drawings raised your critical awareness of this practice? Would a national culture with a greater range and variety of acceptable smells be preferable?

7. If you're not an artist, write a paper in which you analyze and explain Barry's "Common Scents" or another cartoon sequence with a social point, such as Art Spiegelman's "Mein Kampf" (116–17), another sequence by Spiegelman, or one of Garry Trudeau's *Doonesbury* comic strips.



For comprehension, writing, and research activities and resources, please visit the companion website at <college.hmco.com/english>.

Code Blue: Two Definitions

JASMINE INNERARITY

Innerarity, born (1968) and raised in Jamaica, studied at the University of Toronto and earned from the University of Connecticut a BS in nursing (1989) and an MS in nursing/public health (1999). A pediatric oncology nurse, she has served as president of the Connecticut chapter of the Society of Pediatric Nurses and has written movingly of her compassionate care of young patients—those who would survive, and those who would not.

The writing of “Code Blue: The Process” presented problems for Innerarity. She wanted to present an accurate and precise definition of what happens during this emergency procedure that would be clear to an audience of undergraduates, who needed further definitions of terms such as “intubation,” “crash cart,” and “ambu bag.” During the course of several revisions, to ensure that her writing was both accurate and ethical, she checked her work with nursing colleagues (was she revealing medical secrets? no!). She also provided additional definitions of key terms and more illustrations because of her realization that what she as a professional nurse could take for granted was not always common knowledge. To avoid giving the impression of medical infallibility, her last revision was to include an example of the fact that despite a medical team’s best efforts Code Blue procedures do not always succeed.

❁ *Code Blue: The Process*

An unforgettable moment in caring for the sick in the hospital or any institutional setting is the Code Blue Process. Code Blue is the alert signal for a patient who has stopped breathing or whose heart has stopped. This signal is universal throughout hospitals in the U.S. The alert is given via the physicians’ private beepers and the overhead intercom within hospitals. This process is always associated with what seems like chaos to the outsider but to the health team, it is well organized and well executed.

Code Blue is usually initiated by the nurse. There are many reasons for this. First, the nurse spends more time with the patient than any other member of the health team. In addition, the nurse is continuously assessing the patient’s condition. The nurse usually detects small changes in vital signs or physical conditions at crucial times when other members of the health team are absent.

Within the hospital, a patient who has stopped breathing or who is in cardiac arrest is quickly discovered because the circular arrangement of the floor allows all patients to be seen from the nursing station. In addition, those patients who are unstable are placed on cardiac monitors with audio

366 Definition

alarms which alert the medical team to changes in their health status if medical personnel is not present in the room.

- 4 A cart which is equipped with all the necessary equipment to initiate the Code Blue response is also placed in a central region on each hospital floor. This cart called the “Code cart,” usually contains intravenous fluids, emergency medications, and equipment used for intubating the patient. In the event of a Code Blue, this cart is immediately brought into the patient’s room.

Example of Code Blue Process

- 5 Timmy was a two-year-old boy. He was in the Intensive Care Unit for a neurological condition which affects his breathing patterns. He has been doing well. I have been caring for him for the past week and have watched his progress with great joy. He was still being monitored before being released from the Intensive Care Unit to the regular Hospital Unit.
- 6 One morning, I walked in to see Timmy five minutes after his mother had left the room. I had heard them playing together minutes before she left. As I entered the room, I noticed that Timmy was lying still and his lips were turning blue. “Timmy! Timmy!” I shouted, while shaking him. He did not respond. “I have a Code Blue,” I called out.
- 7 My shout of “Code Blue!” was the warning to the rest of the health team to get someone else into the room while the secretary announces the alert to the Code Blue team. In a Code Blue situation, a member from several different medical teams appears. The teams are designed to ensure that in an emergency situation, such as this one, each physician or health care member essential to getting this patient back to health is present. Although the medical personnel who arrive vary by hospitals, there is usually a surgeon, a cardiologist, a respiratory therapist, an anesthesiologist, an intensivist, and the patient’s primary or attending physician for the day. The primary physician leads the Code team by getting a quick history of what precipitated the patient’s cessation of breathing and tries to determine how to reverse this crisis. His role is to give the orders in the code.
- 8 The surgeon arrives to insert central lines—a plastic tubing going from the outside of the body to the inside that is used to infuse medication, fluids, and blood products quickly into the body and heart. A cardiologist has the role of prescribing medications to ensure that the most central organ in the body (the heart) is functioning.
- 9 The anesthesiologist has the role of sedating and intubating the patient who has stopped breathing. Intubation involves placing a plastic tubing through the patient’s mouth and into his or her lungs. This process requires considerable skill, because one has to take care to insert the tube into the trachea, and not into the esophagus which leads to the stomach. Once the tube is placed into the lungs, an X-ray is taken of the chest to confirm that this tube is in fact where it belongs, in the lungs. The end of

the tubing which projects from the mouth is connected to a respirator, a computerized machine that breathes for the patient. The respiratory therapist is in charge of monitoring the respirator.

Accessory personnel, such as members of the fire department or EMT team from the hospital, may arrive to assist in a Code Blue situation. In fact, it is not unusual after the initial assessment of the situation to ask some health personnel who are not needed to leave the room. The aim is to prevent clutter and maximize efficiency in responding to the Code.

A series of quick actions is executed within a minute of the Code Blue call. A team of health professionals rushes into the room. As I try to instill air into Timmy's lungs, using a mechanical device called an "ambu bag," another nurse feels for pulses, and the physician prepares to intubate Timmy. An ambu bag is a pressure bag made of rubber (it looks like an inflated balloon) that has two ends. One end has a long plastic tubing which connects to an oxygen tank or oxygen outlet in the wall, and the other end has a mouthpiece which fits over the patient's face and mouth. When the middle part of the balloon is squeezed, oxygen is expelled into the patient's mouth and ultimately into the lungs.

The physician in charge of Timmy gives the orders:

"500 ml of I.V. fluids wide open stat!"

"What's his pressure?"

"Does he have a pulse?"

"Yes."

"Okay, let's have a blood gas."

Each member of the team rushes to fulfill their role.

The series of quick necessary motions, as well as the numerous health professionals in the patient's room, give the impression of disorder. On the contrary, the process is very orderly: Blood is being drawn, phone calls are being made to get lab results quickly, and the physician is speaking loudly so that everyone can hear what to do and when. There is no time for mishaps. It is an assembly line and everyone must be alert. Each team member must mesh into this new team, the team of people trying to save the patient's life.

Timmy starts to cry after three minutes of resuscitation. His lips are no longer blue. "Good job, team," says the physician.

The team rushes out and back to their original stations. The nurses stay behind to do what they do best, care for Timmy and comfort his family. Timmy's mother has been brought down to the lounge during the code. Timmy will be in an oxygen tent for the night. "What's that?" she asks, pointing to the tent. The oxygen tent is made of plastic and is in the shape of a tent (hence the name). It delivers a continuous supply of oxygen to Timmy, which will help with his breathing overnight. I sit to explain to her what just happened to Timmy and to answer any questions she may have. Timmy's mother takes my hand, "Thanks for saving him."

368 *Definition*

- 16 The process of Code Blue in this instance is short, lasting for fifteen minutes only. Timmy responded well to the medical interventions. In other cases, however, the outcome can be grave. Mark was a twelve-year-old boy with a brain tumor. His family had agonized about the decision to make him a “Do not resuscitate” (DNR) patient. This status implies that if he should stop breathing, then the Code Blue process would not be initiated. DNR is attributed to patients who are gravely ill and for whom medical interventions have proven ineffective. The decision to make a patient a DNR however, is ultimately that of the family. Mark’s parents wanted everything to be done for him despite the recommendation of DNR status by the physicians. Thus, Mark was not a DNR.
- 17 When Mark stopped breathing one evening, a Code Blue was called. Again the group of medical personnel arrived to save Mark’s life. In this case and unlike Timmy, Mark responded poorly to the use of the ambu bag. His heart stopped. He was intubated by the anesthesiologist and was placed on a respirator. The private physician shouted: “We need to take him to the operating room (OR), he’s bleeding.” The physicians debated whether Mark’s heart was strong enough for the OR. Despite several medications, Mark’s heart would not return to the normal sinus rhythm.
- 18 The health team rushed to get blood into his body. The surgeons debated whether they could stop the bleeding, which they found was in his brain. After forty-five minutes of medications and mechanical ventilation, Mark still did not respond. The primary physician and the family talked about the grave outcome for Mark. After a half hour had passed since the Code Blue, the parents decided to let Mark go. He was taken off the respirator and died immediately.
- 19 The timing for the Code Blue process is as varied as the patients involved in the process. The two examples above showed the difference in response to medical interventions, which determine how long the process is continued. In many instances, the team will continue the process for up to an hour if the patient responds to medication. The patient will then be transferred to an Intensive Care Unit where he will be monitored closely until he is stable.
- 20 There are many emotions involved in a Code Blue process, depending on whether the outcome is good or poor. Initially, the team members experience a rush of adrenalin. This occurs because a Code Blue does not happen daily, so the nervousness, yet urgency of the situation takes one by surprise. There is also the continuous struggle with the ethical issues involved in Code Blue situations. For example, in each Code Blue situation, the determination must be made whether or not that patient is a DNR status. Usually the primary nurse and physician are aware of this status. At times, however, the determination must be made immediately. Nurses as well as family members struggle with the decision to make someone a DNR or a full code status.



What's going on here? How many people are present? What are the mode, tone, and energy level of the activities depicted here? What is the relation of teamwork to this matter of life and death?

One of the biggest rewards in caring for the sick is the miracle of seeing a person who has stopped breathing and who looks lifeless return to life. After ten years of being involved in the nursing process, my natural instinct is to care for those who are sick. I genuinely believe that caring for the sick makes them better. Of course, the Code Blue process shows that this is not always true. However, in my experience, the positive outcomes disproportionately overshadow the very small number of morbid outcomes.

[Suggestions for reading and writing about this essay are combined with those pertaining to Abraham Verghese's "Code Blue: The Story" and appear on pages 372–73.]

ABRAHAM VERGHESE

Verghese was born in Addis Ababa, Ethiopia (1955), where his expatriate Indian parents were teachers, but he returned to India to study medicine (MD, Madras University, 1979). During his residency at East Tennessee State University (1980–1983), Verghese concentrated on infectious diseases because, he says, "it offered the promise of a cure. In the early 1980s infectious disease was the one discipline where a cure was common." But in

370 *Definition*

August 1985, the local hospital in rural Johnson City treated its first AIDS patient, and soon the crisis that had once seemed an urban problem spread to the small town, as well. *My Own Country: A Doctor's Story* (1994) describes how Verghese, as a specialist in infectious diseases, gradually became drawn into the treatment of the "shocking number" of male and female patients who took over not only his professional life but also his compassionate imagination.

Of this experience, Verghese, now chief of infectious diseases at Texas Technological Regional Academic Health Center in El Paso, says, "Today I am a doctor who is unable to cure." He explains, "You're suddenly dealing with people your own age whose plight makes you reflect on your ideas about sex, about social issues and, of course, about your own mortality. Almost every emotion is magnified and brought into sharp relief with AIDS." He began writing nonfiction, now published in the *New Yorker* and many other places, aided by a year's Michener Fellowship to the Writers' Workshop at the University of Iowa (1990–1991), as a way to deal with "some of my frustrations at work. I can't reverse death, I can't get into a patient's mind and think his thoughts. But with writing, the boundaries are virtually limitless," as Verghese's most recent book, *The Tennis Partner: A Doctor's Story of Friendship and Loss* (1998) also illustrates. "Code Blue: The Story" opens *My Own Country*, putting into dramatic action—with characters, dialogue, and frenetic activity—the definition that Innerarity has explained in a more formal manner.

Code Blue: The Story

- 1 **I**n the early evening of August 11, 1985, he was rolled into the emergency room (ER) of the Johnson City Medical Center—the "Miracle Center," as we referred to it when we were interns. Puffing like an overheated steam engine, he was squeezing in forty-five breaths a minute. Or so Claire Bellamy, the nurse, told me later. It had shocked her to see a thirty-two-year-old man in such severe respiratory distress.
- 2 He sat bolt upright on the stretcher, his arms propped behind him like struts that braced his heaving chest. His blond hair was wet and stuck to his forehead; his skin, Claire recalled, was gunmetal gray, his lips and nail beds blue.
- 3 She had slapped an oxygen mask on him and hollered for someone to pull the duty physician away from the wound he was suturing. A genuine emergency was at hand, something she realized, even as it overtook her, she was not fully comprehending. She knew what it was not: it was *not* severe asthma, status asthmaticus; it was *not* a heart attack. She could not stop to take it all in. Everything was happening too quickly.
- 4 With every breath he sucked in, his nostrils flared. The strap muscles of his neck stood out like cables. He pursed his lips when he exhaled, as if he was loath to let the oxygen go, hanging on to it as long as he could.

Electrodes placed on his chest and hooked to a monitor showed his heart fluttering at a desperate 160 beats per minute.

On his chest x-ray, the lungs that should have been dark as the night were instead whited out by a veritable snowstorm.

My friend Ray, a pulmonary physician was immediately summoned. While Ray listened to his chest, the phlebotomist drew blood for serum electrolytes and red and white blood cell counts. The respiratory therapist punctured the radial artery at the wrist to measure blood oxygen levels. Claire started an intravenous line. And the young man slumped on the stretcher. He stopped breathing.

Claire punched the "Code Blue" button on the cubicle wall and an operator's voice sounded through the six-story hospital building: "Code Blue, emergency room!"

The code team—an intern, a senior resident, two intensive care unit nurses, a respiratory therapist, a pharmacist—thundered down the hallway.

Patients in their rooms watching TV sat up in their beds; visitors froze in place in the corridors.

More doctors arrived; some came in street clothes, having heard the call as they headed for the parking lot. Others came in scrub suits. Ray was "running" the code; he called for boluses of bicarbonate and epinephrine, for a second intravenous line to be secured, and for Claire to increase the vigor but slow down the rate of her chest compressions.

The code team took their positions. The beefy intern with Nautilus shoulders took off his jacket and climbed onto a step stool. He moved in just as Claire stepped back, picking up the rhythm of chest compressions without missing a beat, calling the cadence out loud. With locked elbows, one palm over the back of the other, he squished the heart between breastbone and spine, trying to squirt enough blood out of it to supply the brain.

The ER physician unbuttoned the young man's pants and cut away the underwear, now soiled with urine. His fingers reached for the groin, feeling for the femoral artery to assess the adequacy of the chest compressions.

A "crash cart" stocked with ampules of every variety, its defibrillator paddles charged and ready, stood at the foot of the bed as the pharmacist recorded each medication given and the exact time it was administered.

The clock above the stretcher had been automatically zeroed when the Code Blue was called. A code nurse called out the elapsed time at thirty-second intervals. The resident and another nurse from the code team probed with a needle for a vein to establish the second "line."

Ray "bagged" the patient with a tight-fitting mask and hand-held squeeze bag as the respiratory therapist readied an endotracheal tube and laryngoscope.

At a signal from Ray, the players froze in midair while he bent the young man's head back over the edge of the stretcher. Ray slid the laryngoscope in between tongue and palate and heaved up with his left hand,

372 *Definition*

pulling the base of the tongue up and forward until the leaf-shaped epiglottis appeared.

18 Behind it, the light at the tip of the laryngoscope showed glimpses of the voice box and the vocal cords. With his right hand, Ray fed the endotracheal tube alongside the laryngoscope, down the back of the throat, past the epiglottis, and past the vocal cords—this part done almost blindly and with a prayer—and into the trachea. Then he connected the squeeze bag to the end of the endotracheal tube and watched the chest rise as he pumped air into the lungs. He nodded, giving the signal for the action to resume.

19 Now Ray listened with his stethoscope over both sides of the chest as the respiratory therapist bagged the limp young man. He listened for the muffled *whoosh* of air, listened to see if it was equally loud over both lungs.

20 He heard sounds only over the right lung. The tube had gone down the right main bronchus, a straighter shot than the left.

21 He pulled the tube back an inch, listened again, and heard air entering both sides. The tube was sitting above the carina, above the point where the trachea bifurcates. He called for another chest x-ray; a radiopaque marker at the end of the tube would confirm its exact position.

22 With a syringe he inflated the balloon cuff at the end of the endotracheal tube that would keep it snugly in the trachea. Claire wound tape around the tube and plastered it down across the young man's cheeks and behind his neck.

23 The blue in the young man's skin began to wash out and a faint pink appeared in his cheeks. The ECG machine, which had spewed paper into a curly mound on the floor, now showed the original rapid heart rhythm restored.

24 At this point the young man was alive again, but just barely. The Code Blue had been a success.

Content

1. What is *Code Blue* according to Innerarity's definition?
2. Is it possible to infer a definition of *Code Blue* from Verghese's illustration of Code Blue in action? What additional information do you need?
3. After she had written several versions of "Code Blue" that contained only positive examples, Innerarity added a negative example—of Code Blue not working—at her teacher's insistence. Does the negative example undercut the positive?
4. Why, in medical and science writing, are there usually many more positive examples (successful processes and procedures) than negative ones? Do the essays by Innerarity and Verghese bear this out?

Strategies/Structures/Language

5. Why would nonmedical people want to know the details of a procedure that can be performed only by a medical team?

6. Innerarity offers a textbook definition of the process, personnel, and equipment used to carry out a Code Blue. In contrast, Verghese shows Code Blue in action. Explain how his narrative also functions as a definition. Which version of “Code Blue” are you more likely to remember? Why?
7. Innerarity had difficulty translating medical terminology into everyday language and wrote several drafts to simplify and clarify the language. Has she succeeded? Has she used any terms that still need definition?

For Writing

8. Define a specialized technical or scientific term or process so a nonspecialist can understand it. See the Magliozzis (142–46), Innerarity and Verghese (365–72), Gardner (342–52), Turkle (397–402), and McKibben (413–23).
9. Write/draw a segment of your life in the form of a graphic novel, as Spiegelman (116–17) and Barry (354–63) do.
10. Write a narrative (that is, tell a true story), as Innerarity and Verghese do, that through its characters and action implies a definition of a significant term—such as *love* (or *hate*), *beauty* (or *ugliness*), *fidelity* (or *betrayal*), *honesty* (or *dishonesty*)—or of a process (how to form or destroy a friendship, how to travel); or of some other concept that you expect to learn to understand in the process of writing about it. See Britt (261–63), Spinner (374–79), White (97–103), Sanders (249–59), and Rodriguez (310–16).



For comprehension, writing, and research activities and resources, please visit the companion website at <college.hmco.com/english>.

JENNY SPINNER

For biographical information, see page 333. The most frequently appearing “character” in Spinner’s personal essays—besides herself—is her twin sister Jackie. In fact, Jenny Spinner has written interchapters to Jackie’s book, *Tell Them I Didn’t Cry: A Young Journalist’s Story of Joy, Loss and Survival in Iraq* (2006), where Jackie was *Washington Post* Bureau Chief in Baghdad, 2003–2004. “I use the word *character* on purpose,” Spinner explains. “In many of my essays, Jackie is a true wit. Of course she’s charming and funny in reality, but she’s extraordinarily charming and funny in my essays. She’s there to make the reader laugh, to make me look good. . . .

“It is when I write seriously about her, when I try to describe our unique relationship as adopted twins, that I most struggle. I was twenty-eight when I began writing ‘In Search of Our Past.’ I had been writing since I was eighteen. It took me ten years to find the courage to write the story of our beginning. Our relationship is so powerful, and so powerfully embedded in who I am, that I was almost afraid to touch it, as if doing so would either cheapen it or prove entirely inadequate.

"I had to remind myself, as I remind my students, that 'I am not the page.' My writing is a construction of myself, of my sister, of our relationship. I am not writing a life; I am writing *about* a life (and thereby creating a new life, in print). To that end, I cannot possibly write about our life in a single essay, or even in a book of essays. The initial drafts of 'In Search of Our Past' include too much detail, too many stories, too many angles on our relationship. . . . I'd lost track of my readers—who didn't need them—and of my focus for this essay: to write about our adoption.

"When revising 'In Search of Our Past,' as is the case each time I write about my sister, I had to forgive myself: for not being able to write perfectly about what means most to me. In the process, I also felt relieved. After all, my readers have access only to that which I give them. I, the writer and chief engineer, remain in control of construction. My writing represents many choices, to include some details, leave behind others. I choose to make my sister savvy and myself a bit awkward. These choices are grounded in reality, in what is true, but they remain creations. I create."

In Search of Our Past

- 1 **W**hen we were young, my twin sister Jackie and I shared everything. Although our childhood years were not the last we shared, they were the least divided. We had the same Baby Alive dolls that burbled slime which Grandpa Spinner once heroically ate; same Buster Browns, brown, narrow, fitted with arch supports for flat feet; same cotton dresses that barely touched the knees; same Trixie Belden books bought for us to share. And share we did: the dresser, its drawers; bathroom towels; gum sometimes; earrings, make-up, the car during high school; perfectionism, ambition and eating disorders after that. But what really mattered is that we shared the door to our bedroom, the way in, the way out, the lock that could be opened with a toothpick: one door, one way, one lock. There is little dignity in running to a room mid-tantrum, sobbing, slamming a door so hard that the second-floor windows rattle, only to turn around and find someone sitting in the middle of her bed watching you unfold.
- 2 It seems fitting that we shared so much of our lives together in our strawberry pink room with its strawberry walls, strawberry carpet, strawberry gingham bedspreads and curtains. What came before the pink was colorless, blank, *tabula rasa* in its purest sense, and we shared that blankness, too. Unlike our brother Tim, twenty months younger and biological child of our parents, we had no roots before birth. The first few weeks following that birth hinged on tiny, gathered bits of information. Adopted at twenty-three days old, we came into the world free of any heritage other than the one we chose for ourselves.
- 3 It was something we always knew: adoption. One of my earliest memories is of the two of us begging my parents to "tell the story." "Don't

you ever get tired of hearing it?" my mother asked, amused. "No." No, even though there was not much to it, or to the answers we sought: A poor young woman and her husband could not afford two infants. They loved them, yes, enough to give them up—because that is what you do, when you love something more than yourself. And so, after repeated tellings, the myth of our birth evolved, out of one "lady," whom we carefully never called mother and one man who soon disappeared from the stories we told ourselves.

For my parents, the story actually began two years before my sister and I were born. In June 1968, three years after they were married, my mother lay in bed trying not to bleed. She was three months pregnant with their first child. Trying hard to save the baby, to go twenty-four hours without spotting, she stayed in bed for several days. On the black-and-white Zenith at the edge of the bed, she watched as Sirhan B. Sirhan shot Bobby Kennedy two thousand miles away in a Los Angeles hotel. Kennedy did not survive; neither did my parents' baby. For a long time, my sister and I celebrated quietly the death of this child. Beneath a blanket tent on one of our beds, we whispered our understanding: Had the baby lived, we would not have—at least not in the lives we knew.

In 1969, after four years of trying to conceive, my parents contacted Lutheran Child and Family Services—a private adoption agency affiliated with the Lutheran Church Missouri Synod. At that time, my mother's oldest sister already had three children; my father's oldest brother, two. My parents so desperately wanted to contribute a baby to the family that when their adoption counselor asked if they were willing to adopt multiple birth babies, they agreed. So rare was this possibility that the question was more formality than reality.

That reality soon reordered itself, however, when my mother received a telephone call from their counselor on July 28, 1970. Would she and my father be interested in adopting twin girls born on the fifteenth? This phone call is the closest thing my sister and I have to a conception. It is the moment in which the idea of us was first presented to our parents, and it is the moment we call birth. Details about the days before are scattered and incomplete. According to information given to my parents by the adoption agency, I had been living in a foster home in the Chicago area since July 24. Not released until July 31, my sister (four pounds at birth compared to my plumper five) was still in the hospital when my mother received the counselor's phone call.

Thinking about these early days creates questions for which there are few answers. We do know on July 15, 1970, at 2:08 and 2:10 P.M. we were delivered by cesarean in the former Chicago Masonic Medical Center (now Illinois Masonic Medical Center). Cesarean is important because it indicates a trace of permanence, a visible scar. On our birthday each year, we imagined her, "the lady," running her fingers across that scar, feeling the hard skin, wondering. Because of the scar, she can't forget. The hospital is

376 *Definition*

important, too, because it means a place exists, means in some building we were there, all three of us. One year, during a visit to Chicago relatives, our parents drove us by the Medical Center. Intimidated by the hospital's reality, we didn't ask to go inside. Behind closed eyes, I imagined pale green walls and gray filing cabinets hiding manila folders. In those folders were names—and a past. A few years later I ventured inside, just to see, but I wasn't allowed on the maternity ward. A nurse told me visitors might infect new mothers and babies. I paced the main lobby for an hour trying to find something that "she" saw, too. When my parents, waiting in the car, came in to find me, my mother tried to cheer me by buying me a pink baby shirt that she would have bought herself had I been hers at that hospital. Back in the car, I hid my face from her good intentions and swallowed sobs.

8 When I was twelve, I went searching for names and didn't find them. I did discover several pages of biographical data which the adoption agency had given to my parents and which my parents chose not to share with us—perhaps because we never asked, careful not to hurt their feelings by reminding them that we were not biologically theirs. In the bottom drawer of a filing cabinet, behind tax records, insurance papers and department store bills, I found a folder marked in my dad's neat block-letter hand: "GIRLS ADOPTION." I sat on his office floor for several minutes, unable to open the folder, the weight of my past leaning hard against my chest. When I finally peered inside, a twenty-seven-year-old man and a twenty-three-year-old woman stepped out to greet me, brushing the dust from their clothes—or trying to pull it back around them. She was tiny with dark brown hair and blue-green eyes. He was tall, had blond hair and blue eyes. These physical details were important. Ever since we were old enough to realize what we were doing, my sister and I had been searching crowds for the woman who gave birth to us. At the World's Fair in Tennessee we thought we saw her, but she disappeared before we could be sure.

9 When we were younger, a number of people told us we looked like our adoptive mother, and we did. We shared her straight brown hair, cut boyishly short like hers, parted in the middle, her brown eyes and fair skin. Our father and brother, with their dark blond hair and green eyes, were their own perfect match. When required to fill out heredity worksheets during what became the dreaded genetics unit in grade- and high-school science classes, we came close, pretending our parents' and grandparents' blood was really ours, at least by association. But the widows' peaks never matched; neither did the blood. In the end, those nights we spent in our pink room filling out our biological family trees were unhappy ones, and we wondered why it never occurred to our teachers that not everyone lived by science.

10 I memorized other details in the file, adding them to the pictures in my head and measuring myself. A talented cartoonist and fiction writer, the woman graduated from college and planned to attend graduate school.

The man was a college graduate, manager of a bank, dabbled in photography and art. They both swam and played tennis. The tomboy in me who loved taking pictures and writing beamed—until I read the next lines. Although they were college sweethearts and intended to marry, the man changed his mind after learning about the woman’s pregnancy. “He didn’t reject her but tried to help,” the black ink scrawled onto my heart. “Mother felt best thing to do was give up for adoption.” I realized then that my biological parents were not married, that what changed the man’s mind was my sister and me. Moreover, the vision of them sharing a life together was a myth, even though my mother always referred to him as the lady’s husband. Probably she gave birth, they parted and went on with their lives, trying not to remind themselves of what they had done. Probably. Nothing is sure. It was a lot to swallow at twelve, especially for someone surrounded in school and at home by a conservative religious doctrine that demanded men and women have sex only after marriage, that chastised people who ran from pregnancies. Until I was old enough to establish my own rules, make mistakes, understand, then forgive, I lived with the burden of sin. At the very least, I knew we were a mistake.

Near the bottom of the papers I found a physical description of Jackie and me at birth: petite feminine build, fair complexions, brown hair with blond highlights, dark blue eyes. When I shared my findings with my sister, we wondered if that description was all the woman knew. How soon did they take us away? Did she ask to hold us? Did she cry? We wondered, of course, if she now wondered, too. But most of our questions were not grounded in a dramatic fairy tale of two happy people ready to apologize and explain once discovered by their progeny. We simply wanted to color in a black hole that swallowed the beginning of our lives. “Dear Lady,” I wrote to her when I was thirteen, “Some day my sister and I will open our adoption records and find out your name. We won’t try to contact you. We just want a name. We’re not looking for a mother because we have one. We’re looking for some answers to questions we’ve had for a long time, questions that might remain unanswered forever.” Every year I wrote to her a version of that letter, always addressed “Dear Lady.” I never put the letter in an envelope, and every year it asked fewer questions and told more about me and my sister. I wasn’t bragging as much as insisting: that we turned out okay, that she would be proud.

Although the darkness surrounding our birth bothered us, my sister and I never opened our adoption records, even after we turned twenty-one and were old enough to do so. The desire for name finally lost its pull. Mostly we didn’t want to hurt our parents. The hole, after all, had nothing to do with them, and we had no intention of creating a new one—in their hearts. A few years ago, I ran into a childhood friend in a bar in my hometown. She had recently been hired by Lutheran Child and Family Services, and, she told me excitedly, she’d read our file. She knew our original names. Leaning close, smiling, she asked, “Do you want to know anything

378 *Definition*

else?" I set my glass on the table and told her I needed a minute to think. I walked to the back of the bar, found a pay phone and called my sister. At first I thought she couldn't hear me over the juke box. Neither of us said anything for a long time. Finally I understood her silence as "no," told our friend "no" and left. Our past stayed behind in the bar, washed down by glass after glass of ordinary beer.

13 From the time we began attending elementary school and our classmates learned of our adoption—how, I don't remember—we knew we were different. One morning in third grade, I stood in front of a long mirror in the girls' bathroom alongside Karen, both of us examining our faces.

14 "Do you ever wonder if you look like her?" she asked.

15 "Who?" I replied, avoiding her eyes, and my own.

16 "Your mother."

17 "I do look like my mother."

18 "Really? Have you seen a picture?"

19 "No."

20 "Then how do you know?"

21 "Because I see her every day." I knew what she was asking but I was determined not to let her make me feel different than she, the tall, skinny girl with long brown flapping braids who was a miniature version of her mother.

22 "I mean your real mother, not Mrs. Spinner," she said, turning away from the mirror.

23 "She is my real mother."

24 "It's not the same," she said, walking away and tossing her braids.

25 Although I hated Karen then, I knew she was right. But my sister and I were good at pretending.

26 Our brother Tim was not always as skilled. In angry moods, he reminded us that we did not belong as much as he did. We, too, were good at throwing an occasional "You love him better because he's yours" tantrum. Usually, however, we kept such comparisons inside. In trips to the grocery store or K Mart, Tim pushed ahead of us, pointing out boxes of cold cereal and stuffed bears he wanted. Jackie and I hung back, reluctant to ask for too much, afraid the expense would force my parents to give us back. We were eleven before we understood adoption well enough to know they couldn't return us. "Don't ask for anything," I whispered to my sister beneath a row of blonde Barbies. "Timmy can afford to, but not us."

27 One afternoon, we kneeled in front of the couch in our basement, tallying how much we had cost our parents since they brought us home. "Did you pay anything to get us?" my sister asked, nervously eyeing the lengthening expense column. "A little," my father said, buried in his own stack of bills and unaware of why she asked. In actuality, they paid \$1,000 to the adoption agency and about \$300 in lawyer's fees. The thought of any money at all, however, even "a little," was a shock to my sister and

me who viewed the transaction as one of love—poor parents handing over their babies to richer ones. Money turned love into business. It made us bought.

“All things considered,” I asked my father when I was older, “do you think your investment has paid off?” 28

“Of course,” he laughed. It wasn’t always that easy. Yet it was. The adoption story we lived was nothing like the dramas that entertained television audiences in the late 1980s, especially following the Baby M and Baby Jessica cases. For people who know nothing about it, adoption is fascinating, embarrassing or sad; for people who do, it just is. No woman ever demanded us back. We never considered going back. Our parents loved us completely, loved us as much as our brother. We also had a wonderful relationship with both sets of grandparents with whom we spent a great deal of time and considered best friends as we grew older. Only once did I feel the awkwardness of being an adopted child in my family. I had just returned home from the first three weeks of my freshman year at college—they were actually my only three weeks as I withdrew, homesick and disenchanted, a failure. I’d always made good grades and given my family reasons to be proud. Now, in the dark of my grandmother’s living room, I tried to explain what went wrong. Reaching out from her chair to touch my hand, she told me, “We don’t know certain things about you girls that could explain a lot. There could be ugly things in your past.” Her explanation startled me. Later I realized she was right, not about why I left college, but in some sense still right. My sister and I didn’t know anything beyond what we created for ourselves. 29

What we *had* created was each other. Eventually I learned there would be gaps even in what we constructed, times when I would be left alone to make sense of the absence that thrust us into this world. Until that time, the only world I knew contained my sister and what we held together—and I could not imagine any experience outside that bond. What lay outside was nothing we could name, touch, hold onto. Nothing would belong only to me, or to her, until we moved away from one another and began to create our own lives. 30

Those lives remain a curious mix of fervent attachment and the desire to be individuals. We are both writers, she a journalist, I, an essayist. We both run, physically and emotionally, until exhausted. She injures herself, and hundreds of miles away, I feel her pain. I cry, and she calls to ask what’s wrong. We fight tortured fights. We make up like lovers, whispering over and over, “Don’t leave me,” “I won’t,” until we are convinced that we will be okay, that no one, that nothing, can destroy us. Together, separately we live, stepping carefully from our shared past, from that dry well falling deep into the dark. 31

Content

1. What couldn't the adopted Spinner twins take for granted, or even know, that children living with their birth parents know and accept? Why, when Spinner finally has the chance to learn her birth parents' names and other information about them (§ 12), does she reject the opportunity?

2. Why did Spinner write this essay? What is its thesis? Is it implied or stated explicitly?

3. This essay could be interpreted from the perspective of contrasts: insiders/out-siders; people with an identifiable past/people without; people with twin siblings/people without; adoptive siblings/birth siblings living in the same family. Explain how these divisions govern what Spinner tells us about these relationships, and what she implies.

Strategies/Structures/Language

4. What's the meaning of Spinner's concluding paradox, "Together, separately we [Jenny and her twin sister] live, stepping carefully from our shared past, from that dry well falling deep into the dark" (§ 31)? Is the essay's ending optimistic, pessimistic, realistic?

For Writing

5. What problems exist for school children who are asked to write family histories when they don't know those histories? Or when the family stories are difficult to understand or full of problems? How can teachers adjust their assignments to be sensitive to issues of individual and family heritages? Construct such an assignment, and explain why you've written it in the way you have. Elicit responses to it from your fellow students before showing it to your instructor.

6. Write an essay that explores the relations between outsiders and a particular insider group such as a family; a group united by race, religion, ethnicity, class, or immigrant status; a gang; a club, a residence-hall group, a sorority or fraternity; or people of a particular geographic area whether urban, suburban, or rural, in a particular state or country. See essays by Tan (13–18), Wiesel (23–27), Yu (173–82), among others. Consider your audience to be outsiders to the group you are discussing.



For comprehension, writing, and research activities and resources, please visit the companion website at <college.hmco.com/english>.

Additional Topics for Writing

Definition

(For strategies for writing definition, see 332)

MULTIPLE STRATEGIES FOR WRITING DEFINITION

Definition is an essential component of many kinds of writing; it is often necessary to define terms, components, or concepts as the basis for explaining something or conducting an argument. Conversely, you may employ a variety of other strategies in writing definitions:

- *illustrations* and *examples*, to show the meaning of the entire term or its components, and to interpret them
- *photographs, drawings, diagrams, maps* as alternatives to “a thousand words”
- a *time sequence*, to show the formation or consequences of a particular term
- *explanations* and *analyses* of the term
- *comparison* and *contrast*; *division* and *classification*, to illustrate the parts of the whole
- a *narrative*, on occasion, to allow the meaning of the term to emerge gradually as the tale unfolds
- *negation*—what a term isn’t

1. Write an extended definition of one or more of the following trends, concepts, abstractions, phenomena, or institutions. Be sure to identify your audience, limit your subject, and illustrate your essay with specific examples.

- a. Peace (see the “World Peace” chapter)
- b. Terrorism, national or international (see the “Terrorism” chapter)
- c. Intelligence (see Gardner, 342–52)
- d. Physical fitness
- e. Personality
- f. Character
- g. Optimism
- h. Depression (economic or psychological) (see Angier, 291–94)
- i. The nature of friendship
- j. Marriage (either, the ideal marriage, or the ideal versus the reality)
- k. Parenthood (see White, 97–103; Lee, 156–64; Sanders, 249–59; Spinner, 374–79; and Rodriguez, 310–16)
- l. Education—formal or informal (see Kozol, 204–11; Zitkala-Sa, 196–202; Turkle, 397–402; and Sedaris, 306–8)
- m. A good job or profession; work; or a very bad job
- n. A sport, game, hobby, or recreational activity (see Young, 517–25)
- o. A Northerner, Southerner, Midwesterner, Texan, Californian, or person from some other state, region, or country
- p. A scientific or technical phenomenon of your choice (an eclipse, the “big bang” theory of creation, genetic engineering, DNA, the MX missile) (see Darwin, 335–40; Gould 404–11; McKibben, 413–23)

382 *Definition*

2. Explain a particular value system or belief system, such as the following:
 - a. Democracy, communism, socialism, or some other political theory or form of government
 - b. Protestantism (or a particular sect), Catholicism, Judaism (or a particular branch—Orthodox, Conservative, Reform), Buddhism (or a particular sort), Islam, or some other religion
 - c. A theoretical system and some of its major ramifications (feminism, Marxism, postcolonialism, Freudianism, postmodernism)
3. Prepare a dictionary of fifteen jargon or slang words used in your academic major, in your hobby, or in some other activity you enjoy, such as playing a particular sport or game, listening to a specific type of music, or working on a computer system.