

FRANCIS BACON

The Four Idols

FRANCIS BACON, Lord Verulam (1561-1626), lived during one of the most exciting times in history. Among his contemporaries were the essayist Michel Eyquem de Montaigne; the playwrights Christopher Marlowe and William Shakespeare; the adventurer Sir Francis Drake; and Queen Elizabeth I, in whose reign Bacon held several high offices. He became lord high chancellor of England in 1618 but fell from power in 1621 through a complicated series of events, among which was his complicity in a bribery scheme. His so-called crimes were minor, but he paid dearly for them. His book *Essays* (1597) was exceptionally popular during his lifetime, and when he found himself without a proper job, he devoted himself to what he declared to be his own true work: writing about philosophy and science.

His purpose in *Novum Organum* (The new organon), published in 1620, was to replace the old organon, or instrument of thought, Aristotle's *treatises on logic and thought*. Despite Aristotle's pervasive influence on sixteenth- and seventeenth-century thought—his texts were used in virtually all schools and colleges—Bacon thought that Aristotelian deductive logic produced error. In *Novum Organum* he tried to set the stage for a new attitude toward logic and scientific inquiry. He proposed a system of reasoning usually referred to as induction. This quasi-scientific method involves collecting and listing observations from nature. Once a mass of observations is gathered and organized, Bacon believed, the truth about what is observed will become apparent.

Bacon is often mistakenly credited with having invented the scientific method of inquiring into nature; but although he was right about the need for collecting and observing, he was wrong



about the outcome of such endeavors. After all, one could watch an infinite number of apples (and oranges, too) fall to the ground without ever having the slightest sense of why they do so. What Bacon failed to realize—and he died before he could become scientific enough to realize it—is the creative function of the scientist as expressed in the hypothesis. The hypothesis—an educated guess about why something happens—must be tested by the kinds of observations Bacon recommended.

Nonetheless, "The Four Idols" is a brilliant work. It does establish the requirements for the kind of observation that produces true scientific knowledge. Bacon despaired of any thoroughly objective inquiry in his own day, in part because no one paid attention to the ways in which the idols, limiting preconceptions, strangled thought, observation, and imagination. He realized that the world be natural philosopher was foiled even before he began. Bacon was a farsighted man. He was correct about the failures of science in his time; and he was correct, moreover, in his assessment that advancement would depend on sensory perception and on aids to perception, such as microscopes and telescopes. The real brilliance of "The Four Idols" lies in Bacon's focus not on what is observed but on the instrument of observation—the human mind. Only when the instrument is freed of error can we rely on its observations to reveal the truth.

Bacon's Rhetoric

Bacon was trained during the great age of rhetoric, and his prose (even though in this case it is translated from Latin) shows the clarity, balance, and organization that characterize the prose writing of seventeenth-century England. The most basic device Bacon uses is enumeration: stating clearly that there are four idols and implying that he will treat each one in turn.

Enumeration is one of the most common and most reliable rhetorical devices. The listener hears a speaker say "I have only three things I want to say today" and is alerted to listen for all three, while feeling secretly grateful that there are only three. When encountering complex material, the reader is always happy to have such "road signs" as "The second aspect of this question is . . ."

"The Four Idols," after a three-paragraph introduction, proceeds with a single paragraph devoted to each idol, so that we have an early defini of each and a sense of what to look for. Paragraphs 8–16

cover only the issues related to the Idols of the Tribe: the problems all people have simply because they are people. Paragraphs 17–22 consider the Idols of the Cave: those particular fixations individuals have because of their special backgrounds or limitations. Paragraphs 23–26 address the questions related to Idols of the Marketplace, particularly those that deal with the way people misuse words and abuse definitions. The remainder of the selection treats the Idols of the Theater, which relate entirely to philosophic systems and preconceptions—all of which tend to narrow the scope of research and understanding.

Enumeration is used within each of these groups of paragraphs as well. Bacon often begins a paragraph with such statements as "There is one principal . . . distinction between different minds" (para. 19). Or he says, "The idols imposed by words on the understanding are of two kinds" (para. 24). The effect is to ensure clarity where confusion could easily reign.

As an added means of achieving clarity, Bacon sets aside a single paragraph—the last—to summarize the main points that he has made, in the order in which they were made.

Within any section of this selection, Bacon depends on observation, example, and reason to make his points. When he speaks of a given idol, he defines it, gives several examples to make it clearer, discusses its effects on thought, and then dismisses it as dangerous. He then goes on to the next idol. Where appropriate, in some cases he names those who are victims of a specific idol. In each case he tries to be thorough, explanatory, and convincing.

Not only is this work a landmark in thought; it is also, because of its absolute clarity, a beacon. We can still benefit from its light.

PREREADING QUESTIONS: WHAT TO READ FOR

The following prereading questions may help you anticipate key issues in the discussion of Francis Bacon's "The Four Idols." Keeping them in mind during your first reading of the selection should help focus your attention.

- What are the four idols?
- Why do the four idols make it difficult for us to see the truth?
- What are some chief characteristics of human understanding?

The Four Idols

The idols¹ and false notions which are now in possession of the human understanding, and have taken deep root therein, not only so beset men's minds that truth can hardly find entrance, but even after entrance obtained, they will again in the very instauration² of the sciences meet and trouble us, unless men being forewarned of the danger fortify themselves as far as may be against their assaults.

There are four classes of idols which beset men's minds. To these for distinction's sake I have assigned names—calling the first class *Idols of the Tribe*; the second *Idols of the Cave*; the third, *Idols of the Marketplace*; the fourth, *Idols of the Theater*.

The formation of ideas and axioms by true induction³ is no doubt the proper remedy to be applied for the keeping off and clearing away of idols. To point them out, however, is of great use; for the doctrine of idols is to the interpretation of nature what the doctrine of the refutation of sophisms⁴ is to common logic.

The *Idols of the Tribe* have their foundation in human nature itself, and in the tribe or race of men. For it is a false assertion that the sense of man is the measure of things. On the contrary, all perceptions as well of the sense as of the mind are according to the measure of the individual and not according to the measure of the universe. And the human understanding is like a false mirror, which, receiving rays irregularly, distorts and discolors the nature of things by mingling its own nature with it.

The *Idols of the Cave* are the idols of the individual man. For everyone (besides the errors common to human nature in general) has a cave or den of his own, which refracts⁵ and discolors the light of nature; owing either to his own proper and peculiar nature; or to his education and conversation with others; or to the reading of books, his education and conversation with others; or to the reading of books,

¹ **Idols** By this term Bacon means phantoms or illusions. The Greek philosopher Democritus spoke of *eidola*, tiny representations of things that impressed themselves on the mind (see note 21).

² **Instauration** Institution.

³ **Induction** Bacon championed induction as the method by which new knowledge is developed. As he saw it, induction involved a patient gathering and categorizing of facts in the hope that a large number of them would point to the truth. As a process of gathering evidence from which inferences are drawn, induction is contrasted with Aristotle's method, *deduction*, according to which a theory is established and the truth deduced. Deduction places the stress on the authority of the expert; induction places the stress on the facts themselves.

⁴ **sophisms** Apparently intelligent statements that are wrong; false wisdom.
⁵ **refracts** Deflects, bends back, alters.

and the authority of those whom he esteems and admires; or to the differences of impressions, accordingly as they take place in a mind preoccupied and predisposed or in a mind indifferent and settled; or the like. So that the spirit of man (according as it is meted out to different individuals) is in fact a thing variable and full of perturbation,⁶ and governed as it were by chance. Whence it was well observed by Heraclitus⁷ that men look for sciences in their own lesser worlds, and not in the greater or common world.

There are also idols formed by the intercourse and association of men with each other, which I call *Idols of the Marketplace*, on account of the commerce and consort of men there. For it is by discourse that men associate; and words are imposed according to the apprehension of the vulgar.⁸ And therefore the ill and unfit choice of words wonderfully obstructs the understanding. Nor do the definitions or explanations wherewith in some things learned men are wont⁹ to guard and defend themselves, by any means set the matter right. But words plainly force and overrule the understanding, and throw all into confusion and lead men away into numberless empty controversies and idle fancies.

Lastly, there are idols which have immigrated into men's minds from the various dogmas of philosophies, and also from wrong laws of demonstration.¹⁰ These I call *Idols of the Theater*, because in my judgment all the received systems¹¹ are but so many stage-plays, representing worlds of their own creation after an unreal and scenic fashion. Nor is it only of the systems now in vogue, or only of the ancient sects and philosophies, that I speak; for many more plays of the same kind may yet be composed and in like artificial manner set forth, seeing that errors the most widely different have nevertheless causes for the most part alike. Neither again do I mean this only of entire systems, but also of many principles and axioms in science, which by tradition, credulity, and negligence, have come to be received.

But of these several kinds of idols I must speak more largely and exactly, that the understanding may be duly cautioned.

⁶ **perturbation** Uncertainty, disturbance. In astronomy, the motion caused by the gravity of nearby planets.

⁷ **Heraclitus (535?-475? B.C.)** Greek philosopher who believed that there was no reality except in change; all else was illusion. He also believed that fire was the basis of all the world and that everything we see is a transformation of it.

⁸ **vulgar** Common people.

⁹ **wont** Accustomed.

¹⁰ **laws of demonstration** Bacon may be referring to Aristotle's logical system of syllogism and deduction.

¹¹ **received systems** Official or authorized views of scientific truth.

214 The human understanding is of its own nature prone to suppose the existence of more order and regularity in the world than it finds. And though there be many things in nature which are singular and unmatched, yet it devises for them parallels and conjugates and relatives¹² which do not exist. Hence the fiction that all celestial bodies move in perfect circles; spirals and dragons being (except in name) utterly rejected. Hence too the element of fire with its orb is brought in, to make up the square with the other three which the sense perceives. Hence also the ratio of density¹³ of the so-called elements is arbitrarily fixed at ten to one. And so on of other dreams. And these fancies affect not dogmas only, but simple notions also.

220 The human understanding when it has once adopted an opinion (either as being the received opinion or as being agreeable to itself) draws all things else to support and agree with it. And though there be a greater number and weight of instances to be found on the other side, yet these it either neglects and despises, or else by some distinction sets aside and rejects; in order that by this great and pernicious predetermination the authority of its former conclusions may remain inviolate. And therefore it was a good answer that was made by one who when they showed him hanging in a temple a picture of those who had paid their vows as having escaped shipwreck, and would have him say whether he did not now acknowledge the power of the gods—"Ay," asked he again, "but where are they painted that were drowned after their vows?" And such is the way of all superstition, whether in astrology, dreams, omens, divine judgments, or the like; wherein men having a delight in such vanities, mark the events where they are fulfilled, but where they fail, though this happen much oftener, neglect and pass them by. But with far more subtlety does this mischief insinuate itself into philosophy and the sciences; in which the first conclusion colors and brings into conformity with itself all that come after, though far sounder and better. Besides, independently of that delight and vanity which I have described, it is the peculiar and perpetual error of the human intellect

¹² parallels and conjugates and relatives A reference to the habit of assuming that phenomena are regular and ordered, consisting of squares, triangles, circles, and other regular shapes.

¹³ ratio of density The false assumption that the relationship of mass or weight to volume was ten to one. This is another example of Bacon's complaint, establishing a connection between "regular," or relationship.

3 to be more moved and excited by affirmatives than by negatives; whereas it ought properly to hold itself indifferently disposed towards both alike. Indeed, in the establishment of any true axiom, the negative instance is the more forcible of the two.

4 The human understanding is moved by those things most which strike and enter the mind simultaneously and suddenly, and so fill the imagination; and then it feigns and supposes all other things to be somehow, though it cannot see how, similar to those few things by which it is surrounded. But for that going to and fro to remote and heterogeneous instances, by which axioms are tried as in the fire: "The intellect is altogether slow and unfit, unless it be forced thereto by severe laws and overruling authority."

5 The human understanding is unquiet; it cannot stop or rest, and still presses onward, but in vain. Therefore it is that we cannot conceive of any end or limit to the world, but always as of necessity it occurs to us that there is something beyond. Neither again can it be conceived how eternity has flowed down to the present day; for that distinction which is commonly received of infinity in time past and in time to come can by no means hold; for it would thence follow that one infinity is greater than another, and that infinity is wasting away and tending to become finite. The like subtlety arises touching the infinite divisibility of lines,¹⁵ from the same inability of thought to stop. But this inability interferes more mischievously in the discovery of causes:¹⁶ for although the most general principles in nature ought to be held merely positive, as they are discovered, and cannot with

¹⁴ tried as in the fire Trial by fire is a figure of speech representing thorough, rigorous testing even to the point of risking what is tested. An axiom is a statement of apparent truth that has not yet been put to the test of examination and investigation.

¹⁵ infinite divisibility of lines This gave rise to the paradox of Zeno, the Greek philosopher of the fifth century B.C. who showed that it was impossible to get from one point to another because one had to pass the midpoint of the line determined by the two original points, and then the midpoint of the remaining distance, and then of that remaining distance, down to an infinite number of points. By using accepted truths to "prove" an absurdity about motion, Zeno actually hoped to prove that motion itself did not exist. This is the "subtlety," or confusion, Bacon says is produced by the "inability of thought to stop."

¹⁶ discovery of causes Knowledge of the world was based on four causes: efficient (who made it?), material (what is it made of?), formal (what is its shape?), and final (what is its purpose?). The scholastics concentrated their thinking on the first and last, whereas the "middle causes," related to matter and shape, were the proper subject matter of science because they alone yielded to observation. (See para. 34.)

Mistake's causes

truth be referred to a cause; nevertheless, the human understanding being unable to rest still seeks something prior in the order of nature. And then it is that in struggling towards that which is further off, it falls back upon that which is more nigh at hand; namely, on final causes: which have relation clearly to the nature of man rather than to the nature of the universe, and from this source have strangely defiled philosophy. But he is no less an unskilled and shallow philosopher who seeks causes of that which is most general, than he who in things subordinate and subaltern¹⁷ omits to do so.

The human understanding is no dry light, but receives an infusion from the will and affections,¹⁸ whence proceed sciences which may be called "sciences as one would." For what a man had rather were true he more readily believes. Therefore he rejects difficult things from impatience of research; sober things, because they narrow hope; the deeper things of nature, from superstition; the light of experience, from arrogance and pride, lest his mind should seem to be occupied with things mean and transitory; things not commonly believed, out of deference to the opinion of the vulgar. Numberless in short are the ways, and sometimes imperceptible, in which the affections color and infect the understanding.

But by far the greatest hindrance and aberration of the human understanding proceeds from the dullness, incompetency, and deceptions of the senses: in that things which strike the sense outweigh things which do not immediately strike it, though they be more important. Hence it is that speculation commonly ceases where sight ceases: insomuch that of things invisible there is little or no observation. Hence all the working of the spirits¹⁹ enclosed in tangible bodies lies hid and unobserved of men. So also all the more subtle changes of form in the parts of coarser substances (which they commonly call alteration, though it is in truth local motion through exceedingly small spaces) is in like manner unobserved. And yet unless these two things just mentioned be searched out and brought to light, nothing great can be achieved in nature, as far as the production of works is concerned. So again the essential nature of our common air, and of all bodies less dense than air (which are very many) is almost unknown. For the sense by itself is a thing infirm and erring; neither can instruments for enlarging or sharpening the senses do much; but all the truer kind of interpretation of nature is

¹⁷ **subaltern** Lower in status.

¹⁸ **will and affections** Human free will and emotional needs and responses.

¹⁹ **spirits** The soul or animating force.

effected by instances and experiments fit and apposite;²⁰ wherein the sense decides touching the experiment only, and the experiment touching the point in nature and the thing itself.

The human understanding is of its own nature prone to abstractions and gives a substance and reality to things which are fleeting. But to resolve nature into abstractions is less to our purpose than to dissect her into parts; as did the school of Democritus,²¹ which went further into nature than the rest. Matter rather than forms should be the object of our attention, its configurations and changes of configuration, and simple action, and law of action or motion; for forms are figments of the human mind, unless you will call those laws of action forms.

Such then are the idols which I call *Idols of the Tribe*; and which take their rise either from the homogeneity of the substance of the human spirit,²² or from its preoccupation, or from its narrowness, or from its restless motion, or from an infusion of the affections, or from the incompetency of the senses, or from the mode of impression.

The *Idols of the Cave* take their rise in the peculiar constitution, mental or bodily, of each individual; and also in education, habit, and accident. Of this kind there is a great number and variety; but I will instance those the pointing out of which contains the most important caution, and which have most effect in disturbing the clearness of the understanding.

Men become attached to certain particular sciences and speculations, either because they fancy themselves the authors and inventors thereof, or because they have bestowed the greatest pains upon them and become most habituated to them. But men of this kind, if they betake themselves to philosophy and contemplations of a general character, distort and color them in obedience to their former fancies; a thing especially to be noticed in Aristotle,²³ who made his natural philosophy²⁴ a mere bondservant to his logic, thereby rendering

²⁰ **apposite** Appropriate; well related.

²¹ **Democritus (460?-370? B.C.)** Greek philosopher who thought the world was composed of atoms. Bacon felt such "dissection" to be useless because it was impractical. Yet Democritus's concept of the *eidola*, the mind's impressions of things, may have contributed to Bacon's idea of "the idol."

²² **human spirit** Human nature.

²³ **Aristotle (384-322 B.C.)** Greek philosopher whose *Organon* (system of logic) dominated the thought of Bacon's time. Bacon sought to overthrow Aristotle's hold on science and thought.

²⁴ **natural philosophy** The scientific study of nature in general—biology, zoology, geology, etc.

it contentious and well nigh useless. The race of chemists²⁵ again out of a few experiments of the furnace have built up a fantastic philosophy, framed with reference to a few things; and Gilbert²⁶ also, after he had employed himself most laboriously in the study and observation of the loadstone, proceeded at once to construct an entire system in accordance with his favorite subject.

There is one principal and, as it were, radical distinction between different minds, in respect of philosophy and the sciences, which is this: that some minds are stronger and apter to mark the differences of things, others to mark their resemblances. The steady and acute mind can fix its contemplations and dwell and fasten on the subtlest distinctions: the lofty and discursive mind recognizes and puts together the finest and most general resemblances. Both kinds however easily err in excess, by catching the one at gradations, the other at shadows.

There are found some minds given to an extreme admiration of antiquity, others to an extreme love and appetite for novelty; but few so duly tempered that they can hold the mean, neither carping at what has been well laid down by the ancients, nor despising what is well introduced by the moderns. This however turns to the great injury of the sciences and philosophy; since these affectations of antiquity and novelty are the humors²⁷ of partisans rather than judgments; and truth is to be sought for not in the felicity of any age, which is an unstable thing, but in the light of nature and experience, which is eternal. These factions therefore must be abjured, and care must be taken that the intellect be not hurried by them into assent.

Contemplations of nature and of bodies in their simple form break up and distract the understanding, while contemplations of nature and bodies in their composition and configuration overpower and dissolve the understanding; a distinction well seen in the school of Leucippus²⁸ and Democritus as compared with the other philosophes. For that school is so busied with the particles that it hardly attends to the structure; while the others are so lost in admiration of the structure that they do not penetrate to the

²⁵ Chemists Alchemists had developed a "fantastic philosophy" from their experimental attempts to transmute lead into gold.

²⁶ William Gilbert (1544-1603) English scientist who studied magnetism and codified many laws related to magnetic fields. He was particularly ridiculed by Bacon for being too narrow in his researches.

²⁷ 'Hors Used in a medical sense to mean a distortion caused by imbalance.

²⁸ Leucippus (fifth century B.C.) Greek philosopher; teacher of Democritus

simplicity of nature. These kinds of contemplation should therefore be alternated and taken by turns; that so the understanding may be rendered at once penetrating and comprehensive, and the inconveniences above mentioned, with the idols which proceed from them, may be avoided.

Let such then be our provision and contemplative prudence for keeping off and dislodging the Idols of the Cave, which grow for the most part either out of the predominance of a favorite subject, or out of an excessive tendency to compare or to distinguish, or out of partiality for particular ages, or out of the largeness or minuteness of the objects contemplated. And generally let every student of nature take this as a rule—that whatever his mind seizes and dwells upon with peculiar satisfaction is to be held in suspicion, and that so much the more care is to be taken in dealing with such questions to keep the understanding even and clear.

But the Idols of the Marketplace are the most troublesome of all idols which have crept into the understanding through the alliances of words and names. For men believe that their reason governs words; but it is also true that words react on the understanding, and this it is that has rendered philosophy and the sciences sophistical and inactive. Now words, being commonly framed and applied according to the capacity of the vulgar, follow those lines of division which are most obvious to the vulgar understanding. And whenever an understanding of greater acuteness or a more diligent observation would alter those lines to suit the true divisions of nature, words stand in the way and resist the change. Whence it comes to pass that the high and formal discussions of learned men end oftentimes in disputes about words and names; with which (according to the use and wisdom of the mathematicians) it would be more prudent to begin, and so by means of definitions reduce them to order. Yet even definitions cannot cure this evil in dealing with natural and material things; since the definitions themselves consist of words, and those words beget others: so that it is necessary to recur to individual instances, and those in due series and order; as I shall say presently when I come to the method and scheme for the formation of notions and axioms.³⁰

The idols imposed by words on the understanding are of two kinds. They are either names of things which do not exist (for as there are things left unnamed through lack of observation, so likewise are there names which result from fantastic suppositions and to which nothing in reality responds), or they are names of things which exist, but yet confused and ill-defined, and ha

irregularly derived from realities. Of the former kind are Fortune, the Prime Mover, Planetary Orbits, Element of Fire, and like fictions which owe their origin to false and idle theories.³¹ And this class of idols is more easily expelled, because to get rid of them it is only necessary that all theories should be steadily rejected and dismissed as obsolete.

But the other class, which springs out of a faulty and unskillful abstraction, is intricate and deeply rooted. Let us take for example such a word as *humid*, and see how far the several things which the word is used to signify agree with each other: and we shall find the word *humid* to be nothing else than a mark loosely and confusedly applied to denote a variety of actions which will not bear to be reduced to any constant meaning. For it both signifies that which easily spreads itself round any other body; and that which in itself is indeterminate and cannot solidize; and that which readily yields in every direction; and that which easily divides and scatters itself; and that which easily unites and collects itself; and that which readily flows and is put in motion; and that which readily clings to another body and wets it; and that which is easily reduced to a liquid, or being solid easily melts. Accordingly when you come to apply the word—if you take it in one sense, flame is humid; if in another, air is not humid; if in another, fine dust is humid; if in another, glass is humid. So that it is easy to see that the notion is taken by abstraction only from water and common and ordinary liquids, without any due verification.

There are however in words certain degrees of distortion and error. One of the least faulty kinds is that of names of substances, especially of lowest species and well-deduced (for the notion of chalk and of mud is good, of *earth bad*);³² a more faulty kind is that of actions, as to generate, to corrupt, to alter; the most faulty is of qualities (except such as are the immediate objects of the sense), as heavy, light, rare, dense, and the like. Yet in all these cases some notions are of necessity a little better than others, in proportion to the greater variety of subjects that fall within the range of the human sense.

But the *Idols of the Theater* are not innate, nor do they steal into the understanding secretly, but are plainly impressed and received

27

³¹ **idle theories** These are things that cannot be observed and thus do not exist. Fortune is fate; the Prime Mover is God or some "first" force; the notion that planets orbited the sun was considered as "fantastic" as these others or as the idea that everything was made up of fire and its many permutations.

³² **earth bad** Chalk and mud were useful in manufacture; hence they were terms of approval. *Earth* is used here in the sense we use *dirt*, as in "digging in the dirt."

into the mind from the play-books of philosophical systems and the perverted rules of demonstration.³³ To attempt refutations in this case would be merely inconsistent with what I have already said: for since we agree neither upon principles nor upon demonstrations, there is no place for argument. And this is so far well, inasmuch as it leaves the honor of the ancients untouched. For they are no wise disparaged—the question between them and me being only as to the way. For as the saying is, the lame man who keeps the right road outstrips the runner who takes a wrong way. Nay, it is obvious that when a man runs the wrong way, the more active and swift he is the further he will go astray.

But the course I propose for the discovery of sciences is such as leaves but little to the acuteness and strength of wits, but places all wits³⁴ and understandings nearly on a level. For as in the drawing of a straight line or perfect circle, much depends on the steadiness and practice of the hand, if it be done by aim of hand only, but if with the aid of rule or compass, little or nothing; so is it exactly with my plan. But though particular confutations³⁵ would be of no avail, yet touching the sects and general divisions of such systems I must say something; something also touching the external signs which show that they are unsound; and finally something touching the causes of such great infelicity and of such lasting and general agreement in error; that so the access to truth may be made less difficult, and the human understanding may the more willingly submit to its purification and dismiss its idols.

Idols of the Theater, or of systems, are many, and there can be and perhaps will be yet many more. For were it not that now for many ages men's minds have been busied with religion and theology; and were it not that civil governments, especially monarchies, have been averse to such novelties, even in matters speculative; so that men labor therein to the peril and harming of their fortunes—not only unrewarded, but exposed also to contempt and envy, doubtless there would have arisen many other philosophical sects like to those which in great variety flourished once among the Greeks. For as on the phenomena of the heavens many hypotheses may be constructed, so likewise (and more also) many various dogmas may be set up and established on the phenomena of philosophy. And in the plays of this philosophical theater you may observe the same thing

³³ **perverted rules of demonstration** Another complaint against Aristotle's logic as misapplied in Bacon's day.

³⁴ **wits** Intelligence, powers of reasoning.

³⁵ **confutations** Specific counterarguments. Bacon means that he cannot offer particular arguments against each scientific sect; thus he offers a general warning.

which is found in the theater of the poets, that stories invented for the stage are more compact and elegant, and more as one would wish them to be, than true stories out of history.

In general, however, there is taken for the material of philosophy either a great deal out of a few things, or a very little out of many things; so that on both sides philosophy is based on too narrow a foundation of experiment and natural history, and decides on the authority of too few cases. For the rational school of philosophers³⁶ snatches from experience a variety of common instances, neither duly ascertained nor diligently examined and weighed, and leaves all the rest to meditation and agitation of wit.

There is also another class of philosophers,³⁷ who having bestowed much diligent and careful labor on a few experiments, have thence made bold to educe and construct systems; wresting all other facts in a strange fashion to conformity therewith.

And there is yet a third class,³⁸ consisting of those who out of faith and veneration mix their philosophy with theology and traditions; among whom the vanity of some has gone so far aside as to seek the origin of sciences among spirits and geni.³⁹ So that this parent stock of errors—this false philosophy—is of three kinds: the sophistical, the empirical, and the superstitious. . . .

But the corruption of philosophy by superstition and an admixture of theology is far more widely spread, and does the greatest harm, whether to entire systems or to their parts. For the human understanding is obnoxious to the influence of the imagination no less than to the influence of common notions. For the contentious and sophistical kind of philosophy ensnares the understanding; but this kind, being fanciful and tumid⁴⁰ and half poetical, misleads it more by flattery. For there is in man an ambition of the understanding, no less than of the will, especially in high and lofty spirits.

³⁶ **rational school of philosophers** Platonists who felt that human reason alone could discover the truth and that experiment was unnecessary. Their observation of experience produced only a "variety of common instances" from which they reasoned.

³⁷ **another class of philosophers** William Gilbert (1544–1603) experimented tirelessly with magnetism, from which he derived numerous odd theories. Though Gilbert was a true scientist, Bacon thought of him as limited and on the wrong track.

³⁸ **a third class** Pythagoras (c. 580–500 B.C.) was a Greek philosopher who experimented rigorously with mathematics and a tuned string. He is said to have developed the musical scale. His theory of reincarnation, or the transmigration of souls, was somehow based on his travels in India and his work with scales. The superstitious belief in the movement of souls is what Bacon complains of.

³⁹ **geni**: Oriental demons or spirits; a slap at Pythagoras, who traveled in the Orient.

⁴⁰ **tumid**: Overblown, swollen.

Of this kind we have among the Greeks a striking example in Pythagoras, though he united with it a coarser and more cumbersome superstition; another in Plato and his school,⁴¹ more dangerous and subtle. It shows itself likewise in parts of other philosophies, in the introduction of abstract forms and final causes and first causes, with the omission in most cases of causes intermediate, and the like. Upon this point the greatest caution should be used. For nothing is so mischievous as the apotheosis of error; and it is a very plague of the understanding for vanity to become the object of veneration. Yet in this vanity some of the moderns have with extreme levity indulged so far as to attempt to found a system of natural philosophy on the first chapter of Genesis, on the book of Job, and other parts of the sacred writings; seeking for the dead among the living; which also makes the inhibition and repression of it the more important, because from this unwholesome mixture of things human and divine there arises not only a fantastic philosophy but also an heretical religion. Very meet it is therefore that we be sober-minded, and give to faith that only which is faith's. . . .

So much concerning the several classes of Idols, and their equipage: all of which must be renounced and put away with a fixed and solemn determination, and the understanding thoroughly freed and cleansed; the entrance into the kingdom of man, founded on the sciences, being not much other than the entrance into the kingdom of heaven, whereunto none may enter except as a little child.

⁴¹ **Plato and his school** Plato's religious bent was further developed by Plotinus (A.D. 205–270) in his *Enneads*. Although Plotinus was not a Christian, his Neo-Platonism was welcomed as a philosophy compatible with Christianity.

QUESTIONS FOR CRITICAL READING

1. Which of Bacon's idols is the most difficult to understand? Do your best to define it.
2. Which of these idols do we still need to worry about? Why? What dangers does it present?
3. What does Bacon mean by implying that our senses are weak (para. 14)? In what ways do you agree or disagree with that opinion?
4. Occasionally Bacon says something that seems a bit like an aphorism (see the introduction to Machiavelli, p. 37). Find at least one such expression in this selection. On examination, does the expression have as much meaning as it seems to have?
5. What kind of readers did Bacon expect for this piece? What clues does his way of communicating provide regarding the nature of his intended readers?

SUGGESTIONS FOR CRITICAL WRITING

1. Which of Bacon's idols most seriously affects the way you as a person observe nature? Using enumeration, arrange the idols in order of their effect on your own judgment. If you prefer, you may write about the idol you believe is most effective in slowing investigation into nature.
2. Is it true, as Bacon says in paragraph 10, that people are in general "more moved and excited by affirmatives than by negatives"? Do we really stress the positive and deemphasize the negative in the conduct of our general affairs? Find at least three instances in which people seem to gravitate toward the positive or the negative in everyday situations. Try to establish whether Bacon has, in fact, described what is a habit of mind.
3. In paragraph 13, Bacon states that the "will and affections" enter into matters of thought. By this he means that our understanding of what we observe is conditioned by what we want and what we feel. Thus, when he says, "For what a man had rather were true he more readily believes," he tells us that people tend to believe what they want to believe. Test this statement by means of observation. Find out, for example, how many older people are convinced that the world is deteriorating, how many younger people feel that there is a plot on the part of older people to hold them back, how many women feel that men consciously oppress women, and how many men feel that feminists are not as feminine as they should be. What other beliefs can you discover that seem to have their origin in what people want to believe rather than in what is true?
4. Bacon's views on religion have always been difficult to define. He grew up in a very religious time, but his writings rarely discuss religion positively. In this work, he talks about giving "to faith that only which is faith's" (para. 34). He seems to feel that scientific investigation is something quite separate from religion. Examine the selection carefully to determine what you think Bacon's view on this question is. Then take a stand on the issue of the relationship between religion and science. Should science be totally independent of religious concerns? Should religious issues control scientific experimentation? What does Bacon mean when he complains about the vanity of founding "a system of natural philosophy on the first chapter of Genesis, on the book of Job, and other parts of the sacred writings" (para. 34)? "Natural philosophy" means biology, chemistry, physics, and science in general. Are Bacon's complaints justified? Would his complaints be relevant today?
5. **CONNECTIONS** How has the reception of Charles Darwin's work been affected by a general inability of the public to see beyond Bacon's four idols? Read both Darwin's essay (p. 597) and that of Stephen Jay Gould (p. 635). Which of those two writers is more concerned with the lingering effects of the four idols? Do you feel that the effects have seriously affected people's beliefs regarding Darwinian theory?

6. **SEEING CONNECTIONS** *Kindred Spirits* (p. 576) represents William Cullen Bryant and Thomas Cole having a philosophical conversation in the wilderness of the Catskills. Would Bacon have approved the getting away from civilization to talk about philosophy, or would he have thought they were giving in to one of the four idols? What visual elements of the painting would Bacon have said were the "affirmative and what were the "negatives"? Do nature's visual affirmatives excite Durand, Bryant, and Cole more than the visual negatives do? What a nature's visual negatives?