Valuing Useless Knowledge

Prologue

Confusion abounds about what the liberal arts really are, and therefore about the meaning of liberal education. The liberal arts may be defined—impishly, but accurately nonetheless—as essentially those areas of knowledge in which practical-minded parents hope their children will not major. But what are you going to do, they cry, with a major in _____? The question will prove hardest to answer, to their satisfaction, when the blank is filled in by, for example, Anthropology, Art, English, Fine Arts, History, Language, Philosophy, or Sociology. An acceptable answer may be a bit easier in the cases of, say, Biology, Chemistry, Economics, Math, Physics, or Psychology; but it may well remain elusive, because we are dealing still with the liberal arts,whose very essence it is to defy direct practical justification.

The question will not even arise, of course, if the major is, say, Agriculture, Business, Computer Science, Education, Engineering, Industrial Arts, Journalism, or Nursing; everyone knows these are good for something.Yet training in such fields does not receive the revered title of a “liberal education” unless accompanied by considerable coursework in the relatively“ useless” areas of knowledge. It is only by offering exposure to useless knowledge,” then, that a college or university earns the right to be called a liberal arts institution; and it is known as such not because of whatever practical pro grams it offers, but in spite of them.

It is easy to spot puzzling features of other cultures, but very hard to spot those of our own; it is, after all, the very nature of culture to seem normal to insiders. Yet the moment we imagine ourselves outside the system, this state of affairs appears decidedly odd. How is it that relatively useless knowledge is so widely considered more valuable than obviously useful knowledge?

What follows is an anthropological exploration of this question. After a brief orientational visit to the nineteenth century, we will descend into ancient history; plunge to the very roots of human prehistory; ascend to the emergence of modern science; and end in the present day. While I have tried for a light touch in handling the material, I consider the question, and how we answer it, to be matters of the utmost importance, touching closely on the question of human survival itself.

Saint and Sinner

There is a kind of knowledge noted above all forbeing relatively useless; we label

itliberal.Now, what could be more obvious than that humankind should attach but little value to such knowledge? Yet we find, to our surprise, a prevailing opinion, among informed and otherwise reasonable people, not merely that knowledge in general is valuable for its own sake, but that this relatively useless knowledge, far from being worthless, is somehow the most valuable of all! Indeed, it is the heart of our most respected form of higher learning—a “liberal arts education.”

Anthropology seeks to explain the biological and cultural facts of human life, including the puzzling beliefs people have held in different times and places. Here, then, right under our noses is a true anthropological puzzle: the widespread belief, in our own place and time, in the inestimable value of apparently useless knowledge.

Now I suspect you have been wanting to object, along some such lines as these: “Oh, no, liberal knowledge, and a liberal arts education based on it, are very useful indeed; they only *appear* useless at first glance. In fact, a good general grounding in the liberal arts engenders mental discipline—the ability to think creatively and to solve problems; flexibility and adaptability; a reflectiveness and openness to new information, bringing enhanced decision-making skill; and perhaps even a more humane and compassionate attitude.”

Attempts to demonstrate such practical benefits of liberal learning are perennial as the grass. (One such recent offering bears the scintillating title, Educating Managers: Executive Effectiveness through Liberal Learning 1) Such arguments, however, are inadequate, indemonstrable, and ultimately beside the point.

Mental discipline, for example, can be acquired as effectively by memorizing practical information, such as the phone numbers one frequently needs, as by memorizing, say, one hundred important dates in the history of ancient Greece (as did a colleague of mine while a student at a leading liberal arts college). As for mental exercise in [4] analytical thinking, it is difficult to see any way in which the study of logic or mathematics would be superior to that of electrical wiring or television repair. To the very limited extent that we know how to “teach people to think,” subjects that are obviously useful appear as good as—and probably better than—less obviously useful ones. Surely flexibility and adaptability, too, could be cultivated through study of a wide range of clearly useful topics. These and related arguments, then, comprise a woefully inadequate defense of the liberal arts.

It is possible—but not demonstrable—that liberal arts education makes people more reflective and more humane. However, when we consider frankly the traits that make for success in the practical worlds of, say, politics and business, it is by no means clear that being reflective and humane succeeds better than being rash and ruthless. No doubt this ought not to be the case, and, in the best of all possible worlds, would not be; practicality, however, is judged by the standards not of some ideal world, but of the one in which we find ourselves.

Of course, students with a good liberal arts education, as a statistical fact, “do well in

life" by conventional standards. Yet correlation does not prove causation: the same individuals may have done as well or better with a more practical education, and any effect of their liberal arts education in producing their worldly success may lie more in the importance attached to that education by [5] others (such as graduate and professional school admissions committees) than in its intrinsic qualities. For would-be doctors, for example, majoring in general Biology is highly "practical" in a narrow sense simply because it will help them get into medical school. Still, much of their liberal arts education—even some Biology courses, such as Ecology—will have little apparent relevance to practicing medicine. Similarly, an undergraduate degree in English is highly "practical" for a student aspiring to a graduate degree in English; but in any broader sense of the word, English clearly is a less practical subject than, say, Journalism.

In fact, arguments aimed at *proving* the practicality of liberal learning are doomed from the outset. This, we will see, is because knowledge, *by definition*, can be correctly called liberal only to the extent that it *cannot* be shown to have direct practical uses. Therefore the better grows the case for the practical value of some item or branch of knowledge, the worse becomes the case for classifying it as liberal! It is only a modest overstatement, then, to call liberal knowledge "useless"; for liberal knowledge really is, by definition, less directly and demonstrably useful than other knowledge.

The puzzle, then, is real, and not easily solved: liberal knowledge, defined as such by virtue of its relative uselessness, remains nonetheless the *sine qua non* of our most valued form of higher education. The question is, why?

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Late in the year 1816, a well-bred British boy named John Henry Newman traveled to Oxford to attend Trinity—a "most gentlemanly College," his father had been assured. The earnest, studious fifteen-year-old, however, had undergone recently a powerful religious conversion (attended by the conviction that his was to be a celibate life); he did not find his new environment altogether "gentlemanly," and had to go out of his way to avoid the many rowdy students that seemed to him more interested in guzzling beer than in learning.

Prior to his conversion, John had been impressed by certain authors—including Thomas Paine—skeptical of Christianity on intellectual grounds. This secularizing influence, however, soon was overwhelmed by his personal contact with the Reverend Walter Mayers. Mayers' brand of theology resonated with certain of his young admirer's natural inclinations, "isolating me," John wrote, "from the objects which surrounded me… confirming me in my mistrust of the reality of material phenomena, and making me rest in the thought of two and only two absolute and luminously self evident beings, myself and my Creator."

After excelling as a student, this otherworldly spirit went on to become a leading figure

in education and religion. In 1845 he left the Church of England (in which he had been ordained in his early twenties) to become a Roman Catholic. He was made Cardinal in 1879, and died in 1890.

Of what relevance is this odd life, ended now over a century ago? In 1852 Newman delivered a series of lectures in Dublin, Ireland. Known today as *The Idea of a University*, these lectures contain the classical characterization of liberal education. It is the crucial fifth lecture, "Knowledge Its Own End," that crystallized the enduring definition of liberal knowledge. Of knowledge, the devout cleric declared that "prior to its being a power, it is a good; that it is, not only an instrument, but an end. I know well that it may resolve itself into an art, and terminate in a mechanical process, and in tangible fruit; but it may fall back upon that Reason which informs it, and resolve itself into Philosophy. In one case it is called Useful Knowledge, in the other Liberal." "Liberal," then, is indeed the designation for useless knowledge—knowledge that is "desirable," we are told, though nothing come of it, as being of itself a treasure, and a sufficient remuneration of years of labour."

It must be stated that nowhere does Newman manage to make clear just why we should so value useless knowledge; needless to say, merely labeling it a "treasure" will not persuade the practical minded.

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One day in 1874, just five years before the venerable priest would be made Cardinal, a seventeen year old boy was called suddenly from the fields of his family's farm on the prairies of Minnesota. His father, a hardworking immigrant from Norway, loaded the son into the family buggy and delivered him to a nearby institution of higher learning, the newly established Carleton College; the local preacher had opined, after all, that the youth was suited for the ministry.

Thorstein Veblen, however, would never make a minister. His cantankerous boyhood had ripened into a rebellious, sarcastic adolescence; his conversion was from religious faith rather than to it. Hopelessly at odds with the straitlaced, pious Carleton environment, he fought back with "mordant wit, corrosive satire, and just plain cussedness."5 The curriculum, which stressed the classics and neglected natural science (as was common at the time) was not to his liking, and he read widely on his own. He scandalized students and professors alike with papers such as "A Plea for Cannibalism" and "Apology for a [9] Toper." One wonders who was more relieved, he or Carleton, when, after six years, Veblen obtained a degree. All in all, he seems to have been much the sort of student the Cardinal had avoided in his time at Trinity.

Perhaps not entirely: Veblen too had genuine intellectual ability and interests. He eventually earned a doctorate in philosophy at Yale, and studied economics at Cornell

and the University of Chicago. He taught at the Monona Academy (Madison, Wisconsin), the University of Chicago, Stanford, the University of Missouri, and the New School for Social Research.

Mumbling his rambling lectures; seeming not to care at all whether students learned; bailing out on hard questions with “Well, you know, I really don’t think I quite understand it myself”;6 so hating grading that he generally simply assigned everyone who stuck out his courses the same grade—“B” or “C” according to his mood: Veblen was an unorthodox teacher.

His problems keeping a job, however, were due to his love life, which was considerably more offensive to conventional morality than were his teaching methods. His numerous—and evidently rather indiscreet—affairs cost him not only his positions at Chicago and Stanford, but also finally his first wife, Ellen Rolfe (whose elite family had never been keen on the match). His second wife, Anne Fessenden Bradley, became psychotic and was institutionalized. The fame Veblen’s writing gained him proved fleet[10] ing; he had grown isolated, lonely, and bitter by the time he died in 1929.

Veblen held radical social and economic views. Of his many books and articles criticizing the status quo, most famous is his book of 1899, The Theory of the Leisure Class. Education by no means escaped Veblen’s withering assault on the upper class’s hypocrisy and superficiality. No doubt recalling his unhappy days at Carleton, Veblen charged that “The classics, and their position of prerogative in the scheme of education…lower the economic efficiency of the new learned generation. They do this…(1) by inspiring an habitual aversion to what is merely useful…and (2) by consuming the learner’s time and effort in acquiring knowledge which is of no use….”

Veblen, unlike Newman, offered an explanation for the value society places on such useless knowledge: its very uselessness gives it impressive display value. Impeccable grammar, for example, liberally spiced with Latin expressions, becomes absolute proof of one’s wealth and status. Displaying useless knowledge, then, provides “evidence of wasted time and effort, and hence the pecuniary strength necessary in order to afford this waste8indeed, the more useless the knowledge, the greater the waste, and, therefore, the more impressive the display! It is a [11] form of “conspicuous consumption,” the phrase for which Veblen is mainly remembered—when he is—today. (Veblen went on to suggest that college athletics were rapidly becoming a new way to waste time and money in the name of “education”—a startling proposal to those who assume that today’s emphasis on college athletics is opposed to what higher education is really about, or that it is a recent development.)

While Newman believed that we should value useless knowledge but could not explain why, Veblen tried to explain why we *do* value it, and implied that we should not—certainly not as highly as useful knowledge. It is not always clear how literally Veblen wanted to be taken, and his educational critique seems to have moderated

somewhat in his later work; still, his initial interpretation rings true enough to be disturbing. Both the ability to speak in an educated manner on a wide range of useless topics, and the liberal arts degree that so often accompanies this ability, remain potent symbols of social status.

Is the valuing of useless knowledge, then, essentially a form of snobbery? Another observation of Veblen's was that the distinction between useful and useless knowledge is "traceable very far back in the history of education."9 Perhaps by delving more deeply into this history we can discover a nobler reason to value useless knowledge?

Mind and Matter

Should you find yourself in Greece, you might bump into the ancient philosopher Democritus: his picture graces some of that nation's currency. Democritus coined the word "atom," Greek for "incapable of being cut." Everything consisted, he thought, of ultimate particles arranged in different ways. He believed that many worlds had come into existence naturally, some of them accompanied by suns and moons. He conceived of calculating the volume of, say, a cone by thinking of it as a stack of extremely thin plates—that is, he [13] nearly invented calculus two thousand years before its time.

Democritus is said to have written over seventy books; not one survives. All that we know of his work comes from a few fragments, and allusions by other writers. From these bits we know he was among humankind's greatest thinkers. What happened to his work?

Democritus was from the "sticks"—the colony town of Abdera, in northern Greece. "Abdera was a kind of joke town," writes astronomer Carl Sagan. "If in 430 B.C. you told a story about someone from Abdera, you were guaranteed a laugh."1 "As a person," Sagan continues, Democritus apparently was "somewhat unusual. Women, children, and sex discomfited him, in part because they took him away from thinking. But he valued friendship, held cheerfulness to be the goal of life…."

He seems to have been humble, a poor selfpromoter: after traveling to Athens to meet the renowned Socrates, he was too bashful to introduce himself. Ironically, Socrates' student Plato is said to have been among those soon to call for the burning of Democritus' books.3 The disappearance of Democritus' work, then, was no accident.

Why was his work deemed so dangerous that it had to be destroyed? "He was awed by the beauty and elegance of the physical world. He felt that poverty in a democracy was preferable to wealth in a tyranny. He believed that the prevailing religions of his time were evil and that neither immortal souls nor immortal gods exist:Nothing exists, but atoms and the void." Though his books were burned, the man was not. Not all people

with unpopular ideas have proven so “fortunate”!

The trouble with Democritus’ work was that it was incompatible with Greek civilization’s growing reliance on slavery for its very survival. According to one authority, “The level of technical mastery over nature achieved at this time offered the Greeks the possibility of a cultivated leisure for a minority, and at the same time their geographical expansion offered them the possibility of enslaving weaker…peoples. Slavery changed from a domestic and innocuous institution into an organized attempt to shift such heavy burdens as porterage, mining, and many agricultural and industrial processes on to the backs of alien chattel slaves. The ideal was established of the citizen as one who did not engage in manual work, and this carried with it the convenient theory that [15] nature had intended other races…to be unfit for citizenship and capable only of manual work.” Greece was becoming, in stark fact, a tyranny over the many by the few.

As useful work was relegated more and more to slaves, philosophers produced rationalizations to justify the arrangement: Aristotle believed that: “The lower sort are by nature slaves, and it is better for them as for all inferiors that they should be under the rule of a master….” Plutarch wrote: “It does not of necessity follow that, if the work delight you with its grace, the one who wrought it is worthy of esteem. Xenophon’s opinion was: “What are called the mechanical arts carry a social stigma and are rightly dishonoured in our cities.”

Any knowledge pertaining directly to the physical world was in danger of being tainted by its possible applicability to the “mechanical arts” fit to be performed only by slaves. To avoid the “social stigma” of practical work, then, respectable knowledge had to be divorced from physical reality. Ideas were “good” if they sounded good and were internally consistent. “The word was the concern of the citizen, the deed the concern of the slave.”7 How well ideas stood up against evidence was considered much less [16] important; after all, determining this might require dirtying one’s hands—figuratively or even literally—gathering data or conducting an experiment. (This attempt to evade the physical world was justified by frequent references to how easily our senses can mislead us.) Thus it was that Plato himself “urged astronomers to think about the heavens but not to waste their time observing them”!

At last, the very concepts of mind and matter became symbols of the social structure of slavery. For Plato, “Mind and matter stand opposed to one another as master and slave. If there is any regularity or beauty in Nature, it is because mind imposes order on nature, which is essentially disorderly.”

Sagan summarizes: “Plato and Aristotle were comfortable in a slave society. They offered justifications for oppression. They served tyrants. They taught the alienation of the body from the mind (a natural enough ideal in a slave society); they separated matter from thought; they divorced the Earth from the heavens—divisions that were to dominate Western thinking for more than twenty centuries.”

As best we can tell, the great “crimes” of Democritus were to havedisbelieved in these divisions, to have denied the existence of the gods, and to have despised tyranny.

Though we today no longer suppose that astronomers should avoid actually looking at the stars, the elitism of ancient Greece echoes disturbingly in our notions about liberal education. Certainly there remains an emphasis on the effective manipulation of words; and all too often this educated verbosity seems aimed more at deception and control of the many by the few, than at expressing the truth. The assumption persists in some quarters, too, that the possessors of Liberal Knowledge are fundamentally different from the wielders of Useful Knowledge. Says Cardinal Newman, “there are two ways of using Knowledge, and in matter of fact those who use it in one way are not likely to use it in the other, or at least in a very limited measure.”11 And while the Cardinal proceeds to express gratitude to “the many” whose duty is the exercise of Useful Knowledge, he cannot resist comparing their status to “the state of slaves or children.”

Having delved more deeply into the history of valuing useless knowledge, then, we seem to have found support for Veblen’s cynical status-symbol theory. Indeed, we have found that this value has at least one root in symbolizing and perpetuating the social distance not only between rich and poor, but virtually between master and slave. Is the valuing of useless knowledge indeed nothing but a way to rationalize and perpetuate social inequality? Or might it have other roots lying even more deeply in our past?

Democritus had not labored alone. His work in fact belonged to an intellectual tradition originating in the Mediterranean region of Ionia, at a time and place in which commerce, not slavery, was the basis of survival and prosperity. These great thinkers, sometimes called the “Presocratics” (“as if, notes Sagan, “their main function was to hold the philosophical fort until the advent of Socrates, Plato, and Aristotle,” were the sons of sailors and farmers and weavers. They were accustomed to poking and fixing, unlike the priests and scribes of other nations, who, raised in luxury, were reluctant to dirty their hands. [Veblen, too, noted that great contributions to knowledge come, quite regularly, from the children of ordinary working people.] They rejected superstition, and they worked wonders.

The secret of their success, Sagan suggests, was the human hand and their willingness to use it. It therefore seems fitting that one of the Ionian experimentalists, Anaxagoras, believed that our hands, in addition to being appendages useful for creating knowledge, were nothing less than the key to human nature. To unearth the significance of this idea for our problem, we must dig much deeper into the human past—literally a thousand times farther than we have gone so far.

Hand and Brain

In the mid1980s, “mobile robots” were not very mobile. About the size of a van, they

mostly just sat around computing. They could attain speeds of ten or fifteen miles per hour—if, that is, you gave them a sufficiently smooth, evenly lit roadway on which to do it. [20] You could teach them the word “door”; but nding one or going through it was hopelessly beyond their ability.

Allen was different. Only the size of a footstool, Allen, when programmed to (1) avoid obstacles, (2) follow walls, and (3) go toward gaps, used doors perfectly well literally without knowing the meaning of the word.

The old assumption had been that to act smart, machines needed large vocabularies, and big electronic “brainsto hold them. But Allen, and a following generation of even smaller, smarter robots, proved that it does not take big brains to behave intelligently. Indeed, Rodney Brooks, of the Massachusetts Institute of Technology, who started this whole trend, took his inspiration from the fact that insects behave quite intelligently with almost no brains at all.1 Intelligent animal behavior is far less cerebral than we are prone to assume.

In the beginning must be a big brain”—this presupposition held back not only robotics, but also, several decades earlier, our understanding of our own evolution. In the late nineteenth and early twentieth century many people were growing accustomed to the idea that humans, like other species, had evolved from earlier forms of life; both scientists and the educated public, however, found it natural to suppose that an enlarged brain was what lay at the base of our ancestors’ divergence from the lines leading to today’s (smallbrained) apes: “After all, it was argued, it is intelligence that most clearly and absolutely differentiates humanity from the rest of the animal kingdom. It is in our ability to think, to communicate, and to invent that we are most distant from our animal cousins. This being the case, it was assumed that such abilities must have been evolving the longest; in other words, the human brain and the ability to think must have evolved first. Thus, the argument went, the fossil evidence for evolution should show that the brain had expanded rst, followed by the modernization of the body.”

Actually, by the year 1912 a bit of fossil evidence already had accumulated suggesting that this had things backward—that our humanype body had evolved first, while our brain remained small or in other ways primitive. In 1891, for example, the Dutch scientist Eugene Dubois had discovered, in what is now Indonesia, the bones of an ancient human (“Java Man”) whose body was much like ours, but whose brain size was only twothirds the modern average; and from Germany, in 1856, had come the first “Neanderthal Man fossils, with postcranial bones (bones below the skull) revealing a body more modern than its large but rugged skull. Both “Java Man (now termed Homo erectus) and Neanderthal Man (now 22] classied simply as an archaic form of Homo sapiens) had a pronounced ridge of bone above the eyes.

This evidence was awkward, especially for the British. First of all, they had had nothing to do with either of the above discoveries, or with others such as CroMagnon (early

modern Homo sapiens) in France; and it was hurtful to national pride—in the homeland of Darwin himself!— thus to have been “shown up by the French, Germans, Dutch, and others. Furthermore, as possessors of the world’s greatest empire, the British had a special interest in believing in a very close relationship between large brains and human intelligence: under this assumption, evidence for slightly smaller (average) brain size among some colonized peoples could be interpreted as proof of the mental superiority of the British, which in turn helped justify their privileged role as colonizers. (Large average differences in brain size between entire species sometimes are substantially related to differences in intelligence; the modest differences between individuals or groups within a species, however, are not.)

The year 1912 seemed to set the world right for the British. In that year a lawyer from southern England, Charles Dawson, found fragments of an apparently ancient human skull and jaw at a place called Piltdown. Though appearing to be, like “Java Man, half a million years old, the skull showed neither the small brain size nor bony ridges of the previous fossil finds; indeed, it was 23] as large and smoothly rounded as a modern human skull. The jaw, however, was a different story. It strikingly resembled the jaw of an ape—a chimpanzee or orangutan, perhaps. This nd immediately gave England the center stage in human paleontology; and it dramatically supported the prejudice about the big brain’s priority in human evolution. In the sensationalistic language that does so little to advance genuine understanding, the New York Times of December 19, 1912, trumpeted, “Paleolithic Skull Is a Missing Link”; and, three days later, “Darwin Theory Is Proved True.”

We need to back up a few decades. True English gentleman that he was, Charles Darwin did not like offending people. Fearing the controversy his theory would unleash, he had postponed its publication as long as possible. When, in 1859, his great book finally appeared, it brimmed with beautiful examples from the plant and animal kingdoms; but it mentioned the human animal scarcely at all. The closing pages of The Origin of Species state simply—almost incidentally—that “much light will be thrown, by the book’s theory, on our own origin and history.4 Darwin then waited eleven years before offering his interpretation of human evolution, which he detailed in a book entitled, in the genderbiased language of his time, The Descent of Man.

Did Darwin, like so many others, consider the big brain to have been basic in setting us apart from the rest 24] of the animal kingdom? The crucial passage is worth quoting here in full, not only for its relevance to our problem, but also because we so seldom bother to read and appreciate the actual words of this great thinker:

> As soon as some ancient member in the great series of the primates came to be less arboreal [treedwelling], owing to a change in its manner of procuring subsistence, or to some change in the surrounding conditions, its habitual manner of progression would have been modified: and thus it would have been rendered more strictly quadrupedal [fourlegged] or bipedal [twolegged].… Man

alone has become a biped; and we can, I think, partly see how he has come to assume his erect attitude, which forms one of his most conspicuous characters. Man could not have attained his present dominant position in the world without the use of his hands, which are so admirably adapted to act in obedience to his will.… But the hands and arms could hardly have become perfect enough to have manufactured weapons, or to have hurled stones and spears with a true aim, as long as they were habitually used for locomotion and for supporting the whole weight of the body, or…so long as they were especially fitted for climbing trees. 25] Such rough treatment would also have blunted the sense of touch, on which their delicate use largely depends. From these causesalone it would have been an advantage to man to become a biped; but for many actions it is indispensable that the arms and whole upper part of the body should be free; and he must for this stand firmly on his feet. To gain this great advantage, the feet have been rendered flat; and the great toe has been peculiarly modified, though this has entailed the almost complete loss of its power of prehension [grasping]. It accords with the principle of the division of physiological labour, prevailing throughout the animal kingdom, that as the hands became perfected for prehension, the feet should have become perfected for support and locomotion.… If it be an advantage to man to stand firmly on his feet and to have his hands and arms free, of which, from his preeminent success in the battle of life, there can be no doubt, then I can see no reason why it should not have been advantageous to the progenitors of man to become more and more erect or bipedal. They wouldthus have been better able to defend themselves with stones or clubs, to attack their 26] prey, or otherwise to obtain food. The best built individuals would in the long run have succeeded best, and have survived in larger numbers.… As the progenitors of man became more and more erect, with their hands and arms more and more modified for prehension and other purposes, with their feet and legs at the same time transformed for rm support and progression, endless other changes of structure would have become necessary. The pelvis would have to be broadened, the spine peculiarly curved, and the head fixed in an altered position, all which changes have been attained by man.… The free use of the arms and hands, partly the cause and partly the result of man's erect position, appears to have led in an indirect manner to other modifications of structure. The early male forefathers of man were…probably furnished with great canine teeth; but as they gradually acquired the habit of using stones, clubs, or other weapons, for fighting with their enemies and rivals, they would use their jaws and teeth less and less. In this case, the jaws, together with the teeth, would become reduced in size, as we may feel almost sure from innumerable analogous cases… [such as] the reduc[27] tion or complete disappearance of the canine teeth in male ruminants, apparently in relation with the development of their horns; and in horses, in relation to their habit of fighting with their incisor teeth and hoofs. In the adult male…apes…it is the effect on the skull of the great development of the jaw muscles that causes it to differ so greatly in many respects from that of man, and has given to these animals their [ferocious faces]. Therefore, as the jaws and teeth in man's progenitors gradually became more reduced in size, the adult skull would have come to resemble more

> and more that of existing man.… As the various mental faculties gradually developed themselves the brain would almost certainly become larger.5

According to Darwin, then, our upright body evolved first, bringing with it changes in teeth and jaw that allowed the skull to become smoother and less bony. Expansion in brain size, he thought, then followed.

Only a theory, you may say; and that is true. But it is the best theory we have, and it is consistent with a huge—and still growing—stock of evidence. The only evidence ever found against it was Piltdown.

And Piltdown was a fake. This was proved in 1949 and 1953, when tests using new dating techniques revealed that the skull and jaw were from different creatures, and had been chemically stained to appear far older than they really were. The skull resembled that of modern humans because it was a modern human's; the jaw, that of modern apes because it was a modern ape's. Science had been tricked; but science had exposed the trickery.

Who pulled this clever stunt, and why? It is a mystery. Many have been accused, including even the creator of Sherlock Holmes, Sir Arthur Conan Doyle. A recent addition to the list of suspects is Lewis Abbott, an egotistical artifact collector who felt slighted by the professional scientists of his time.

From the 1920s on, evidence has continued to pile up supporting Darwin's belief that in the (human) beginning was not the big brain, but the bipedal body. Bipedalism has a high price we humans still pay today in the form of assorted aches and pains—hernias, fallen arches, and chronic back problems, to name a few. No monkey complains of such maladies! And obviously, quadrupeds are stable (like a car), bipeds unstable (like a motorcycle). To have evolved at all, then, bipedalism must have been very good for something; and our best guess remains the one put forth so clearly by Darwin: a primate with its arms and hands freed from use in locomotion could better make and use tools, thereby exploring and manipulat[29] ing its environment in a new, uniquely effective manner.

Especially important was the hand. It is sometimes said that a chimpanzee's hand can do anything a human hand can do; this, however, is not quite so. When we wrap our hands around a steering wheel or ball bat, we use what is called the power grip. A great ape—chimpanzee, gorilla, or orangutan—can match us at this. But when we grasp a pen to write, or a scalpel to perform surgery, we use the "precision grip, which no ape can match. Crucial to a good precision grip is a thumb that (1) can be rotated at its base; (2) is long; and (3) can flex its last joint. These are the features that make our thumb, as anthropologists like to say, "fully opposable, allowing it to cooperate so beautifully with our fingertips in performing delicate manipulations.

Recent fossil evidence suggests that the earliest humans, or “hominids (including even a variety that became extinct)—upright bipeds four feet tall with brains no larger than a chimpanzee’s—already were equipped with just such a thumb.7 It seems quite certain, then, that our ancestors were doing many clever things with their hands long before the big brain appeared on the evolutionary scene. No doubt the larger brain rendered our hands cleverer yet; indeed, one suspects that those precision-gripping hands helped bring about the subsequent enlargement of the brain. Having a good grip manually probably placed a new premium on “getting a better grip [30] mentally. Better tools would have meant better chances for survival and reproduction; and fossil evidence does reveal that tools generally became more complex, carefully shaped, and efficient as the human brain expanded. Though we cannot be certain, it therefore is quite possible that the brain expanded mainly because larger brains could produce better tools.

In any case, intelligent human behavior is, at a deep evolutionary level, manual. We seem to recognize this fact unconsciously when we use manual metaphors for mental effort: we talk about “grasping,“getting hold of, or getting a handle on” ideas; “groping for solutions to problems; or putting together the pieces to solve a mystery. (It would be interesting to study how widespread and ancient such expressions might be in human language generally.)

Though the roots of intelligent behavior among humans are uniquely manual, they remain nonetheless typically practical; and this returns us to the more general point. Intelligent behavior is far less cerebral than creatures with craniums as capacious as our own like to assume. It takes almost no brain for an insect to behave quite intelligently; and we became human while our brains remained ape-sized. Those small brains of our early ancestors no doubt were being modified in a human direction; but the earliest intelligent human behavior occurred surely without benefit of subtle philosophies or 31] higher mathematics, and quite possibly without even language itself. (How many of us, after all, need to brush up on the definition ofoor before we walk through one? And who has not seen a human infant display intelligent behavior—notably, use of its hands to try to get what it wants—long before it is capable of language, let alone of abstract thought?)

The intense practicality of animal (including human) intelligence is not surprising. Intelligent behavior evolved because it helped animals cope with their environments well enough to survive and reproduce. It was immediate problems of survival, not any intrinsic value in abstract thought, that brought forth our human intelligence; and it remains our nature to apply our hands and brains first of all to practical problems immediately confronting us, rather than to theoretical problems the solution of which has no apparent value for survival or reproduction.

We draw, then, a two-pronged conclusion: intelligent behavior among humans, relative to that among animals generally, is (1) uniquely manual, but (2) typically practical. This

typical penchant for practicality will prove useful in explaining why we value useless knowledge; it is necessary first, however, to explore the significance of the manual nature of our intelligence.

On this point Anaxagoras of Ionia was basically right. Our uniquely large brain, bringing a yet higher 32] order of intelligence, emerged only after we already were equipped with our clever, dexterous, uniquely human hands. The classical Greek belief that some of us humans are creatures of Mind rather than of Matter, suited by nature for working with our brains rather than our hands, appears as a profound and articial splitting of our fundamental human nature; it could not, and did not, endure.

Reason and Evidence

One upon a time not so very long ago, a highly intelligent life form on a certain planet stumbled across something new: a small, flat, upright rectangle from which creatures resembling themselves stared out. The object had been placed there by an alien—even more intelligent—from another world, for no better reason than to satisfy its curiosity about how the less intelligent species would respond to the new stimulus. Thus did the chimpanzees of Gombe, Tanzania, discover a mirror placed in their midst by the British scientist Jane Goodall.

Most of the chimps quickly correlated their own movements with what they saw in the mirror. Some playfully swung their arms back and forth before the mirror; some even made funny faces at themselves. Nearly all soon wandered off, however, leaving behind a lone, puzzled young female. She stared intently into the mirror, then took a long look behind it. Seeing nothing there, she returned her gaze to its front and, at the same time, reached a hand deliberately behind the mirror and waved it. Clearly, she had conceived and executed a successful experiment aimed at determining whether what was seen in the mirror was affected by what happened behind it.

The wprd science” conjures up white coats, test tubes, and atom smashers; but such things are mere trappings. Science at its root, to paraphrase Einstein, is simply refined common sense—“common sense” because it relies on ordinary reason, “refined” because it continually seeks out the best evidence it can find.[2] The key words here are “reason” and “evidence,” for it is in the ongoing, never-ending interaction of these two that science consists. Common sense is reasonable enough; but unrefined by the systematic search for quality evidence, it screens out whatever is inconvenient or unpleasant, and so ends up producing wishful thinking rather than reliable information. Experiments, incidentally, are so popular in science simply because they produce such high-quality evidence.

A hand waved behind a mirror can be evidence; more generally, however, the hand gathers evidence. This gathering can be direct, as when a geologist picks up a rock, or

an entomologist captures an insect (the young Darwin was an accomplished collector of beetles); or it can be indirect, as in performing an experimental manipulation, or constructing and using an apparatus to gather new evidence (a telescope, for example), or testing ideas already suggested by reason and evidence (a particle accelerator, perhaps). In either case, dirtying one's hands is a real and present danger.

The basic primate hand did not evolve in the first place for so lofty a purpose as gathering evidence to test ideas; it evolved for grasping tree branches and picking food—that is, for meeting the immediate survival needs of mammals adjusting to life in the trees. Still, Goodall's experimentative chimp suggests that the capacity for coordinated triangulation of hand, eye, and brain to test ideas is already millions of years old.

Scholars outside the sciences sometimes argue that it is racist, sexist, or ethnocentric to admire science. This would make more sense if it were true, as they seem to assume, that science is the exclusive invention of a handful of white, European males over the last few centuries. In fact, people of all times and places have applied reason to evidence, and to that extent science is the collective creation of our entire species.

Yet the interaction of reason and evidence usually has proceeded in a slow, unself-conscious, trial-and-error way. The contribution of modern science was to raise the interaction of reason and evidence to consciousness, thereby systematizing and accelerating it. It had to overcome the ancient bias, inherited especially from the "post-Ionian" Greek philosophers by way of medieval theology, in favor of reason as opposed to physical evidence. (The stereotype that pictures medieval scholars arguing endlessly over how many angels could dance on the head of a pin is by no means entirely unwarranted: such questions really did consume enormous quantities of mental energy—which fact is itself a significant problem for the social and psychological sciences.[3] Needless to say, these debates placed the disputants under little pressure to gather physical evidence directly relevant to their tortured reasonings!) In this respect, modern science took up where Democritus and the Ionians had left off; and the self-conscious effort to understand the universe in naturalistic terms thrived, once again, in a society made relatively practical-minded and democratic by a focus on commerce.

Not that modern science emerged directly to serve economic interests: its first great strides were in astronomy, and were of little commercial value. It seems rather that market trading, regulated in Europe less and less by governments, guilds, or God's servants from the twelfth century on, again produced social conditions conducive to the vigorous investigation of reality. Once again, a middle class whose upward mobility was based on commercial success had weakened the traditional connection between physical work and low social status. If physical work was respectable, a respectable idea should work in the physical world; and doing the work necessary to find out if it did was becoming a credit, not a disgrace. "Poking and fixing" no longer made one a peasant or slave; devising and using gadgets was as suitable for studying the stars as

for sawing wood.

But old ideas die hard, and progress could prove difficult. Plato, we saw earlier, had recommended thinking about heavenly bodies rather than looking at them. After hard work on development of the telescope, Galileo (1564–1642) described new details of our moon's surface, and discovered four of Jupiter's moons. A philosophy professor at Padua, however, refused Galileo's invitation to take a look for himself, presumably because in theory such additional heavenly bodies should not exist; meantime, another faithful Platonistic scholar at Pisa argued, before the Grand Duke himself, that such new bodies logically could not exist![4]

Though modern science perhaps was immediately motivated, like Goodall's chimp, more by sheer curiosity than by economic interests, its commitment to real-world evidence made inevitable its eventual technological and economic value. As recently as the mid–nineteenth century, however, the direct economic impact of science remained modest. The great productive power of the capitalism of that time—which Karl Marx so admired, even as he despised its inhumane aspect—was based more on traditional crafts such as clock making and lens grinding than on the progress being made by systematic science. But by the late nineteenth century, the practical value of this science had become so clear that businesses large enough to afford it began establishing laboratories to develop new processes and products. Today many governments, too, invest heavily in scientific research. Scientific progress, technological innovation, and economic growth have become deeply—and apparently permanently—intermeshed.

This development's place in the general evolution of human civilization has been well summarized recently in these words: "Perhaps the most important point about Western science and technology is that they were linked at all. In other civilizations, economically useful technologies depended minimally, if at all, on the wisdom of astronomers (or astrologers), philosophers, mathematicians and other sages. These thinkers had little to offer to farmers, sailors, smiths and other artisans who had developed their technologies within their craft traditions. In fact, the thinkers often confined themselves to an abstract world of ideas as an escape from the transient and imperfect, real world. For Western scientists, however, there was no escape. Their empirical methods required them to engage the real world. It is precisely because the scientists were so engaged that they accomplished so much."

As the practical value of science grew clearer, many people began to believe it deserved a larger place in the curriculum of higher education, which continued to stress the classics, philosophy, and religion. Indeed, to many astute observers the traditional emphasis began to appear absurd: "As the Orinoco Indian puts on his paint before leaving his hut, not with a view to any direct benefit, but because he would be ashamed to be seen without it; so, a boy's drilling in Latin and Greek is insisted on, not because of their intrinsic value, but that he may not be disgraced by being found ignorant of them—that he may have "the education of a gentleman"—the badge marking a certain

social position, and bringing a consequent respect."

So wrote the great English thinker Herbert Spencer, in an essay tellingly entitled, "What Knowledge is of Most Worth ?" This was the first in Spencer's series of essays on education, published between 1854 and 1859—which years, incidentally, bracket the birth (in 1857) of Thorstein Veblen. What a delight it must have been for the rebellious young Veblen to discover the writings of Spencer, from which his own work would take so much inspiration!

But Spencer was no Veblen. Bent more on positive change than on negative criticism, Spencer proceeded to explain what education is for, and how, point by point, its goal could best be achieved. "To prepare us for complete living is the function which education has to discharge; and the only rational mode of judging of any educational course is, to judge in what degree it discharges such function."

The concept of "complete living" is admittedly vague, but certainly inspiring. (One is reminded of Christ's words, "I am come that they might have life, and that they might have it more abundantly." Moreover, Spencer laid out a logical set of priorities in working toward complete living.

First, a person must be able to see to her or his biological survival and well-being. After all, we scarcely need a crystal-clear conception of complete living to know that a corpse is incapable of it. In support of this first imperative is a second: a person should be able to secure a livelihood. Third, a person should be capable—since the need may arise—of good parenting, for the successful perpetuation of society and the species. Fourth, the individual should be a good citizen. Finally, the person should develop good taste—an ability to appreciate and enjoy the finer things of life.

The ideal education, of course, would provide complete preparation in all five areas; but this is impossible, Spencer admitted, so it is necessary to apportion educational time wisely, devoting more time to the more basic needs. Knowledge is useful only insofar as it helps meet these needs; and the most useful knowledge is that which meets the most basic needs. In practice this would mean allocating the largest block of time to (1) biological and psychological science, in reference mainly to human health and wellness; the next largest to (2) mathematics, and physical and social science, especially in their practical, vocational applications; the next largest to (3) social science as it promotes good parenting; the next largest to (4) social science as it conduces to good citizenship; and the smallest to (5) literature and the fine arts—indeed, the "humanities" Spencer recommended leaving as a leisure activity for students: "*As they occupy the leisure part of life, so should they occupy the leisure part of education.*"

Note that virtually all required educational work would be more or less scientific. For that matter, even the leisure-time humanities, Spencer believed, should be approached scientifically. Spencer predicted that ultimately Science, sadly neglected in higher

education but actually “highest alike in worth and beauty, will reign supreme.

Whatever one may think of Spencer’s plan, his general approach was far more sensible than Cardinal Newman’s. Nowhere is this clearer than on the subject of time. Liberal Knowledge, wrote Newman, is “desirable, though nothing come of it, as being of itself a treasure, and a sufficient remuneration of years of labour;10 Spencer, to the contrary, recommended: “Before devoting years to some subject which fashion or fancy suggests, it is surely wise to weigh with great care the worth of the results, as compared with the worth of various alternative results which the same years might bring if otherwise applied.”

In place of Newman’s inscrutable reverence for knowledge regardless of its human uses, then, Spencer offered a straightforward prioritizing of knowledge according to its practical contribution to living life more completely. Spencer’s sensible approach, too, seemed to respond perfectly to the growing recognition of science’s value to [43] humankind.

Nonetheless, Newman’s are the notions that have prevailed—overwhelmingly as an ideal, and substantially in actual practice. Science has not attained anything like the pervasiveness Spencer predicted (and recommended) for it. The chief value of science is seen, even by those who believe strongly in its importance in the general-education curriculum, as lying in its general methodological precepts and world view rather than in any specific practical use in attaining the Spencerian goals of personal wellbeing, vocational preparation, responsible childrearing, and good citizenship. A century after Spencer’s essays appeared, for example, the distinguished philosopher of science Ernest Nagel could declare that “primary or exclusive emphasis on the development of specialized skills is a disservice to the student, to the future of both pure and applied science, and to the prospects of a liberal society.”

Higher education, then, firmly anchored in useless knowledge, seems to have withstood the gale force of science—or, to put things more accurately (if less poetically), it has incorporated science on its own terms, by deemphasizing science’s immediate uses. At liberal arts institutions, then, Biology is not taught chiefly with an eye to making students healthy; Mathematics, to producing accountants or engineers; Psychology, to creating responsible parents; nor Sociology and History to producing good citizens. No, these and other “liberal arts” continue to be taught, for the most part, as though knowledge is good simply for its own sake, quite apart from whatever uses it may happen to have.

Of course, some educators—wellmeaning, one hopes—argue that this ought not to be; that the emphasis, in the classroom, should be on a discipline’s practical value, or on interdisciplinary attempts to address current social problems or political issues. Such views, like Spencer’s, are by no means indefensible; and surely a university should be a place where diverse perspectives can thrive. But emphasizing the practical value of

knowledge implicitly deemphasizes the value of knowledge for its own sake, and therefore directly opposes liberal education's traditional ideal—which is precisely the instilling of a love of knowledge for its own sake.

So the rise of modern science, with its obvious uses to us, has left intact the valuing of useless knowledge. This is the more surprising when we consider that even as science was proving its uses, some of the social arrangements that made status symbols so important were vanishing: abject slavery disappeared, and the great colonial empires dissolved. Of course, we still have with us marked cleavages between rich and poor, powerful and powerless; admittedly, useless knowledge continues to have, even today, its ornamental value for symbolizing these social inequalities. Yet can this be the entire reason we look to a Newman rather than a Spencer for our conception of higher education? One begins to suspect that the valuing of useless knowledge, a belief as resilient as it is perplexing, possesses a hidden significance we have not yet unearthed.

The Sacred Cow

India: a huge nation of pampered cows and hungry peasants, an entire society victimized by its own bizarre belief that cows are sacred. In the words of the noted anthropologist Marvin Harris, “It does seem that there are enormous numbers of surplus, useless, and uneconomical animals, and that this situation is a direct result of irrational Hindu doctrines. Tourists on their way through Delhi, Calcutta, Madras, Bombay, and other Indian cities are astonished at the liberties enjoyed by stray cattle. The animals wander through the streets, browse off the stalls in the market place, break into private gardens, defecate all over the sidewalks, and snarl traffic by pausing to chew their cud in the middle of busy intersections. In the countryside, the cattle congregate on the shoulder of every highway and spend much of their time taking leisurely walks down the railroad tracks.”

But as Harris goes on to explain, there is more here than meets the eye. Careful research shows that the apparent surplus of cows is not real, and that cows in fact are a scarce and precious *nonfood* resource on which the people’s survival depends. In a nonindustrial agricultural system cows perform the function of a tractor factory: they produce the oxen that pull the plows that till the land that grows the food that feeds the people. Cows are valuable, too, as milk producers. Their dung, moreover, makes them the main providers of fertilizer, cooking fuel, and even housebuilding materials.

Despite appearances, the cows are by no means pampered. Tough zebu breeds, they manage to survive on waste products such as rice husks and straw, inedible for [48] humans. When they appear to tourists to be milling about and getting in the way, they in fact are scavenging for whatever garbage and stubble they can find. They compete with humans for neither land nor food. As one researcher concluded, “Basically, the cattle convert items of little direct human value into products of immediate utility.

The efficient exploitation of cows does not end with their death: the meat can be sold to butcher shops catering to non-Hindus, the hides to the leatherwork industry.

In light of all this, Harris suggests, it seems likely that the “irrational belief” that cows are sacred helps motivate Hindu peasants to preserve the lives of their cows precisely so they can “milk them” for all they are worth! Were farmers to slaughter their cows whenever hunger tempted them to do so, they probably would be far worse off in the long run. The belief that the cow is sacred and therefore must not be killed thus helps people behave in their own best long-term interests; it protects them from themselves, so to speak.

Food for thought: Automobiles and airplanes are faster than oxcarts, but they do not use energy more efficiently. In fact, more calories go up in useless heat and smoke during a single day of traffic jams in the United States than is wasted by all [49] the cows of India during an entire year. The comparison is even less favorable when we consider the fact that the stalled vehicles are burning up irreplaceable reserves of petroleum that it took the earth tens of millions of years to accumulate. If you want to see a real sacred cow, go out and look at the family car.

What does it mean to consider something sacred? The idea of the sacred usually is associated with religion; in fact, French sociologist Emile Durkheim suggested that the most fundamental characteristic of religious beliefs is that “they always suppose a bipartite division of the whole universe, known and knowable, into two classes which embrace all that exists, but which radically exclude each other. Sacred things are those which the interdictions protect and isolate; profane things, those to which these interdictions are applied and which must remain at a distance from the first.” Sacred things, then, are “special,” set apart and protected from the ordinary (profane) realm.

It may well be true, as Durkheim claims, that religion always involves sacred objects; but it would not follow that all things considered sacred are necessarily [50] religious. The American flag, though not religious in the usual sense of the term, is a good example of a sacred object, for it is set apart and protected, by complex traditions, from contact with the ordinary world (such as by burning, or touching the ground). Similarly, a young lady, quite lacking religious convictions, recently told me that a woman’s wedding gown ought not to be altered for subsequent wear, but simply tucked away and preserved. Her explanation? “It’s sacred!”

Is the sacred cow an exceptional case, or might it be that sacred things and social taboos often serve practical purposes in hidden ways? Harris suggests that many dietary taboos, “in several different cultures, work much like the sacred cow; he suggests, too, that the same goes even for something as seemingly different as the incest taboo: the investment of the incest taboos with so much guilt, anxiety, and symbolism reflects deep confusion and ambivalence concerning the cost/benefits of incest; hence the need for the imposition of unquestionable “sacred” social rules that cut through that ambivalence and prevent each new generation from repeating the trials and errors of past generations.”

There is something vaguely religious in our belief in Liberal Knowledge—that is, in our valuing of knowledge [51] for its own sake (or, as I have put it to be provocative, in our valuing of “useless” knowledge); it is no accident, one suspects, that the classic statement of this belief was put forth by a priest! But the belief is not religious—not, at least, in the usual sense of the word.

Yet if valuing useless knowledge is only distantly related to religion, it seems very akin to the creation of a sacred object. “There is a Knowledge, which is desirable, though nothing come of it,” the Cardinal inscribed for the ages. Does this not serve precisely to set apart a segment of the universe—namely, human knowledge—and protect it from our ordinary (profane) standard of value— namely, practicality? To believe in Liberal Knowledge, then, is to consider human knowledge sacred! And this is tantamount to a taboo on judging knowledge from a strictly practical standpoint.

Is it possible that human knowledge, like the Hindu farmer’s cow, needs protection for our own good? This seems not merely possible, but altogether probable. As we saw in chapter 3, human intelligence, like animal intelligence generally, is profoundly practical. Our large brain, with its great powers of abstraction, is a recent arrival on the evolutionary scene; our judgments about the value of our own mental productions—that is, about our knowledge—tend to be lamentably “gut-level”—perhaps quite literally millions of years behind the times. It becomes understandable, then, that for most of us the “natural,” [52] spontaneous response to a new item of knowledge is to hope, with all the primitive power of wishful thinking, that it will prove useful right *now*, to *me*, in a way that is *obvious*. But the modern world is not the world of those first, small-brained but dexterous humans. They lived in tiny, dispersed societies whose low-tech cultures were incapable of threatening the habitability of the earth; we do not.

I submit that in our world, the archaic response to human knowledge threatens our continued survival as a species; and that valuing useless knowledge (believing in Liberal Knowledge, and hence in liberal arts education) is our way of protecting ourselves from that danger.

Certainly knowledge has become a source of confusion and ambivalence. Expanding so fast that we talk of an “information explosion,” it becomes ever more complex and intimidating. The archaic demand that an item of knowledge be “good for something” becomes more tempting than ever before, a seductive psychic defense against the deluge threatening to engulf us. But can we afford this luxury, any more than Hindu farmers can afford the luxury of devouring their cows?

Our judgments about what knowledge is useful are fallible and biased. Consider three questions: (1) Useful for whom? (2) Useful when? (3) Useful how? Our archaic biases are clear. Useful for whom? “For me”; “for my loved ones”; at most, “for my society.” (We should cringe when someone says we need good liberal education predominantly in order to outcompete other nations, whether militarily or economically.) We in fact are one species inhabiting one planet; yet we seem bent, much of the time, on trashing one another and our common home. We need to seek, and cherish, knowledge on behalf of humankind as a whole.

Useful when? Our archaic bias is to demand usefulness in the immediate future; indulging this bias, however, is increasingly detrimental to the long-term habitability of Earth. Short-term thinking is no safer, these days, than in-group thinking. Knowledge does not come neatly labeled with a date by which it will be useful. We cannot be confident even about *which* knowledge will become useful, let alone when. We do know that history is full of cases in which “useless” knowledge was preserved to our unanticipated benefit, or destroyed to our unanticipated detriment; it is much harder to come up with convincing cases of our having preserved truly useless knowledge to our unanticipated detriment! We need to seek, and cherish, knowledge on behalf of the indefinite future.

Useful how? Our bias is to demand that the way in which an item is—or might become—useful be obvious to us. Are art, literature, and music useful? Some argue that they are not. Others, while agreeing that they are not, declare that we should create and appreciate them none[54] theless. I suggest that they probably are useful, but in indirect ways that cannot be demonstrated. We do not live by bread alone. Anyone who truly has experienced the power of art—and certainly it need not be of the "serious" sort—knows its ability to fortify us, whether in rising to life's challenges or in bowing to its inevitabilities. Such a one will scarcely doubt that the humanities contribute to humankind's ongoing "self-humanization," vastly—but undemonstrably—enhancing our long-term prospects as a species.

We must value "useless knowledge," then, precisely because we cannot trust ourselves to know truly useless knowledge when we see it. Our vision is too limited, our judgments too archaically shortsighted, self-centered, and simpleminded.

If, however, we insist on considering human knowledge profane rather than sacred (in Durkheim's sense), it is certain that we impoverish our collective existence; and it is likely that we even imperil it. "Useless" college course work placing humankind and our achievements in the broadest contexts possible may be our best protection against our deep-seated propensity for narrow "practicality." Writes the Russian physicist Sergei Kapitza:

Recently, following the demise of official Soviet

ideology, attempts have been made to introduce

the humanities into the curricula of our scien

tific and technical universities. At the Moscow Institute for Physics and Technology, on the initiative of the rector, Nikolai V. Karlov, a systematic effort has been made to offer lectures and courses on the history of culture, on religion and art and on the history of science and civilization. Critics ask what such courses contribute to training. The answer is that what really matters is education. Unfortunately, the importance of education is not properly appreciated, and it is this very lack of appreciation that ultimately led to [the nuclear disaster at] Chernobyl.6 Some technically oriented

institutions in the United States also have been working to correct the same deficiency.7 Of course it is not our high technology, in itself, that increasingly imperils our planet and ourselves; it is the selfish, shortsighted ways in which we apply it. Indeed, entrusting an ever more advanced technology to our essentially primitive notion of practicality could produce that ultimate impracticality: human extinction. Still, our big brain, powerful enough to have created high technology, may yet prove subtle enough to use it wisely. Cherishing all products of the human intellect, not the "practical" alone, will be both a cause and an effect of the wisdom we shall need if we are to survive far into the future. [56] Of course I cannot *prove* this, any more than the Russian physicist Kapitza can prove that Chernobyl was preventable through liberal arts education. If I could somehow demonstrate that cherishing knowledge for its own sake could save us, this essay would constitute a contribution to the engineering of long-term human survival—a practical project indeed. But that would make it a contribution to Useful Knowledge; and is it not clear, on reflection, that no viable defense *of* Liberal Knowledge could be other than a contribution *to* Liberal Knowledge? Epilogue The flight of the planets is nothing nobler; all the arts lose virtue Against the essential reality Of creatures going about their business among the equally Earnest elements of nature. Robinson Jeffers, "Boats in a Fog" iberal Knowledge" is, by classical definition, less demonstrably practical than "Useful Knowledge." The question of why we value liberal education so highly therefore cannot be answered by demonstrating that liberal knowledge is, in some way, really more practical than useful knowledge. The answer lies not in the usefulness of what I have called "useless knowledge," but in the usefulness of protecting knowledge from our archaically narrow notion of the useful—a notion inimical to the survival of a species evolved to high technology. If this is correct, what is *ultimately* practical for our species is to form the habit of valuing knowledge for its own sake. "Love of liberal learning" is one name for that habit; and the prestige attached to a liberal education is (among other things) a sign of that habit's development and diffusion. A liberal arts institution must miss no opportunity to proclaim the value of knowledge for its own sake. Is it not the vocational and professional school's place to insist,uncompromisingly, that knowledge be useful? No less uncompromisingly must the liberal arts institution insist on the value of knowledge for its own sake. There is beauty in the thought that we have sacralized human knowledge—set it apart and protected it from the profane requirement that to be valuable a thing must be practical—not merely as elitists seeking yet another status symbol, but more fundamentally, in the phrases of the poet, as creatures going about the ever-challenging business of survival "among the equally earnest elements of nature." In this light, the valuing of "useless knowledge" appears as nothing less than humankind trying to save itself.

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Notes to Chapter 4, Reason and Evidence

This account is based on a scene from the motion picture *Miss Goodall and the Wild Chimpanzees* (National Geographic Society, 1965).

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Spencer, *Education*, 96. 10.Newman, *Idea of a University,* 105.

11. Spencer, *Education,* 29.

12. Ernest Nagel, “Science and the Humanities,” pp. 188–207 in *Education in the Age of Science,* ed. Brand Blanshard (New York: Basic Books, 1959), 196.

Notes to Chapter 5, The Sacred Cow

1. Marvin Harris, *Cows, Pigs, Wars, and Witches: The Riddles of Culture* (New York: Random House/Vintage, 1978), 7.

2. Odend' hal, quoted in Harris, *Cows, Pigs, Wars, and Witches*, 19.

3. Harris, *Cows, Pigs, Wars, and Witches*, 27.

4. Emile Durkheim, *The Elementary Forms of Religious Life,* ed. Joseph Ward (1915; repr., New York: Free Press, 1965), esp. 56.

5. Marvin Harris, *Cultural Materialism: The Struggle for a Science of Culture* (New York: Random House/Vintage, 1980), 81. Admittedly, the origin and diffusion of beliefs the functions of which are latent rather than patent pose technical problems with which anthropologists continue to struggle.

6. Sergei Kapitza, “Antiscience Trends in the U.S.S.R,” *Scientific American* (August 1991), 138.

7. See, for example, Edward B. Fiske, “M.I.T. Widens Engineering Training,” *New York Times* (June 1, 1987): 1, 14. [63] Bibliography Coser, Lewis A. *Masters of Sociological Thought: Ideas in Historical and Social Context.* New York: Harcourt Brace Jovanovich,

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