

2. Writing Across the Curriculum

One spring day in 1985 I got a telephone call from a professor named Thomas Cover at Gustavus Adolphus College, a small liberal arts college of Lutheran origins in St. Peter, Minnesota. He wanted to tell me about a new program at his college that he thought would interest me. It did. In fact, it's what got me thinking about this book.

He said that in the fall term Gustavus Adolphus would launch a curriculum in which seventy-five courses, covering the entire spectrum of a baccalaureate education, would be listed with a "W," meaning that writing would be a required part of the course, that it would be a factor in the student's grade, and that the teachers would work with the students on the process of organizing, writing and rewriting their papers and reports. Three "W" courses would be required for graduation.

The call crystallized an idea I realized I felt strongly about: that the teaching of writing should no longer be left just to English teachers but should be made an organic part of every subject. The idea, which goes by the name of "writing across the curriculum," has been very much in the air among educators for at least a decade. But I had never heard of any school or college actually trying it. (I've since heard of many.) That's why the call from Minnesota excited me. It was a chance to see the idea in action and to find out whether it was as important a trend as I thought it was.

Professor Cover asked if I would like to come out to Gustavus Adolphus and talk to the students about writing. I said I would like to come out and talk to the professors; they were the real heroes of the mission. How were they going to undertake a kind of teaching they had never tried before? How were they going to adapt writing to their discipline? How did they think writing would help their students to learn?

I asked Thomas Cover how to get to Gustavus Adolphus. He said that if I flew to Minneapolis he would meet me at the airport. I said I'd see him there.

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As baggage I would be taking along a number of strong opinions on why so many Americans don't learn to write and why they live in so much fear of trying.

One of them has to do with English teachers. Under the American system, they are the people who teach our children to write. If they don't, nobody will. They do it with dedication, and I hope they'll be rewarded, if not here on earth, at least in heaven, for there's almost no pedagogical task harder and more trying than teaching somebody to write. But there are all kinds of reasons why English teachers ought to get some relief. One is that they shouldn't have to assume the whole responsibility for imparting a skill that's basic to every area of life. That should be everybody's job. That's citizenship.

Another reason is that it's not what most English teachers want to do. Their real subject is literature—not how to write, but how to read: how to extract meaning from a written text. That's what they were primarily hired to teach and what they were trained to teach. Inevitably, much of the writing that English teachers assign is based on literature—on what somebody else has already written—and therefore has little reality. And what students in turn write for the English teacher is more florid than what they would write for anybody else. They reach for a "literary" style that they think the teacher wants and that

they assume is "good English." But this style is no part of who they are. Nor is it necessarily good English; much of what academics write and read is fuzzy and verbose. Students should be learning a strong and unpretentious prose that will carry their thoughts about the world they live in.

Another powerful element in learning to write is motivation. Motivation is crucial to writing—students will write far more willingly if they write about subjects that interest them and that they have an aptitude for. But they don't often get that chance; writing tends to be assigned only in subjects like English or history that are identified with writing.

What also gets imparted in those classes is fear. The fear of writing is planted in countless people at an early age—often, ironically, by English teachers, who make science-minded kids feel stupid for not being "good at words," just as science teachers make people like me feel stupid for not being good at science. Whichever our type, the loss of confidence stays with us for the rest of our lives.

Much of this fear could be eased if writing became a component of how these subjects are taught. A science-minded student, if he were encouraged to write about a scientific or technological subject, would soon find that he could do it. He would discover that writing is primarily an exercise in logic and that words are just tools designed to do a specific job. Similarly, the sciences could be demystified for liberal arts types like me. We could write our way into at least a partial understanding of many subjects whose language of numbers and symbols has scared us away.

The hard part, as in swimming, is to take the plunge. The water looks so cold. Can it be warmed up? I think it can. The way to begin is with imitation.

We all need models, whatever art or craft we're trying to learn. Bach needed a model; Picasso needed a model; they didn't spring full-blown as Bach and Picasso. This is especially

true of writers. Writing is learned by imitation. I learned to write mainly by reading writers who were doing the kind of writing I wanted to do and by trying to figure out how they did it. S. J. Perelman told me that when he was starting out he could have been arrested for imitating Ring Lardner. Woody Allen could have been arrested for imitating S. J. Perelman. And who hasn't tried to imitate Woody Allen?

Students often feel guilty about modeling their writing on someone else's writing. They think it's unethical—which is commendable. Or they're afraid they'll lose their own identity. The point, however, is that we eventually move beyond our models; we take what we need and then we shed those skins and become who we are supposed to become. But nobody will write well unless he gets into his ear and into his metabolism a sense of how the language works and what it can be made to do. That's a fundamental premise of this book.

Another is that the essence of writing is rewriting. Very few writers say on their first try exactly what they want to say. Recently I got a form letter from my cable TV company saying, "Next month we will upgrade our phones, so it will be difficult to reach us." A few days later I saw an interoffice memo from a supervisor requesting "a list of all employees broken down by sex." Meaning is remarkably elusive. After a lifetime of writing I still revise every sentence many times and still worry that I haven't caught every ambiguity; I don't want anyone to have to read a sentence of mine twice to find out what it means. If you think you can dash something off and have it come out right, the people you're trying to reach are almost surely in trouble. H. L. Mencken said that "0.8 percent of the human race is capable of writing something that is instantly understandable." He may have been a little high. Beware of dashing. "Effortless" articles that look as if they were dashed off are the result of strenuous effort. A piece of writing must be viewed as a constantly evolving organism.

Curiously, this hasn't been the prevailing theory in our schools. American children have long been taught to visualize a composition as a finished edifice, its topic sentences all in place, its spelling correct, its appearance tidy. Only lately has there been an important shift. The shift—in the terminology of the trade—is from “product” to “process.” It puts the emphasis where it should have been all along: on the successive rewritings and rethinkings that mold an act of writing into the best possible form. If the process is sound, the product will take care of itself.

Finally, in the national furor over “why Johnny can't write,” let's not forget to ask why Johnny also can't learn. The two are connected. Writing organizes and clarifies our thoughts. Writing is how we think our way into a subject and make it our own. Writing enables us to find out what we know—and what we don't know—about whatever we're trying to learn. Putting an idea into written words is like defrosting the windshield. The idea, so vague out there in the murk, slowly begins to gather itself into a sensible shape. Whatever we write—a memo, a letter, a note to the baby-sitter—all of us know this moment of finding out what we really want to say by trying in writing to say it.

This was the aspect of “writing across the curriculum” that excited me most of all. It was an idea based on two principles: learning to write and writing to learn.

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St. Peter, Minnesota (pop. 9,000), is two hours south of Minneapolis, near the Iowa border, and Professor Gover drove me through flat and fertile country, its farms farther and farther apart. I wasn't surprised that I was bound for a college that I had never heard of and that was in such an isolated place. In my travels I've found that the teaching of writing is taken more seriously at little-known colleges and universities than at the big

and famous ones. Again and again, on campuses in Kentucky and Idaho and Indiana and Missouri and other states far from the Ivy League, I've met teachers deeply committed to the task of getting students to write well. The news out there is good. Professor Gover explained that he had been chairman of the committee that was putting writing into—and across—the curriculum at Gustavus Adolphus. I asked him how the idea took root.

“Over the years,” he said, “our faculty did a lot of good-natured berating of the English department: ‘Why can't you teach these students to write?’ The English teachers said, ‘They write well for us, but in your classes they don't have that expectation—students don't think of writing as being any part of your courses.’ Of course that was true, and what it stemmed from was a lifelong sense of inadequacy on our part. Those of us who teach science and other technical subjects have always felt insecure about writing. It's not that we felt stupid—we knew that we could deal well with ideas and that we understood our discipline. But somehow when it came to putting words on paper it never came out right, and we heard about it, usually from our grade school or high school English teacher. It's like the math anxiety you see in people who don't have a bent for mathematics.

“What we found developing at Gustavus Adolphus was a sense that we should all be sharing the responsibility for teaching writing. We formed a writing committee that consisted of professors from many different disciplines, and we invited proposals for ‘W’ courses from the entire faculty. The response was instantaneous. As soon as the ownership of writing by the English department was lost, people in other fields said, ‘I'd be willing to give it a try.’ The procedure is that they have to submit a proposal and the writing committee has to approve it. To help them we're bringing in outside experts to give workshops in how to teach writing. One reason for the high response

is that everything is voluntary. If the program had been imposed by the administration I don't think it would work."

I asked Professor Gover what his own discipline was. He said he was a professor of chemistry. Chemistry! A whiff of sulfur from Mrs. Boyden's class flew in the car window. Of all subjects, why did that have to be the one he was a professor of? Surely there was no way to write about chemistry. I asked him how he would adapt writing to his subject. He said he was going to teach a course called "Chemical Discoveries That Changed the World" and get his students to write papers about them. I liked the title of the course and the idea of changing the world. I asked him what some of the discoveries were.

"One was the synthesizing of urea by a German chemist named Friedrich Wöhler in 1828," he said. "It was the first time man had made an organic compound, which had always been considered God's work, and the discovery touched off intense debates about theology and philosophy all across Europe for many years. It shook the foundations of faith."

Of course I didn't even know what urea was. Professor Gover told me it was the chief solid component of urine. I also didn't know that urine had a solid component. But what I did suddenly know was that this was a chemical achievement that went far beyond the chemistry lab.

Another discovery that Professor Gover said he would include was the formulation of the periodic table of the elements. I asked him what there was to discover; didn't the elements already exist? They existed, he said, but there was no organized way of thinking about them or knowing about their affinities to one other. He told me about the Russian chemist D. I. Mendeleev, who noticed that certain properties of the elements recurred periodically when he arranged them according to their atomic number. From that observation, in 1869, he proposed the periodic law—one of the cornerstones of modern

chemistry—and devised the famous chart that puts elements with similar properties in easily identified groups and alignments.

As Professor Gover described how Mendeleev juggled the elements into a coherent system, leaving blanks for elements that hadn't yet been discovered but whose properties he could predict, the periodic table which had intimidated me at Deerfield took on the excitement of a puzzle and a chase. If Mrs. Boyden had asked me to write a paper about Mendeleev's search for order in the elemental soup, or about the spiritual agony that Wöhler caused by playing God, I might have been drawn into the history and romance of the subject and lost some of my fear. Now, listening to Thomas Cover's tales of Wöhler and Mendeleev and other chemists who journeyed into the unknown, I thought, "What an interesting subject!"—no small thought for someone with chemistry anxiety. Then I thought: Probably every subject is interesting if an avenue into it can be found that has humanity and that an ordinary person can follow. Writing was such an avenue—perhaps, in fact, the main route.

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Actually I was far readier to think this thought than I would have been ten or fifteen years earlier. The difference was that many scientists have recently begun to write about their fields in language that is not only clear but often eloquent. One of them is the biologist Lewis Thomas, whose books, *Lives of a Cell* and *The Medusa and the Snail*, vividly proved that a scientist can also be a humanist. Another is the paleontologist Stephen Jay Gould. In his monthly column in *Natural History* magazine and in books like *The Panda's Thumb* I've found myself caught up in the riddles of evolution and the miracles of the natural world. Could never forgets one of nature's oldest

laws: that everybody loves a story. Every month he tells me a remarkable story and then tells me why he thinks it came out the way it did.

Another scientist-writer is Paul Davies, author of *The Edge of Infinity*, whose latest book announced by the boldness of its title, *God and the New Physics*, that it would jump into spiritual waters where men of science have seldom deigned to go. As Davies says in his introduction, the new physicists have "had to learn to approach their subject in totally unexpected and novel ways that seemed to turn common sense on its head and find closer accord with mysticism than materialism. The fruits of this revolution are only now starting to be plucked by philosophers and theologians [and are] even finding sympathy with psychologists and sociologists, especially those who advocate a holistic approach." Davies's book opens almost as many cans of worms for philosophers and theologians as Wöhler did with his synthesized urea.

Thomas and Gould and Davies belong to a new breed of scientists who don't consider it demeaning to write for the layman and who will even admit that science doesn't know all the answers. That this historic gap between science and the humanities was closing I first noticed after I went to work for the Book-of-the-Month Club in 1979—another chapter in my continuing education. At that time the Club's members were still united in their dread of science; they would only take a science book if it came cloaked in romance (archaeology) or adventure (Thor Heyerdahl's *Kon-Tiki*) or some other humanistic garb. As long as science was disguised as a colorful yarn—grave robbers in the Valley of the Kings, explorers on rafts retracing the Polynesian migrations—readers didn't have to tax their liberal arts brain.

But in the early 1980s a new generation of readers came of age who didn't want to be coddled. Educated by the ecology movement and threatened by nuclear technology, they were

Ecology movement's success depends in part on writing

eager to know more about chemistry and physics to protect themselves and their habitat. The result is that today there's hardly a subject so cerebral or abstruse, from quantum mechanics to quarks, that Book-of-the-Month Club members won't give it a try. One of their favorite writers is Douglas R. Hofstadter, whose ten-year-old *Gödel, Escher, Bach* shows few signs of fatigue. Several years ago the Club, not even blinking at the title, offered his *Magical Thinking: Questing for the Essence of Mind and Pattern*, which ponders such imponderables as the nature of human creativity and the limits of artificial intelligence.

Impressed by those brain signals from its science-minded members, the Club sent them a questionnaire in 1986 to find out what their primary field of interest was. It listed twenty fields and asked them to choose only one. They wrote back and said they couldn't. What they were saying was that although they are scientifically inclined, they are generalists, as interested in astronomy and mathematics and evolution as they are in physics and the genetic code and the processes of life.

Watching this trend, I realized that people are no longer so imprisoned by the notion that some subjects are "too hard." Even I was less fearful; because of writers like Lewis Thomas I've begun to feel a little less dumb. But it's also a little late. I would rather have started getting smart earlier, and that's what I'd like for everybody else—a long acquaintance with the major branches of learning.

By "major branches" I mean a far broader kaleidoscope than I've been talking about here. I've singled out the humanities and the sciences because they are regarded as natural opposites, even natural enemies. But this is oversimplifying to make a point. Between English at one end of the spectrum and chemistry at the other are many subjects, like economics, that are a mystery to both camps. Some people would say that economics is also a mystery to the economists. But none of us would deny

that economics has a tighter grip on our daily lives than English or chemistry. Shouldn't we know more about its theories and applications? And how about all those other subjects: anthropology, engineering, mathematics, philosophy, political science, psychology, religion, sociology? What can they tell us about how we behave, build, think, govern ourselves and grope for values to live by?

They can tell us as much as we want to know. Probably no subject is too hard if people take the trouble to think and write and read clearly. Maybe, in fact, it's time to redefine the "three R's"—they should be reading, riting and reasoning. Together they add up to learning. It's by writing about a subject we're trying to learn that we reason our way to what it means. Reasoning is a lost skill of the children of the TV generation, with their famously short attention span. Writing can help them get it back.

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One thing I like about driving into a small college town is that I almost always know where I'll find the college: on high ground. If the town has a hill of any kind, that's where the founders chose to build, as if to proclaim through topography that learning is an elevated pursuit. Gustavus Adolphus was a Lutheran version of that ideal. Behind the short and resolutely flat Main Street of St. Peter, with its feed stores and savings associations, the side streets sloped upward for four or five blocks and at the summit I caught a glimpse of the clock tower on what I knew would turn out to be a stately mid-nineteenth-century stone building with a name like Old North. The educational verities were intact.

At the college I spent two days talking with professors who would be teaching "W" courses in the fall. Their disciplines covered the gamut of a liberal education—everything from art history and computer science and engineering to ethics and

philosophy and theater. All of them were excited at the prospect of making writing a component of their course. But they still didn't quite know how they were going to do it. We discussed possible approaches, and I mentioned how strongly I believe that writers learn by imitation. I asked the professors if they knew any examples of what they considered good writing in their field. They all did. A professor of mathematics said she knew of many elegant proofs. Two physics professors said that Einstein's theory of relativity was a marvel of lucid exposition. Other professors recalled other models they admired.

I urged them to make copies of those models for their students. Writing, I reminded them, can't be taught or learned in a vacuum. We must say to students in every area of knowledge: "This is how other people have written about this subject. Read it; study it; think about it. You can do it too." In many subjects, students don't even know that a literature exists—that mathematics, for instance, consists of more than right and wrong answers, that physics consists of more than right or wrong lab reports.

I wondered if it would be possible to go in search of the literature: to collect models of good, clear writing in different fields and put them in a book. The book would be an informal guided tour for teachers and students required to write about subjects they had never thought of writing about before. At the very least it would take some of the fear out of the writing and learning process. I also thought it would demonstrate that how-ever disparate the fields, the same principles of good writing would apply to them all. Well-written chemistry would be achieved with the same tools as well-written art history.

All that remained was to write my book. I told the professors at Gustavus Adolphus that I would come back at the end of the fall term and see how they had made out.