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What We Learn from Writing on the Job

The January 1977 issue of *College English,* a special issue devoted to "Literacy and Basics," contained responses to an editorial call for articles on the "literacy crisis" described in the public media. The then editor of *College English,* Richard Ohmann, prefaced the issue with an editorial in which he expressed his disappointment about the number and scope of contributions he received. Ohmann noted that contributors wrote "as if [literacy were] divorced from social, economic, or political factors" (p. 441). He went on to ask: "Is the problem of literacy part of a larger one having to do not only with education itself but also with the society which incorporates it?"

The causes of the "literacy crisis" in the mid-70s are no clearer now than they were when the furor was at its peak. Whether television was responsible for the decline in standardized test scores, whether the scores were attributable to a broader population of students taking the tests, or even whether the scores were truly indicative of a general decline in verbal skills among young people are no longer crucial questions. The important fact in retrospect was that many people *believed* that high-school and college students didn't write as well as they used to. In response to the public's concern, colleges and universities began to reexamine their writing programs, which in some cases had been abolished a few years earlier on the stated grounds that high-school graduates no longer needed such training. One visible result of this reexamination is the emphasis in college courses on writing outside the university. In regular freshman English classes increased attention is given to "practical" writing assignments and situations. Technical and business writing classes have multiplied, perhaps more rapidly than any other courses in the university. Another result has been the movement toward writing-across-the-curriculum programs. Such programs have been implemented at institutions ranging from large state universities to small private colleges, and their influence has even extended to high-school curricula. Writing-across-the-curriculum programs take as a given that the ability to write well is important in any discipline a student undertakes.

Although college English teachers are now more aware than they used to be

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of writing in the world beyond the classroom, there have been very few system-
atic efforts to gauge the importance of writing for college graduates in general,
either as a humanistic activity that aids in personal development or as a practical
skill that is a valuable professional asset. The humanistic assumption is actually
a set of assumptions which are difficult to articulate and even more difficult to
measure. On the other hand, the importance of writing on the job can be mea-
sured in a variety of ways. Moreover it is the practical assumption that is now
most often used to justify increased funding for writing programs.

A great deal of anecdotal evidence has been collected that supports the prac-
tical assumption. (See Richard B. Larson, "English at Work: An Informal Fol-
low Up," *CE* 43 [1981], 132-136.) Also, there are several surveys that examine
the writing of graduates of particular programs or of members of a particular
occupation.[1] These surveys have found that college graduates write a great deal
on the job, that they write varied types of texts for different audiences, and that
they find their coworkers—especially ones newly hired—deficient in writing abil-
ity. The problem in generalizing from these surveys is that each has a very nar-
row focus. No one, to our knowledge, has attempted to survey a cross section of
college graduates to see what role writing plays in their professional and private
lives.

We set out to construct a broad picture of the writing of college-educated
people in general, examining what they wrote both on and off the job. Such a
picture would give us some sense of how well college-educated individuals think
they were prepared for their writing needs after graduation. We focused on five
related questions:

1. How much work time do college-educated people spend writing?
2. What types of writing are required of college-educated people?
3. What methods of composing and what media do college-educated people
   use?
4. What do college-educated people think should be taught in college writ-
   ing programs?
5. How much writing do college-educated people do in their personal
   lives?

Our desire to reach all the major segments of the college-educated population
ruled out sampling by mail. We thought that a mail sample would elicit a profile

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1. For example, Martha H. Rader and Alan P. Wunsch, "A Survey of Communication Practices
of Business School Graduates by Job Category and Undergraduate Major," *Journal of Business
Communication*, 17 (1980), 33-41; and Paul V. Anderson, "Research into the Amount, Importance,
and Kinds of Writing Performed on the Job by Graduates of Seven University Departments that Send
Students to Technical Writing Courses" (paper presented at the Annual Meeting of the Modern
Language Association, Houston, December 1980) study writing by graduates of particular programs
and schools. Richard M. Davis, "How Important Is Technical Writing? A Survey of the Opinions of
Successful Engineers," *The Technical Writing Teacher*, 4 (1977), 83-88; and Donna Stine and Donald
Skarzenski, "Priorities for the Business Communication Classroom: A Survey of Business and
Academe," *Journal of Business Communication*, 16 (1979), 15-30 consider the writing of people in
particular occupations.

of only those individuals responsible for answering correspondence from outside the company or agency. We felt it necessary to visit each agency and business so that we could gather information from employees at several levels in the organization. Furthermore we wanted to supplement our survey with interviews to gain another perspective from which to view the writing of college-trained people. Thus we did not achieve a geographical distribution. All of the 200 people we talked to worked in the metropolitan areas of Austin, Dallas, and Houston, Texas and Shreveport, Louisiana. We do not think this limitation to be crucial because many of the firms we surveyed draw from a national population and many of the individuals we interviewed are not natives of the region.

We used statistics from the United States Departments of Labor and Commerce[2] of the number of college-trained people in the various sectors of the work force as the basis for selecting our sample. The largest variance of our sample from government statistics on college-trained people by type of employer is 1.7%; the largest variance by type of occupation is 2.5%.

Stratification of the Survey Population by Type of Occupation
and Type of Employer

Occupation	%
1. Professional and technical occupations	54.5
2. Managers and administrators	27.0
3. Sales workers	8.5
4. Clerical workers	6.0
5. Craft and kindred workers	1.5
6. Other blue-collar and service workers	2.5

Employer	%
1. Agriculture, mining, and construction	5.5
2. Manufacturing	14.5
3. Transportation and public utilities	5.0
4. Wholesale and retail trade	16.5
5. Finance, insurance, and real estate	8.0
6. Services	44.0
7. Government	6.5

Of the 200 people sampled, 28.9% worked for companies or agencies that employ fewer than 100 people, and 17% worked for companies or agencies that employ 10,000 or more people nationally. All respondents attended a college or trade school; 161 held at least a four-year college degree; and 71 had completed graduate work.

What percentage of your work week is spent writng? For all respondents who

2. Scott Campbell Brown, "Educational Attainment of Workers: Some Trends from 1975 to 1978," *Monthly Labor Review*, 102 (1978), 54-58; Bureau of Census, *Educational Attainment in the United States: March 1979 and 1978*, Current Population Reports Population Characteristics Series, P-20, No. 356 (Washington, D.C.: U.S. Department of Commerce, 1980).

answered this question (N = 197), the mean or average was 23.1% of total work time spent writing, or over one day in a five-day week. Nearly three-fourths of the people sampled claimed to give 10% of work time or more to writing. Only four people claimed never to write while on the job. Since some respondents likely think of writing time as production time only and exclude the time spent planning and reviewing, our figures may even be low. In a study of how business letters are composed, John Gould found that on the average two-thirds of total writing time is spent planning, thirteen percent is spent reviewing, and only twenty percent of the time is spent producing the letter ("Experiments on Composing Letters: Some Facts, Some Myths, Some Observations," in Lee W. Gregg and Erwin R. Steinberg, eds., *Cognitive Processes in Writing* [Hillsdale, N.J.: Erlbaum, 1980], pp. 97-127).

Professional and technical occupations employ over half the college-trained people in the United States, and persons in those occupations wrote on the average 29% of total work time—a figure higher than that for any other occupational group. Everyone in a technical or professional occupation who is counted in the present survey wrote on the job. Only 17% wrote less than 10% of their work time and only 34% wrote less than 20% of their work time. In other words, two-thirds of our sample of people in technical and professional occupations wrote at least one full working day out of every five. At the other extreme, persons in blue-collar occupations, in which few college graduates are employed, wrote on the average only 4% of total work time. They were the only occupational group that wrote during less than 10% of work time. We also analyzed time spent writing on the job by type of employer. Government and service employers required the most writing (29% of total work time). Next were finance, insurance, and real estate (22%) and manufacturing (21%). The type of employers that required the least time writing were those in wholesale and retail trade (13%).

How many letters, memos, and reports do you write in a week? Respondents were asked to specify each written document by type and to divide types according to whether they were sent to persons inside or outside their company, institution, or agency. We found anomalies in the data we collected. Five persons claimed to write more than 100 letters a week. These people send out many form letters, and their inclusion inflates the mean or average number of letters per week for the entire sample. For this reason, we decided to use median rather than mean figures.

By the measure of the median the 200 people we surveyed wrote 2.9 letters and memos to persons inside their company or agency and 5.2 letters to persons outside in a given week. Only 17 individuals did not write letters or memos on the job. The most frequent types of letters written to persons both inside and outside the writer's place of work were letters of response to requests and letters of inquiry. Respondents also wrote many types of interoffice memos (including memos requesting subordinates to revise their written work), letters ranging from thank-you letters to letters advising clients, and a variety of other types such as notes on patients' charts (by a physician), company policy statements, and the writing necessary to fill out numerous kinds of forms.

Unlike letters, reports are more often written for persons inside the writer's place of work. The 200 people we surveyed wrote 2.4 reports a week to persons inside their company or agency, and 0.4 reports a week to persons outside. The most frequent reports were instructions and procedures; next most frequent were status reports and personnel management and employee relations reports. Respondents also wrote reports of original research, budget reports, grant proposals, business forecasts, minutes of meetings, descriptions of mechanisms, press releases, speeches, management briefings, technical bulletins, and equipment justifications.

In a given week the median number of different types of documents that each individual wrote was 7.2. This figure alone suggests the diversity of writing on the job.

What percentage of what you write on the job is written in collaboration with one or more persons? One of the biggest differences between writing in the classroom and writing on the job is in the nature of authorship. School writing assignments are almost exclusively designed to be written by one person (though, of course, this is not always the case), while on-the-job writing tasks are frequently written by more than one person. The median percentage of writing done with some other person or persons is 10% (mean = 25%). Only 26.5% of the 200 people we surveyed never collaborate in writing.

Do you compose on a computer or use a computer for word processing? Just over a quarter of our sample (25.5%) used computers for communcating in writing. Of the 51 persons who used computers for writing, 47 did so frequently.

Do you dictate letters or reports as part of your job? Over a quarter of those surveyed (26%) regularly dictate letters or reports. Among users of dictation, the median number of documents per week composed by dictation was 3.7.

Do you make notes for oral presentations or make visual aids or handouts for oral presentations? The majority (56.5%) of persons we surveyed make oral presentations. Typically, presentations are not read from a prepared text or from notes. Instead, information on overhead transparencies or slides or handouts is used both as an organizational aid for the audience and a mnemonic aid for the speaker. Oral presentations are frequent activities for those who give them (median = 12.1 a year).

Do you write for presentations on videotape? For what purpose? Some companies and agencies are extending the audiences of oral presentations by videotaping them. About 10% of the people we sampled use videotape regularly. The purpose is predominantly for instruction, but some use for sales and for in-house reports also was reported.

Based on your experiences on the job, what do you think should be taught in college writing classes? Respondents (N = 191) wrote discursive answers which we analyzed for content. Clarity was mentioned more than any other quality (by 43% of those responding), followed by grammar, mechanics, and usage (42%), organization (33%), general business and technical writing (31%), brevity (26%), and specific business and technical formats (24%). Other qualities mentioned were idea development (22%), making an impact on audience (15%), vocabulary (11%), adapting to an audience or situation (10%), problem solving (7%), and

reading (4%). These opinions are somewhat difficult to interpret. For example, clarity could mean an emphasis on a plain style or it could reflect concern for organization or even concern for the underlying conception of a piece of writing. We will return to this point in our conclusions. The importance of grammar, mechanics, and usage is perhaps inflated because we collapsed many kinds of responses that mentioned standard usage. Had we sorted these responses into related, but divisible, categories rather than grouping all responses related to correctness, matters of grammar, mechanics, and usage might have appeared to be relatively less important.

What do you write off the job? How often? We found that people do not write much off the job. Respondents wrote on the average less than one personal letter a week. Other types of writing off the job were even more infrequent. Ten people (5%) wrote for or edited some type of publication off the job (for example, a regional Audubon Society newsletter), and twenty-four people kept diaries or journals, but only two of them wrote daily entries.

The telephone has largely replaced letters as a means of communcating with distant family and friends. Perhaps television and other forms of entertainment have had a similar effect upon writing as a hobby. Journals and diaries do not seem as prevalent as they once were, judging from the extensive nineteenth-century diary collections in some historical libraries. More research is needed into what and why people write off the job.

An often cited reason for the so-called decline in writing abilities is that people do not write much off the job. Children and young adults do not understand the uses of writing because they rarely see adults write. We still believe, nevertheless, that writing has important functions for college-trained people off the job. Occasions for making complaints and requests in writing arise frequently. Many people, including therapists, recommend keeping daily journals. One respondent, a retail sales manager, said that self-examination in writing is valuable because "writing down your personal thoughts gives you time to think about your feelings."

We came to three general conclusions about the writing of college-trained people on the job.

1. Many college-trained people have a sophisticated knowledge of the rhetorical demands in writing. College-trained people who write frequently have a developed awareness of the specific differences in writing for varied audiences and purposes. Rhetorical theory from Aristotle to the present is founded on the relationships among writer, audience, and subject matter. Although most college-trained people do not have an explicit awareness of rhetorical theory, they often talk about writing in terms of subject matter, audience, and the image of themselves which they wish to project through their writing. For example, a meteorologist who now works primarily as a hydrology consultant at an engineering firm talked about the writing that he and his associates do.

> We write about a wide range of subject matters. Some things are familiar to a lay audience. Most people can understand a study about floods. They can understand a study that defines a 100-year flood plain. They can imagine, say, water covering a

street familiar to them. But other subjects are very difficult to communicate. We work with three-dimensional models of water currents, for example, that are based on very recondite hydrolic movements. We also have a wide audience range. Some of our reports are read by citizen groups. Sometimes we write for a client who has a technical problem of some sort and is only interested in what to do about it. And sometimes we write for audiences with high technical expertise like the Army Corps of Engineers. Audiences like the Army Corps expect a report to be written in a scientific journal style, and they may even want the data so they can re-analyze it. A lot of times the audience is mixed. A regulatory agency may know little about the subject of one of our reports, but they may have a technically trained person on their staff who does. In any case, we must understand what it is that the client wants, and we must be aware of what he knows about the subject. We must convince clients that we know what we're doing. We depend on return business and word-of-mouth reputation, and we must make a good impression the first time. Much of the professional reputation of this company rides on how we present ourselves in our technical reports.

Other respondents discussed matters of style and tone in terms of the relationship between writer and audience. A secretary told us: "Many times the only communication we have with an individual is by writing. Proper tone is most important."

Our survey, like previous surveys, found strong concern among college-trained people for clarity, brevity, and organization. The question that other surveys have not answered is what respondents mean by these qualities in writing. Are these terms merely "buzz-words?" Do these responses reflect the prejudices of the researchers? Or do they reflect broader and deeper awareness about what makes effective writing? A simple mention of the importance of clarity, brevity, and organization on a survey instrument does not give a sense of what a respondent means by these terms.

When respondents were given a chance to discuss these terms, they frequently related clarity, brevity, and organization to rhetorical concerns. They more often defined clarity as clear thinking rather than simple writing. As one respondent put it, "Good writing and clear thinking are inseparably tied." Another person told us that clarity in the written product reflected a clear approach in attacking the problem. A person in marketing explained her concept of clarity:

> Planning and organization are most important in meeting the needs of the intended reader, whether he is a client, a potential client, a regulator, or some other person. The written report or document must convey the intended message as clearly and accurately as possible in as short a form as possible. Clarity of expression permits the reader to devote most of his or her energy to the consideration of the message. The reader should not be forced to wonder what the writer intended to say.

Likewise, brevity was not held up as an end in itself but as an aid to the reader in understanding the subject: "Too many people are overly wordy and unable to take a complicated subject and reduce it to the major points. Many a good idea has been killed with an overabundance of words."

Concern for "grammar" and "mechanics" was widespread among respondents, but we did not find that our respondents equate "grammar" with the widely publicized "back to the basics" movement. Persons who mentioned qual-

ities like "grammar," "proper syntax," and "mechanics" usually touched on other issues as well when they elaborated their concerns for the teaching of writing. One doctor who mentioned grammatical correctness also wanted students to have "exposure to well-written material in a variety of fields, from E. B. White to Einstein." Others maintained that strict emphasis on correctness will not produce effective writing. As one person said:

> Codified rules will not teach proper writing skills. Reading good writing finally ingrains good practice. Good writing is part of everything we communicate officially and must be part of and required in every course from kindergarten through graduate school.

Perceptions such as these indicate that at least some college-trained people have a well-developed understanding of the complexity of writing and the complexity of teaching writing. The popular media and, indeed, college writing teachers themselves have repeated terms like "grammar" in describing the public's concern about writing. We found labels such as "grammar" and "usage" express only part of the concerns that college-trained people have about writing. People who said the "basics" are important also stressed that college graduates need to know more than just the basics. They need to be able to write well in novel situations and to master a number of different styles. They especially must be able to write for different audiences.

2. *Writing is an important and frequently used skill across all major types of occupations and employers of college-trained people.* We base our second conclusion on our numerical data as well as on our interviews. When respondents were asked what percentage of work time they spend writing, 193 of the 197 who answered this question said that they write on the job. Furthermore, 145 of the 197 write at least 10% of their total work time or for four hours in a 40-hour week; 98 of the 197 write 20% of total work time or eight hours in a 40-hour week. People in professional and technical occupations—the types of occupations in which over half of college-trained people are employed—on the average write nearly 30% of total work time.

The products of many companies, agencies, and institutions are written documents. The high percentage of employees who write regularly on the job is a result of the growth in both technology and bureaucracy, and the importance of the written word is understood by those who work for such employers. An engineering consultant said: "Our product ultimately is the written document. Poorly written reports can (and have) undermined the value of the technical work."

We asked 172 respondents if they found bad writing a problem at their place of work, and 134 answered "Yes." We then asked the respondents to list some of the results of bad writing. Among the 134 people who found bad writing a problem, 58% noted that bad writing causes misunderstanding at the places where they work and 49% said that bad writing wastes employees' time. Bad writing creates waste in three primary ways: people take longer to read poorly written documents, misunderstand them, and have to rewrite them. Consequently, bad writing often forces more paperwork. Besides causing ineffi-

ciency within a company or agency, bad writing has adverse effects on relationships with the public. One respondent told us, "If valuable time is not taken to correct bad writing within the company, it can have serious effects on clients' opinions of our competency." Several respondents were concerned with the image that bad writing projects because "customers feel that bad writing reflects on our ability to get the job done." A tax examiner mentioned another effect of bad writing: "It causes misunderstanding between the taxpayer and this office. This leads many times to unnecessary litigation."

The quality of writing not only determines the image a company or agency projects to the public, but also the image an employer has of individual employees. An executive at a scientific consulting firm was blunt on this issue.

> People who can't write don't last very long around here. We can't afford them. We're a small company compared to our competitors. We work on a close profit margin. If a person writes poorly, then another person of similar technical competence has to be put on the same job, a person who can understand and translate what the first person has written. This means two people are doing the job of one. We don't enjoy that kind of luxury around here.

Writing ability is a screening device for many employers. A vice president of a nationwide corporation explained how new employees are recruited.

> We go after the top graduates in any given field we need. We pay well, so we usually get those we are after. In any particular field, we will go after the graduates of six or seven schools we know are good. We know those we recruit have the ability to solve technical problems. What we don't know is how well they can identify technical problems, how well they can manage, and how well they can communicate. We try to find those things out before we hire them. We ask for a short piece of writing, usually an answer to some technical problem that we are sure they know how to solve. And when we bring them here [for an on-site interview], we ask them to make an oral presentation on some technical area they know about. We aren't really interested in what they have to say, though the candidates usually aren't aware of this. We want to know how well they can communicate.

Likewise, persons we surveyed who knew about promotion decisions at their place of work regularly brought up writing ability. Writing ability sometimes is not as important in an entry-level position as it increasingly becomes as the individual advances in an organization. An executive at a major record corporation detailed how this situation arises in wholesale and retail businesses.

> Many companies, ours included, do not require written reports by their employees who are involved in the actual sales or promotion process. Everything is communicated orally, the purpose being to eliminate the paperwork load, thus allowing more time at the point of contact. The real problem I see is one that develops later in an individual's career, after he has been on the street for several years with no need of written communication. The individual is promoted to a management-level position and charged with the responsibility of written documentation without having recent training or experience in written communication. The ability of the individual to move readily into management is more often than not hampered by that individual's lack of written communication skills than by the understanding of the job itself.

Some managers explained to us that in addition to the writing that they do

they are often responsible for the writing of their subordinates. Hence they frequently serve as editors. A manager told us:

> In order to help them [lower-level managers] to improve their skills, I have them prepare the first draft of many of my letters and reports. Any changes I make are reported back to them, and we discuss the reasons for the changes. I feel that this process is the best way for them to improve their skills, and it also helps me to recognize what progress they are making.

The final comment is one indication of how managers view writing skills in terms of job performance. As one chemist put it, "The boss may only see your memos and make many decisions concerning your career on that basis."

3. *College-trained people write diverse types of written products in a variety of media using a variety of composing processes.* Part of the awareness that many of our respondents showed for rhetorical constraints originates in their experiences with writing of diverse types. Not only did we see a wide range of types represented across our sampling, but individuals themselves write several types of letters, memos, and reports. In fact the types are so diverse that they challenge any definition of what we have been up to now calling "writing." We saw people using graphics and brief written handouts in what were otherwise impromptu oral presentations. We watched the service manager at an automobile dealership make his parts order by typing a set of symbols into a computer terminal. And we talked with a claims examiner for the Veterans' Administration who has 120 form letters in computer files which he can send by typing a name and a command into his terminal.

In interviews, some of which have been quoted above, respondents explained to us that their audiences are as diverse as the types of documents they write. Several persons employed in professional and technical occupations emphasized the need for translating complex technical material into more accessible language for audiences with little technical knowledge. Some people addressed this issue as a matter of changing a professional vocabulary into lay language, but other people recognized that extensive restructuring and refocusing are often needed as well when presenting complex material to less sophisticated audiences.

Concern for different audiences was sometimes expressed in terms of style. A common pair of complaints we heard were that employees write too informally for those outside the company or agency and write too formally for those within, projecting stuffiness or indifference. Obfuscation was also frequently mentioned, whether as jargon, bureaucratese, or, in the words of an Air Force officer, "Pentagonese."

> There is a military argot—Pentagonese—which permeates all military writing. It is complicated by charged words, words that have particular shades of meaning to the initiated. It inhibits communication between the armed forces and those outside.

Several people talked about the different styles that different purposes require. Whether respondents touched on writing aimed at "selling an idea," ingratiating oneself to a legislator, or presenting the main points of an impact study, it was clear that some people had a well-developed sense of the relationship of style and purpose.

Few previous studies of real-world writing have looked at how the writing is composed. We found some important differences between how real-world writing is composed and how school writing is composed. People writing on the job use a variety of composing strategies. Memos and letters are rarely revised while reports often go through multiple drafts, especially those reports destined to go outside the company or agency. Another major difference between writing on the job and school writing is multiple authorship. The majority of people we surveyed (73.5%) sometimes collaborate with at least one other person in writing. The nature of the collaboration varies considerably. Sometimes a half dozen or more experts in various fields will contribute a section to a technical report, with the project leader integrating the sections into a coherent whole. In other cases a superior will simply review the work of a subordinate, making small changes if necessary. And on still other occasions people will work closely throughout all phases of a writing project, coming up with ideas and putting them on paper as a team. Coauthorship is especially common in professional and technical occupations. It places a different set of demands on a writer than does single authorship. Writers must be able to blend their styles with the styles of others so that the final document has a single, unified voice. The voice must be consistent not only throughout a particular document, but oftentimes throughout all written documents that an agency or company produces.

Many businesses and agencies now use word processors for much of their correspondence. The transition to computers is affecting how people write.

> We have gone to a word processing department. This was done to save money on correspondence. But I have not been able to use word processing the way it was designed, designed to save money. I used to write letters out longhand, then go back and revise them and hand them to my secretary. Now we are supposed to give dictation directly to the word processing department. If I write letters out in longhand, then revise them, then read them over the phone, I have defeated the purpose of the system, to save money and to centralize correspondence. But so far I haven't been able to dictate letters directly.

The problem that this writer has with dictation might not be a problem if he could have access to a terminal in his office. At present only a few people have access to terminals in companies with word processing centers. Thus the situation is little different from a conventional typing pool. Computers save time because, in theory, nothing has to be typed twice. That savings can only be realized if authors use a terminal to write their documents.

The relationship between writing on the job and college writing courses has become controversial in recent years. Richard Ohmann contends that "there is little doubt that the proliferation of freshman English around the country, as the most inevitable part of the whole college curriculum, owed to the university's newly assigned task of training American professional and managerial elite" (*English in America* [New York: Oxford, 1976], p. 134). Ohmann claims that freshman English was founded on the practical assumption that the governors of an industrial society need not only to learn to communicate in writing, but to communicate in a particular dialect and to follow certain conventions of usage.

Humanistic assumptions in freshman English, such as appreciation of literature, emerged after such courses were established nationwide. Even then Ohmann argues that the practical assumption remained paramount: "It is enough that both the skills (fluency, organization, analysis) and the attitudes (caution, detachment, cooperation) that we [English teachers] encourage in the young are essential to the technostructure" (p. 302).

It is evident that the needs of an industrial society maintained a strong influence on the college curriculum over the last century. The question today is how will the needs of postindustrial America shape college writing courses? In search of answers to this question, we have examined economic trends since World War II. Most long-term economic studies do not isolate occupations that emphasize writing ability. They have focused on traditional kinds of economic products rather than the production and distribution of knowledge. Fritz Machlup did the first large-scale study of what might be called the "information sector" of our economy.[3] Machlup classified five major groups of industries and institutions that produce, process, and distribute knowledge: 1) education, 2) research and development, 3) media of communication, 4) information machines, and 5) information services. He estimated that in 1958, 29% of the gross national product (136.5 billion dollars) and 31% of the total labor force were committed to the information sector as he defined it. Furthermore Machlup found that the information sector had expanded very rapidly since 1947, more than doubling the growth rate of the GNP during that ten-year period. Machlup's estimates have attracted considerable attention in the business world. His figures have been periodically updated. In 1968, for example, Jacob Marschak predicted that the information sector would involve 40% of the GNP by the late 1970s ("Economics of Inquiring, Communicating, Deciding," *American Economic Review,* 58 [May 1968], 1-8). Growth in industries such as telecommunications, television, data processing, and health services during the 1970s helped to bear out Marchak's predictions. Such figures suggest that the national interest in written communication is not a passing fad and that writing ability will be important for a large percentage of jobs that college-trained people enter in the near, and not so near, future.

Besides affecting employment trends, technology will have a great impact on the nature of writing in business, industry, and government. One expert, Paul Strassman, forecasts that there will be 55 million people in "information employment" jobs by 1990.[4] Because of the high labor cost, there will be great pressure to increase the effectiveness of each employee's communications through electronics. By the end of 1981 there were more than one million word processing installations in the United States. Strassman foresees over 20 million electronic workstations in 1990.

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3. *The Production and Distribution of Knowledge in the United States* (Princeton, N.J.: Princeton University Press, 1962). This and other economic studies that concern the importance of writing are summarized in Daniel Bell, "The Social Framework of the Information Society," in *The Microelectronics Revolution,* ed. Tom Forester (Cambridge, Mass.: MIT Press, 1980), pp. 500-549.

4. "Information Systems and Literacy" (paper presented at the Conference on Literacy in the 1980s, Ann Arbor, Michigan, June 1981).

Not all observers, of course, see such developments positively. Some, such as Kirkpatrick Sale in *Human Scale* (New York: Coward, McCann, and Geoghegan, 1980), fear the centralization that technology makes possible and wish for a return to a less complex world. Others, such as Herbert Schiller, see communications technology as one of the ways rich nations control poorer ones.

> A largely one-directional flow of information from core to periphery represents the reality of power. So, too, does the promotion of a single language—English. A rapid, all encompassing communication technology (satellites and computers) is sought, discovered, and developed. Its utilization exhibits a close correspondence to the structure and the needs of the dominant elements in the core of the system.[5]

As communications technology spreads and becomes more sophisticated, its uses will also become more controversial.

Whether for good or bad, electronic technology will have long-range effects on the nature of writing. One effect may be the increased emphasis upon graphic design in written communication. For about seventy years writing in the world of work has reflected the limitations of its chief generating device—the typewriter. Typewriters increased the number of documents that a clerical staff could produce and standardized the appearance of those documents. But typewriters are clumsy for most tasks other than full-line documents with justified left margins. Tables, for example, are difficult to produce on typewriters, and more complex graphic representations, such as pie diagrams, are impossible. Until recently computer systems for text processing have by and large shared these limitations. Line-oriented text editors are even less efficient than typewriters for composing tables and other routine spacing tasks. That situation, however, is also changing. The currently available Xerox Star system allows a user to form complex charts and other visual symbols with a few commands.

What we learn from asking about writing on the job is not just that writing is an important skill. We should know that. It is no coincidence that the "literacy crisis" occurred at a time when many colleges and universities were reducing or abolishing their writing programs while the jobs that their graduates were entering increasingly required more writing. What we really learn are some insights into how diverse and complex writing is. We also see that there are processes of composing rather than a composing process, and that these processes differ among writing tasks and media. Written reports often begin as oral presentations with visual aids, such as handouts and slides. One manager told us that he encourages his employees to use dictation for written work because they become much more adept in oral presentations. Indeed, we finally realized that our notion of *writing* imposed an artificial distinction upon the communication we were observing. All that we learned suggests that the rediscovery by English teachers of the rhetorical tradition is no accident. We are by necessity coming toward a semiotic view of writing, a view that incorporates writing among other forms of communication.

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5. *Communication and Cultural Domination* (White Plains, N.Y.: M. E. Sharpe, 1976), p. 6.