Communication in the 21st Century:

The Original Liberal Art in an Age of Science and Technology

A White Paper by Carolyn R. Miller

Publication Series
Center for Communication in Science, Technology, and Management
August 1996
North Carolina State University
This is the first in what we plan as a series of occasional publications sponsored by the Center for Communication in Science, Technology, and Management. We hope they will be useful and provocative in identifying issues for discussion, both on campus and off, as well as in focusing attention on instructional and public-service needs and in identifying areas of needed research.

“Communication in the 21st Century” was prepared as a white paper for Margaret Zahn, Dean of the College of Humanities and Social Sciences at North Carolina State University. It was part of a larger effort to provide her with a perspective on the role of the liberal arts at a land-grant institution with a historical commitment to the natural sciences and technologies.

Because the white paper also serves as an introduction to some of the issues and perspectives important to the work of the CCSTM, we thought it would be a fitting inaugural publication for our series.

A brief disclaimer is necessary. The white paper represents my views, as its author, not the views of my academic department, the Department of English, nor the views of the Department of Communication.

And a word of explanation about these departments. Through the accidents of institutional and disciplinary history, these two departments at North Carolina State University both have some claim to the arts of communication: the Department of Communication emphasizes the arts of speaking and listening, and the Department of English emphasizes the arts of writing and reading; both departments have faculty with professional interests in the media and electronic communication. The CCSTM is designed to be a unit where faculty from both departments can work productively together, to discover what they have in common, and to learn from each other.

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Communication is dramatically changed by new technologies. In the 20th century, we have seen the effects of the telephone, radio and television, film, high-speed printing, xerography, desk-top publishing, electronic mail. These communication technologies have changed our national political life, corporate management styles, family connections, individual work habits. Additional change in the next century is inevitable, as we adopt video conferencing, multimedia, and internet technologies. Many of the effects of new technologies are unpredictable: the predicted “paperless office” has failed to materialize, for example, and word-processing software has transformed the labor of writing in a way that was never anticipated (and initially was resisted) by computer developers.

But some aspects of communication, both oral and written, have not changed. Communication is still the social glue that holds together nations, corporations, scientific disciplines, and families. Social psychologist Karl Weick once noted that the key tool for effective leadership is the “management of eloquence” because “fluent, forceful, moving expression” affects the ways followers think, speak, and act. Communication also remains the source of problems when people fail to understand each other, fail to agree, fail to act. Failures of communication contributed in material ways to the Three Mile Island nuclear accident and the loss of the space shuttle Challenger, according to the Presidential commissions that investigated both
disasters. New technology does not necessarily make communication more effective, more persuasive, or more ethical.

Economic historians have estimated that persuasive communication accounts for at least 25% of the GDP. And such communication is a significant aspect of the work of college graduates: in the 1980s, surveys showed repeatedly that college-educated workers in a variety of professions spend 25–30% of their time on the job writing; as they gain seniority and responsibility, these workers spend more time in oral communication and their success depends increasingly on the quality of their speaking and writing. Hundreds of interviews conducted in the 1990s by NCSU students in technical and business writing courses confirm these results for professionals in engineering and business workplaces in North Carolina. (A report on this research is forthcoming from CCSTM.)

Complaints about the inadequate communication abilities of college graduates have remained remarkably constant through the past century. An editorial in the Engineering Record of 1915 declared that “the English productions of engineering students . . . can only be described by the word ‘wretched.’” But engineers weren’t the only students who fell short: a series of Harvard reports in the 1890s deplored the “illiteracy” of undergraduates and blamed the prep schools for failing to teach composition. At NCSU today, the most common criticism of students by employers and program advisory boards concerns their ineffective oral and written communication. And this university is not unique: how to teach effective writing and speaking has proved a resistant challenge for higher education nationwide.

As a curricular imperative and a pervasive social process, communication poses several problems for universities entering the 21st century.

1. Communication is both more difficult and more necessary in situations of greater diversity and change. Communication requires a common bond—a language, a set of premises, mutual goals—in order to
negotiate differences between people and between the past and the future. Multinational corporations, interdisciplinary research teams, and multicultural courtrooms and legislatures all face the difficulty of creating a working unity from diversity. Similarly, when technological, economic, and cultural changes occur rapidly, communicators must find ways of accommodating innovation to tradition. These conditions will characterize communication situations in the 21st century and will require communicators who are more competent, more strategic, and more eloquent than ever before.

2. New technologies encourage forms of communication that may be inadequate to the issues to be dealt with. Information overload from multiple sources, computer screens that present short chunks of text, hypertexts that encourage skipping and browsing, mass media “sound bites,” multimedia “infotainment”—all these features militate against the hard work of analyzing complex problems. But communication will have to address complex problems in the 21st century, problems posed by the conditions of diversity and change mentioned just above. Complex problems require thorough examination, understanding of relevant history and precedents, detailed analysis of alternatives, thoughtful reflection, and reasoned judgments. This hard work has been facilitated by print technology and the high literacy it promotes, but it is not compatible with the new technologies.

3. Common conceptions of communication, which are built into our language and our culture, are inadequate and misleading. We think (and talk) about communication as a process of packaging messages and transmitting them, of “putting ideas into words” and “getting them across.” This mechanical sender–receiver model of communication obscures complex relations between knowledge and language, between habit, presumption, values, and interests—all of which condition the meaning and effects of communication. We must learn to think of communication as an art, not
a skill or a science. In contrast to a science, which seeks universal and absolute laws, an art requires constant adaptation, constant refinement in new and evolving situations. As an art, communication requires (and in turn develops) the powers of interpretation, creative imagination, empathy, and reasoning. But our existing models and metaphors for communication do not capture these powers.

4. **Conditions in higher education make effective instruction in communication difficult.** There are at least two dimensions to this problem:

(1) Although budgets demand increased instructional economies, communication instruction (writing, speaking, or mediated) is irreducibly labor-intensive. Many efforts to use technology to increase efficiency are misguided, such as the essay-grading computer program developed by a Duke education professor. Communication does not occur without an audience, without real attention; if there is no one to hear or read and respond, students know that their work is not communication but rather empty formalism. Can technology help us achieve economies of human attention?

(2) Because everyone learns to speak in early childhood and learns the mechanics of writing in elementary school, we treat communication as a “basic skill” that must be mastered before higher learning takes place; communication instruction in higher education is therefore thought of as remedial. But good communicators must have much more than basic skills, and they must continually keep learning. As one study has shown, even successful writers of scientific research reports struggle in learning to write their first patent disclosures. We must recognize that thoughtful, strategic communication is essential to the goals of higher education—to critical thinking, complex problem solving, and social responsibility—and deserves continued attention in every curriculum.
Communication is the oldest of the liberal arts, an art for free people engaged in democratic self-government, communal decision making, intellectual inquiry and speculation. The ancient Greeks called it the art of rhetoric, and they argued over its relationship to knowledge and to justice; Aristotle claimed that rhetoric is essential to politics, for it provides a method of arriving at decisions about matters of expediency and justice. Rhetoric concerns the human interest in communication; it cares whether communication is effective and affecting, eloquent and cogent, perceptive and appealing—not whether it is correct or incorrect.

Rhetoric served as the capstone of advanced study from the time of the earliest medieval universities through the 18th century, when the rise of science and the search for certainty displaced it. It has recently been revived as philosophers, historians, anthropologists, and others have become interested in the role of persuasive language in constructing the human world and in managing uncertainty when certainty is not possible. Although rhetoric, and the humanistic disciplines generally, will not displace science and technology as the defining enterprises of our times, they can help improve those enterprises. The humanistic disciplines can modify the aspects of science and technology that have led to public distrust and criticism; they can help rebuild public confidence and support; and they can make science and technology more effective in an increasingly competitive world.

The communication arts must be reconceived for the 21st century, however. One possibility has been suggested by Robert Reich, U.S. Secretary of Labor, in his discussion of the coming global economy. The jobs of the future for educated workers, he says, involve symbolic analysis—manipulations of words, data, and visual representations. Symbolic analysis is already the core of the work done by research scientists, software engineers, lawyers, investment bankers, public relations executives, management consultants, systems analysts, and others. The value in their work comes, Reich says, from the ways they identify, represent, communicate, and solve problems and persuade...
others to involve themselves in the process. The education of such actors for the global arena should provide not only facility with new technologies for manipulating symbols but also principled experience with the capabilities and limitations of symbols and the ways symbols affect other people.

Another possibility for reconceiving the communication arts is to classify them with the arts of design—to explore their similarities with such fields as mechanical engineering, urban planning, medical therapy, visual design, software engineering. All design arts combine the theoretical and the practical; all are creative, goal-directed activities; all must take account of intrinsic principles and an exterior environment of use and social effects. What would it mean for composition instructors to think of their work as more like engineering than literature? As a design art, communication would be understood as productive, innovative, and strategic; it should also be socially responsible and ethical. These qualities can provide a new agenda for instruction and research in communication.

Other, better approaches may be possible, but further research, curriculum development, and instructional experimentation will be necessary. Such work should be a vital part of the role to be played by the humanities and social sciences in the land-grant university of the 21st century.
Sources and Suggested Reading


