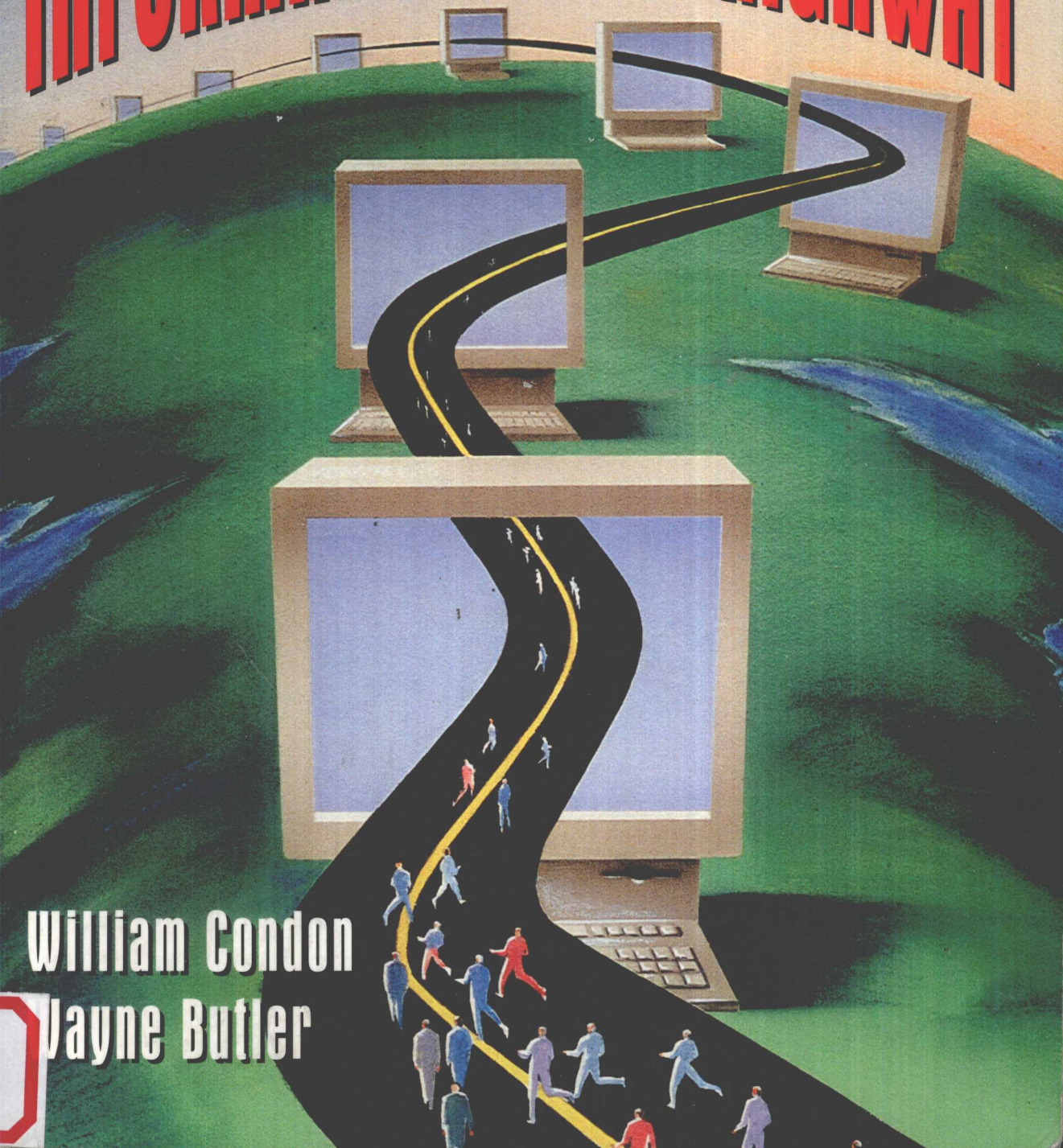


WRITING THE INFORMATION SUPERHIGHWAY



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WRITING THE INFORMATION SUPERHIGHWAY

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PREFACE

Every day computer technology becomes a larger part of our lives. As computers have progressed from massive vacuum tube-burning mainframe machines to silicon chip-driven laptop and notebook-sized personal micros, these devices have moved from the military world and research facility into the home and school. Computer culture, once the domain of scientists and engineers, has permeated mainstream culture to such an extent that much of what we do during the course of our daily activities—from banking to shopping, from using the microwave oven to communicating with others—is facilitated, in outward and in more and more transparent ways, by computer technology. In 1997 it is nearly impossible to read a newspaper or magazine or watch TV news and not read or hear a story about technology. In fact, many of you may now be using computers to get the news and advertising you used to get through newspapers and magazines.

Even if what we hear and read is not directly related to technology, the language of technology has made its way into our collective consciousness. The infopike. The Internet. Cyberspace. Hypertext. Interactive TV. CD-ROM. Virtual communities. The World Wide Web—or, to those in the know, simply “the Web.” No clear consensus yet exists on what overall terms will be used to describe the conglomeration of technologies that are transforming the ways people gather information, communicate, and create knowledge, the ways groups of human beings interact and form the social groups that lie at the center of what it means to be human. For the time being, anyway, we will use the most popular term—the information superhighway.

When thinking of the information superhighway, most in the academic community think first of the Internet, the amorphous, nonhierarchical and distributed “network of networks” with no owner or central controlling agencies. *Information superhighway*, as a descriptive term, is more encompassing. The information superhighway also embraces cable television, which in the near future promises to offer not only broadcasting but also interactivity and not only will include programming for entertainment and news but will permit on-line shopping, video conferencing, and on-demand videos. The information superhighway includes the various commercial information systems such as America Online, Prodigy, and CompuServe. And, the open-ended term *information superhighway* also allows us to name those technologies and information services not yet developed.

In one sense, the information superhighway can be considered a technological phenomenon. At its technological core it is personal, mini-, and mainframe computers linked together through cabling into local networks that are in turn linked together by more cabling into wide area networks. Special software allows one computer on one network on one side of the world to communicate with another computer on another network on the other side of the world.

More important, however, is what these networks of networks allow human beings to do. The information superhighway lets individuals communicate with individuals and groups and allows groups to communicate with groups via computer-mediated communication (CMC) such as E-mail, newsgroups, electronic bulletin boards, and chat programs. CMC allows people separated by vast distances and time to distribute, gather, and share information, data, and software through databases, Gopher sites, FTP servers, and World Wide Web sites. This information, and the people who create it, share it, and use it, are really the substance of the information superhighway. If the hardware, cabling, and software are the skeleton and vascular systems of the information superhighway, then the information is the heart of it and the people who produce and share the information are the brains and soul of it.

Although the technological wizardry that ties all the computers together is a wonder, perhaps eventually rising to the ranks of one of the Great Wonders of the World, the information superhighway is only as good as the *information* that speeds along the wires. The superhighway is a distributed system where there is no central font of information, and where anyone may send an E-mail message, create a World Wide Web homepage, or make data and information available on his or her personal computer to the rest of the network; so the quality of the information superhighway will only be as good as what people put on it.

That is where this book comes in. We have chosen the title *Writing the Information Superhighway* for a number of reasons. Of course, we are playing off a pun that grows out of the highway metaphor, which for better or worse dominates the ways our culture has come to describe the phenomenon. But taking the pun a bit further also reveals our feeling toward the roles those who will contribute to and use the content will play. "Riding" implies passivity, like riding on a bus that someone else drives on a route someone else selects. "Writing," on the other hand, is an act of creation. Writers are active, not passive. Writers must invent ideas, gather materials, synthesize, analyze, and otherwise sort out those ideas, and then communicate them to others. Writing, and the critical thinking activities that effective writing requires, is the process by which information is transformed into knowledge.

TRANSFORMATIONS IN EDUCATIONAL SETTINGS

Until the introduction of the personal microcomputer into the classroom, one could predict with a high level of certainty what people might see if they peeked into almost any writing classroom anywhere in the United States. Inside a traditional school building, those classrooms might have forward-facing desks

bolted to the floor, or movable integrated chairs with writing surfaces, or movable tables or desks with chairs. If the furniture was movable, the pieces might be arranged into rows, into clusters, into a full or semicircle. In some writing classrooms, teachers might be standing at the front of the room lecturing, giving demonstrations on a chalkboard or overhead projector, or leading a discussion. In more workshop-oriented writing classrooms, students and their desks might have been clustered in tight circles to facilitate small-group discussion. Although throughout the years there have been examples that fall outside this range of options, for the most part the material conditions of educational settings consisted of one or more variations of these scenarios.

In a growing number of schools, colleges, and universities, however, the places where writing is taught, learned, and accomplished are undergoing radical transformations. Some writing classrooms may have as few as one or two computers in the back of the traditional classroom. These might be stand-alone computers used primarily for word processing, or they might be connected to the outside world via a modem. In other places, one or two or even a number of rooms might have been transformed into public-use computer labs where teachers can make appointments to bring students from the traditional classroom for one or several meetings a week. These labs might include a couple of printers and a dozen to two dozen or so stand-alone personal computers, but by this point they have probably been linked together on a local area network at least, and perhaps into a wide area network with full Internet access. Other institutions have opened general computing sites that are not dedicated to or available for instructional purposes but can be used by students to word-process papers, read and send E-mail, use the Internet, and conduct on-line research. At the far end of the technology-rich writing environment in education are those relatively few sites around the country that have computer-based classrooms used primarily by the English department or writing program. These are not places merely for word-processing papers but rather places where actual writing instruction occurs and where at least half and maybe all the class meetings for each section of each course are held.

Traditional writing textbooks could assume many common denominators among those who might use the books. The teacher was the experienced writer and writing teacher with years of study and experience with language and with helping students grow as writers. Students would enter rather traditional classrooms that looked much like the classrooms of their previous educational experiences with a wide range of writing abilities, but they would come in with relatively equal abilities with such technologies of writing as pencils, pens, typewriters, and paper.

This book, too, strives to help teachers help students become better writers, but the potential audience is more diverse. The teacher may be either a novice or advanced computer user who is taking the first or second steps to teach writing with computers and for the first time may be stepping into the educational setting without full confidence born of previous experience or deep knowledge. In fact, some or even many of the students might have more technological knowledge, ability, and confidence than the teacher. For both

the teacher and the student, this relationship will most likely be new—and intimidating. Furthermore, we cannot know, like composition textbook writers before us, what the learning place will look like, that is, what technology will be available to the teachers or students.

So, in this world of changing, diverse learning environments, new roles emerge for all the entities that come together in a learning environment, including teachers, students, and educational materials. And with these new roles come new burdens of responsibility. But, if even a portion of what futurists like the Tofflers predict comes true in the twenty-first century, if, that is, knowledge—the gathering of data and information, the processing and synthesizing of that information into knowledge, and the communicating of that knowledge to others—will become the dominant resource of the twenty-first century, we, teachers and students alike, will be obliged to accommodate these changes and share the burden of shouldering these responsibilities. Taking on such responsibilities, however challenging it may sound, is nothing new for education. In fact, the central role of education has always been to prepare young people for the civic and economic duties they will inherit.

TRANSFORMATIONS IN TECHNOLOGY

Another challenge of writing on the information superhighway is the constant and rapid rate of change in technology itself. The introduction of the personal computer occurred only fifteen years or so ago. And in that short time, we have gone from stand-alone machines with limited functionality—cumbersome word processors and drill-and-practice software that amounted to mere electronic workbooks—to the Internet with its various forms of computer-mediated communication such as electronic bulletin boards, electronic mail, MUDs and MOOs, and the hypermedia of the World Wide Web. Whereas early computer users grappled with the special and idiosyncratic logic, languages, and commands of mainframe computers and then personal computers that mimicked those mainframes, those using computers for the first time today will be accommodated by the more “user-friendly” graphic interfaces of the Macintosh and Windows operating systems. When one compares today’s technology to that of a mere fifteen years ago, one might be tempted to think, “Ah, how far we’ve come.” Indeed, the computer world is a more friendly place than it once was, but it is still a complex one. Thinking in terms of the automobile, we are driving on pneumatic tires in an enclosed passenger space, with an engine that will start and run with some reliability. We are sitting on padded seats in a vehicle that furnishes us with some amenities—a heater, fuel gauges, a speedometer, shock absorbers. And we can buy this automobile at a reasonable price. In other words, we’re driving a Model T—with a long way to go before we operate anything like the sleek, reliable, accommodating vehicles we drive today. Those computers are still a long way down the road.

Still today, those who endeavor to get on the information superhighway must first deal with all the incompatibilities that exist among competing hardware and software products. Ever since IBM-compatibles and Macintoshes

forged different paths in personal computing, users have been faced with a dilemma, an either/or decision. Macintosh software would not work with IBM-compatibles and vice versa. So, either users were wedded to one or the other or they became sort of "bilingual." The advent of Windows 95 is closing the gap between the two platforms, and contemporary software packages are doing a better job of making files created for one platform compatible with the other, but as far as personal computing goes, we still live in a somewhat bifurcated world. To further complicate matters, a great range of possibilities exist for connecting to the Internet, sending and receiving E-mail, copying files from one computer to another, creating Gopher and World Wide Web sites, and browsing those sites.

Finally, yet another variable can lead to great frustration among those who would use computer technology: obsolescence. Just as soon as we are dazzled with how far computer technology has come over the last two decades, we become baffled by how much more quickly it changes in the next two years. Computer manufacturers introduce new hardware with faster processors, more random access memory (RAM), and more hard disk space. Such upgrades are welcomed, but shortly after each new hardware upgrade, software developers crank up their programs with more features that quickly use up the potential of the faster processors and increased RAM and hard disk space. This "progress" makes the computer model you owned just before to the latest and greatest upgrade unable to use the latest and greatest software, thus making your machine, which may only be a couple of years old, stuck in a time warp. So, that Macintosh LC with four megabytes of RAM and a forty-megabyte hard disk and that snappy 2,400-baud modem you bought just a few years ago will let you send and receive E-mail, but it won't let you access the World Wide Web using the most recent version of Netscape.

Unfortunately, computer hardware and software are not the only things that become obsolete quickly. So does your own knowledge. If you first dabbled in computers and word processing during the mid 1980s and cut your word processing teeth on Applewriter II or Word Perfect 1.0 for DOS, for example, you would not recognize today's versions of the same programs. You would have to learn a whole new set of commands to perform the same functions. You would not, however, be starting from scratch because the word-processing and computer literacy concepts you learned would serve as the basis for the new operating procedures. If you learned the concepts of entering and formatting text, of moving text around with copy and paste techniques, of saving and printing files, all you would need to learn is how to use different keystrokes or menu-based commands, or now icon-based commands, to complete the same concept-based tasks.

In fact, this emphasis on concepts rather than skills underlies the purpose and structure of this book. As textbook writers, we cannot anticipate or control the technological realities in which every writing teacher and student might live. There is no way any book written for a large, general audience could address in a detailed, specific way the pedagogical differences and needs of different learning sites because what one can do in the fully networked, Internet-accessible computer classroom dedicated specifically to the teaching of writing

is vastly different from what one can do in the institution where classes are conducted in traditional classrooms and students have access to the technology only outside of class in public, general computing sites. Likewise, we cannot address the particular skills of word processing or E-mail in terms of specific applications such as Microsoft Word for Windows or the Macintosh version of Eudora, a popular E-mail program. What we can and will do, however, is focus on the conceptual underpinnings of word processing, computer-mediated communication, and information retrieval and offer activities designed to help teachers and writers work collaboratively to learn the technological topographies and application skills particular to their specific learning sites.

WRITING EDUCATION IN THE INFORMATION AGE

For perhaps the first time in educational history, teachers need not be the main authority for all knowledge to be attained in a class. Indeed, the teacher will still be a more experienced writer and will bring to the mix her experience as a teacher, but if she has considered using this book, she may or may not have the breadth and depth of knowledge about the technology that even some of her students will bring (each of us authors has been in such a situation, and we continue to be amazed at the level of expertise that some students bring to our classes). And students, many of whom are already more fully integrated members of contemporary electronic culture, will still need the teacher's help to develop advanced literacy skills. But, in comparison with previous educational settings, anyway, the distribution of responsibility for learning literacy will be less lopsided. The information superhighway metaphor implies that all those who use it are on some sort of journey. In the case of college writers, that journey is a quest for improved academic literacies. But because this journey will take us through sometimes uncharted territories, students will at times rely on teachers as seasoned trail guides. However, the territory can change so quickly and completely (witness the rapidity with which the World Wide Web transformed from side road to interstate highway) that no guide, however experienced, can really know the way. Teachers cannot send writers off into the wild unknown and say simply, "Go forth and survive." Instead, teachers and students must forge new relationships and work together as expedition teams to which each member of the team contributes unique knowledge, whether that knowledge involves techniques of reading critically, writing well, using a particular piece of software to find electronic information, or uncovering a well-spring of on-line resources.

Writing the Information Superhighway, then, is not merely a composition textbook written for students, a pedagogical "how-to" book for teachers, or a technology manual for learning the Internet. This is the case in part because a plethora of books for each of those audiences and purposes already exists. Students and teachers can already choose from hundreds of composition textbooks and style manuals, but those grow out of more traditional modes of writing, conceptions of learning how to write, and relationships between teachers and learners. Although such books offer detailed information on writing and language

concepts such as the writing process, modes of discourse, structures of argumentation, and so forth, few address the needs, techniques, and skills of writing on-line. Plenty of books already exist for teaching teachers how to integrate technology into their teaching, but these serve more as resource guides for teachers and not for students. Take a casual stroll through the “new media” section of almost any bookstore, and you will find scores of books about the Internet, but those typically focus on the technological aspects of the information superhighway with little information about how to read and write on it effectively.

This book, then, strives to bridge the traditional gaps between what teachers do and what students do and what writers do and what net surfers do. Ultimately, we have designed *Writing the Information Superhighway* as a guidebook to help learning communities that consist of students and teachers working together to use new technologies to learn not only traditional academic literacy but also the new literacies engendered by the new technologies.

ABOUT THE STRUCTURE OF THIS BOOK

As you prepare to embark on this journey along the information superhighway, it will be useful for you to understand the map we’ve laid out for you. Part I, “Producing and Accessing Digital Texts,” includes five chapters that focus on the kinds of activities writers pursue using computers. Chapter 1, “Manipulating Text,” emphasizes the principles of creating digital texts using word processing. Chapter 2, “Communicating on the Internet: One on One,” focuses on one-on-one communication via electronic mail. Chapter 3, “Communicating on the Internet: Accessing Virtual Communities,” includes a definition and purpose for each of the ways of accessing and participating in a variety of electronic communities, a description of common applications, and practice activities that will help students learn how to find appropriate lists, groups, and MOOs for English-related communications. Chapter 4, “Gathering Information on the Internet: Reaching Out and Bringing Back Resources,” describes the “information” portion of the information superhighway and advises writers about gathering information in the form of facts, texts, graphics and other pictorial resources. Chapter 5, “Constructing Texts On-Line,” explains how the advent of the World Wide Web has created a virtual workspace where writers not only can give others access to their documents but also collaborate, with as large a group of other writers as they wish, in constructing documents. Moreover, hypertext markup language (HTML) provides a means of linking these individual documents together so that the individual document changes, in effect, because of its juxtaposition with other documents. This chapter discusses the world of on-line texts that writers can explore and participate in, using, again, constantly evolving tools.

Whereas Part I sets the context by introducing members of the electronic learning community to the technologies and the “rules of the road,” so to speak, Part II, “Writing Projects for the Information Age,” leads learning community members through a number of writing projects that ask writers to use what they’ve learned in Part I and apply those techniques and principles in

inventing, composing, sharing, and revising the kinds of texts typical of academic writing. Chapter 6 focuses on issues of assessment. We start there based on our belief that writing communities must reach a consensus on standards. Once such standards are in place, then the rest of the writing completed during the semester is done within a shared context. Chapters 7, 8, 9, and 10 include projects that lead writers through assignments that require them to write narratives, use writing to learn, and report, analyze, and argue. During these activities, writers will learn how to use the information and resources available on the information superhighway to help them write more traditional academic texts, how to write about the Internet itself, and how to write texts specifically for the information superhighway. Chapter 11 addresses writing in the disciplines. Although this section does not set out to teach writers everything they need to know about writing in different disciplines, it does address the differences among writing in various disciplines and what resources exist on the Internet to help writers learn more about the disciplines they seek to join, how to join the various virtual communities their disciplines have created, and how to conduct disciplinary research using the Internet. Part II wraps up with three projects in Chapter 12, "Writing for the World Wide Web." These projects lead students through analyses of Web Sites, introduces them to converting their linear electronic texts into hypertextual World Wide Web documents using HTML, and then finally leads them through the process of constructing Webfolios, World Wide Web versions of hypertextual writing portfolios.

The Appendices include "A Directory of On-Line Resources for Writers" that presents addresses of newsgroups, listserv discussion lists, appropriate reference books, and helpful FTP, Gopher, and World Wide Web sites. Finally, you will find a "Glossary of Key Terms" that includes definitions of technical terms this text uses frequently.

Whereas writing in the late age of print is a mostly linear affair, writing in the information age will rely more and more on multimedia blended with hypertext into what is called *hypermedia*. If we could have, we would have constructed this book as a hypertext. That is, we acknowledge that writing community members need not start on page one and continue through to the very end. Depending on the technological context of your school, the computer literacy of your learning community members, and the length of your semester, most will find it difficult if not impossible to complete every single activity of every single project in the book. In fact, we've designed each chapter and project to be comprehensive enough so instructors can pick and choose which ones are most appropriate for their learning community and the goals of the course. So, for instance, if most class members have fairly sophisticated and advanced word-processing and E-mail skills, you may want to start with Part II and launch right into the writing projects. And if your community decides from the very beginning you will use portfolio assessment and your school's access to the World Wide Web will allow you to create Webfolios, you might decide to start with Project 2 but then jump to the last project dealing with constructing Webfolios.

We welcome you to cyberspace and wish you luck as you begin writing the information superhighway.



ACKNOWLEDGEMENTS

First, we'd like to acknowledge each other. This project emerged from an exchange of E-mail messages in which both of us agreed that this was the textbook we'd write if we were ever to write a textbook and that we'd only write such a book if we could write it together. So we did. From start to finish, we've shared the conception, the development, and the sheer work of drafting and revising equally. So, while the publishing world demands that one of us be listed as "lead author," we want to state, here, that no such figure exists with regard to this text. In fact, we flipped a coin to determine which of us would be "lead author" in the eyes of the publishing industry and the Library of Congress. In subsequent editions, if we're fortunate enough to need them, we'll take turns.

Both of us also wish to thank several people without whom this book probably would not exist, and certainly would not have taken the shape it has. Joe Opiela is first among these, our editor at Allyn & Bacon, who knew when to push, when to give us some room, and when to seek some outside opinions. Our colleagues, whom Joe recruited, and who gave us always solid advice: John M. Clark, Bowling Green State University; Ray Dumont, University of Massachusetts, Dartmouth; Lisa Gerrard, University of California, Los Angeles; Marcia Peoples Halio, University of Delaware; and Christine Hult, Utah State University. We are grateful for their generous input; they helped this book work. We'd like to thank Kate Tolini of Allyn & Bacon and Merrill Peterson of Matrix Productions for their work in bringing our manuscript so quickly into print. Doug Day and Lisa Kimball, both of Allyn & Bacon, offered sustaining encouragement and advice along the way. Julie Steiff, an ECB colleague, prepared the index and provided support as we brought this project to a close.

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and ACW-L (a list for the Alliance for Computers and Writing) kept us aware of the latest ideas and the latest in technology; thanks to them, we always knew what the stakes were and how high the community's expectations would be. At heart, we are all teachers, and the fact that we had so many good teachers surrounding us, literally and virtually, as this book developed helped us keep the focus where it belonged—on what happens as writers write and writing students learn.

We also need to thank some people individually.

WAYNE: I want, first, to acknowledge the contributions of all the student pioneers in a class called (what else?) *Writing the Information Superhighway* who helped develop *that* course and chart *the* course down the infopike. Special thanks to Irfan Murtuza and Stephen Chim, both stellar members of that learning community, for their invaluable research assistance. In addition, Dr. Rebecca Rickly, an ECB colleague, collaborated with me on current versions of the course. Becky's ideas influenced much of what appears in the book. Hugh Burns, Locke Carter, Fred Kemp, Nancy Peterson, John Slatin, Paul Taylor of the Daedalus Group—my first travel companions on the info highway—deserve thanks and much, much more for their past and current intellectual and emotional support and inspiration. Finally, I thank my wife, Sara, and my children, Alexis and Ian, whose love, patience, and good humor remind me the info highway can only take one so far.

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In closing, we both freely admit that this book took shape amid many and varied influences and that we would have to write *another* book in order to acknowledge them all. Many more people than we can mention sent us advice, URLs, encouragement, and so forth. We could not have undertaken, let alone finished, this project without the support of the computers and writing community.

W. B.

B. C.



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