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A VISUAL RHETORIC OF

ELECTRONIC-AIDED PUBLISHING

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of

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Janice K. Tovey

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TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

ABSTRACT

Tovey, Janice K. Ph.D., Purdue University, August, 1995. A Visual Rhetoric of Electronic-Aided Publishing. Major Professor: James E. Porter.

This purpose of this study is to develop a visual rhetoric of electronic-aided publishing technology, a rhetoric that will situate computer technology for print documents and the use of visuals and visual language within the rhetorical process and recognize the significance of both technology and visuals for rhetoric and composition research and pedagogy. This study examines various bodies of literature from different disciplines to determine the role of technology and the visual in the rhetorical process, and analyzes the writing spaces of one instantiation of electronic-aided publishing technology.

Chapter 2 argues that technology is not neutral, but does influence human thinking and composing process. Theories of technology, specifically writing technology, from researchers in history, speech communication, literary theory, and rhetoric and composition reveal the changes in culture and in individuals brought about by alphabetic writing, printing press technology, broadcast media, and computer technology.

Chapter 3 examines the writing space of one Apple Macintosh computer system and accompanying applications to reveal its visual and dynamic writing space. Used in the production of print documents, and conjoining the static conventions of print and the dynamic, impermanent qualities of electronic writing, this technology encourages the writer to assume additional roles as designer, publisher, and distributor of text. The graphics-based interface provides visual symbols for computer commands, making the

writing space inherently visual, reminding the writer of the various options available, and encouraging the writer to incorporate visual elements into the writing process.

Chapter 4 draws on postmodern critical theory, cognitive studies, design studies, and professional writing for theories of the role of the visual design and visual elements in discourse. Each of these brings a different understanding of visual language to rhetoric and composition. Publishing, one aspect of professional writing, provides a noteworthy example of the integration of technology and visual design into the rhetorical process.

Acknowledging the use of electronic-aided technology and its potential effects on the writer implies certain new directions in both technology and in writing instruction. In technology design, new interfaces can be constructed to reflect a variety of environments familiar to users. And in writing courses, instructors can incorporate issues of visual design. All writers can now make decisions which affect the design of their printed texts.

CHAPTER 1

INTRODUCTION: WHY DEVELOP A VISUAL RHETORIC
OF ELECTRONIC-AIDED PUBLISHING

What Will This Study Do?

The purpose of this study is to develop a visual rhetoric of electronic-aided publishing technology which will situate the technology within rhetoric and composition, reconcile the place of the printed document within the emerging electronic culture, and discuss the convergence of design and technology. I want to demonstrate three major points to theorists and practitioners in rhetoric and composition:

1> Technology is not incidental to the process of writing, and writing and publishing technologies can influence the production of those texts.

2> Though the continuing development of electronic text delivery systems has altered our conception of text, the emerging electronic culture remains dependent on print for storage and retrieval of information.

3> The visual as well as the verbal components of text are rhetorical, and one significant effect of this technology is its foregrounding of the visual nature of text and text production.

I have elected to study the technology of electronic-aided publishing because it foregrounds the issues of technology, delivery and the visual, and their significance to rhetoric and composition.

Why Is This Project Important To
Rhetoric and Composition?

A study of this nature is significant to rhetoric and composition for several reasons. Developments in computer technology have changed writing and publishing techniques. Even though the computer has become an important instructional tool in composition, rhetoric and composition studies as a whole either fail to account for technology or underestimate its connection to delivery. An informal survey of five journals[1] from 1990-1993—which address a variety of issues in English studies, including literature and rhetoric and composition, and whose research methods include empirical, theoretical, and rhetorical analyses—reveals that only 6% of the articles address technology and its influences and effects on writing or reading. In addition, with only two exceptions, the articles which test hypotheses about writing in general (as opposed to studies which test hypotheses about writing with a computer) do not mention the technology used by the subjects. The failure to name the technology could indicate that the researcher assumes that technology or media are either neutral or transparent. This view sees the act of writing as unaffected by the instrument used to produce the text.

Furthermore, in Fulkerson's (1990) review of composition theory and studies in the 80s, he does not mention technology, computer or other media, as part of writing or writing pedagogy, nor does Berkenkotter (1991) in her discussion of the various paradigms which inform composition pedagogy. Lanham, in a review of four books which address the issues and concerns of technology, opens with the statement: "In the

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[1] The journals are *College English, College Composition and Communication, Journal of Advanced Composition, Research in the Teaching of English,* and *Written Communication. Computers and Composition* is not included in this survey because it focuses specifically on the issues surrounding computer technologies as writing and instructional tools. The percentage of articles which discuss technology would be lower without Vol. 8 (1991) of *Written Communication* which included 6 articles dealing with technology (out of a total of 8). This informal survey is meant to provide an overview of the situation, not a detailed examination.

convergence of democratization, electronic technology, and rhetorical theory that is creating postmodern culture, *technology has been the least ponderable variable*" (1992, p. 199, emphasis mine). Technology is not a widely discussed issue, except in *Computers and Composition*, and the anthologies specifically addressing issues of technology and its effects and influences on writing and instruction (e.g. Handa, 1990; Hawisher & LeBlanc, 1992; Hawisher & Selfe, 1989, 1991; Holdstein & Selfe, 1990; Selfe & Hilligoss, 1994).

Also, the primary focus of rhetoric and composition has been on the verbal element of language in the production of text, even in the discussions of electronic technology. Another informal survey of the same five journals, plus *Computers and Composition*, finds only a few articles devoted to visuals and document design. These discussions are found in more specialized literature, that of information designers and technical communicators. Ruszkiewicz (1988), however, points out that the graphics-based technology of electronic-aided publishing can heighten the writer's awareness of the relationship between the visual and the verbal components of text. And composition researchers and practitioners should recognize the potential of the technology.

During the 1980s the computer made its way into writing classrooms, or, perhaps more accurately, writing instruction made increased use of computer labs as classroom settings. A variety of courses from first-year composition to specialized professional writing courses is now being taught in these labs. The equipment available to writers and writing instructors, in labs or in private settings, once limited to word processing programs or text editors and dot-matrix printers, now may include networked computer workstations with integrated applications. Software programs are available to create both text and graphics which are then incorporated into a document through page layout programs and printed by means of high quality laser printers. For example, an Apple Macintosh Quadra 650 computer might run Microsoft Word, a word processing program

(with drawing capability in version 5.1 and higher), Aldus PageMaker or Ventura

Publisher for page layout, Claris MacDraw or Aldus Superpaint for drawing, and

Micorsoft Excel as the spreadsheet program. This system could be complemented both

by networking and hypertext applications, and by hardware such as scanners and laser

printers.

These desktop systems are being used in classroom and business settings to

produce print documents, serving as a reminder that the print culture[2] has not been

replaced by electronic online text. Online systems have, however, become a major source

of documentation and have emerged as a research focus in computers and writing to

challenge the assumptions of the print culture. Bolter (1991) claims that the print, or

book, culture has been dominant for the past 500 years, since the printing press became

the primary technology of publishing. Landow (1992, 1993) agrees that today's

conceptions of scholarship and criticism and of originality and authorial property are

derived from print technology, and electronic technology marks the next major shift,

promising radical effects on literature, education, criticism, and scholarship. Bolter and

Welch remind us that print texts are still assumed to be more authoritative than either

manuscript or nonprint, electronic texts, and appear "more natural or even inevitable"

(Welch, 1990b, p. 31), suggesting that print technology is so pervasive in our culture that

unless a text is "printed" its credibility is undermined. Slatin (1990) argues, along with

Bolter and Welch, that electronic media demand both creators and audiences of texts be

more aware of the technology as the culture must extend credibility and authority to

these alternate texts. Landow also believes that books will lose their primary role in

humanistic scholarship as "readers become accustomed to the convenience of

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[2] The term "print culture" is used by Ong (1982), and later by Hawisher and Selfe
(1991), to refer to the period in which text is defined by printing press technology. Bolter
(1991) refers to this period as the "age of print," while Landow (1992) uses the term
"culture" in reference to the period prior to print, the manuscript culture.

electronically linked texts" (1992, p. 23). To ignore electronic technologies, desktop systems or online technologies, constitutes a gap in theory, research, and practice in rhetoric and composition. And rhetoric and composition theory will be incomplete until it accounts for the visual component of rhetoric as it manifests itself within the technological writing space of electronic-aided publishing.

Goal of the Study

The primary goal of this study is to recognize the technology of electronic-aided publishing as the place where different views of text and writing, often isolated, can be merged. I have already identified three views important to rhetoric and composition: 1> print culture, 2> electronic culture, and 3> visual design. The following discussion will summarize each view in light of the issues I have introduced: the role and significance of a> technology and its delivery system and b> visual design to the rhetorical situation. Table 1.1 below summarizes the differences in technologies, delivery systems, and language emphasis (verbal vs. visual) in the print and electronic cultures. Each of these technologies will be discussed in Chapters 2 and 3 of this study.

The print culture represents the theorists with a pro-print bias, who generally consider the language, or words, of the text as primary. Technology is ignored for the most part, although some, such as Michael Heim (1987), have realized that the advent of computers as a writing technology is cause for concern. Heim's discussion is meant to alert users to the potentially negative impact of the computer (see Chapter 2). But, unlike Heim, other theorists and practitioners may not discuss technology at all. Elements of delivery and the visual, if they are mentioned at all, may not be considered rhetorical, but are regarded as simply enhancing presentation.

Table 1.1 Focus of print culture vs. electronic culture

	technology	delivery system	language emphasis
PRINT CULTURE	**WRITING**	**PRINTED DOCUMENTS**	**VERBAL**
	PRINTING PRESS	**PRINTED DOCUMENTS**	**VERBAL**
transitional technologies	**WORD-PROCESSING**	**PRINTED DOCUMENTS**	**VERBAL**
	ELECTRONIC-AIDED PUBLISHING	**PRINTED DOCUMENTS; SOME ONLINE**	**VERBAL, VISUAL**
ELECTRONIC CULTURE	**E-MAIL**	**ONLINE**	**VERBAL**
	NETWORKING, CONFERENCING	**ONLINE**	**VERBAL**
	HYPERTEXT, HYPERMEDIA	**ONLINE**	**VERBAL, VISUAL**

But other researchers functioning in the print culture (but outside the domain of rhetoric and composition) have recognized the significance of technology to writing, publishing, and distributing documents, and how these technologies have affected human consciousness and writing. Ong (1982) and Havelock (1986) have researched the influence of the Greek phonetic alphabet and the effects of literacy on human consciousness and culture. Eisenstein (1979, 1983) has provided a history of the influence of the printing press, pointing to its cultural impact. McLuhan (1962, 1967) has studied the impact of the electric, or electronic, media, and research has also been conducted into the age of scribes and the manuscript culture which preceded the printing press.

A second view of writing, labeled electronic culture, is represented by many of the contributors and subscribers to *Computers and Composition*, to participants and attendees of the annual Computers and Writing Conference, and to subscribers to the

MBU-L listserv group. This community of teachers and researchers recognizes the influence and impact of technology on both the production and the distribution (delivery) of text, and yet, they, too, often ignore the visual component. Recent articles in *Computers and Composition* indicate a strong research interest in online systems—approximately 35% of the articles from 1990-1993 address issues relating to online systems. The journal also provides a forum for a discussion of theory, pedagogy, and technology. But few articles critique the specific technology of electronic-aided publishing or the printed documents which it produces.

The third view relevant for this study includes the theory, practice and research that recognizes the significance of the visual component of text, primarily information and graphic designers and professional writers (see Chapter 4). Not only graphs and pictures, but also page design and formatting are considered rhetorical. Postmodern theorists such as Foucault (1870, 1984) and Barthes (1977) have encouraged the inclusion of the visual and design into the rhetorical situation. In professional writing, Barton and Barton (1985, 1993a, 1993b), Bernhardt (1986), Kostelnick (1988, 1989, 1994), Porter and Sullivan (1994) and Sullivan (1988, 1991, 1992) reflect an interest in the visual elements beyond document design and layout. In design studies, the work of Buchanan (1989) and Kinross (1989) has recognized the rhetoric of information design and as well as the rhetoric of the design of practical objects.

For the most part the issues of technology, delivery, and the visual are not merged in these views. (The most notable exception is the work of Patricia Sullivan who has recognized the significance of technology, of delivery, and of the visual to the meaning of text.) This study will argue that electronic-aided publishing technology combines the elements of these various views promoting a rhetoric which encompasses the significance of technology, delivery, and the visual.

There is a little irony in this study, however. Even as I attempt to demonstrate how this particular technology can open up the areas of research and study in rhetoric and composition, I am unable to use the technology to its full potential. This dissertation is being written on a desktop computer with word processing, page layout, and drawing programs, but the format for the document reflects the conventions and expectations of the dominant print culture. Guidelines for page setup, such as margins, and placement and style of headings are determined by each of the various departments of Purdue University. (Until 1994, the established guidelines were applied university-wide, insuring that all Purdue dissertations looked alike.) My text is double spaced, with 1"-1.5" margins—a convention of the print culture which assumes that a manuscript is not a final publication copy, and will be edited and typeset, although this manuscript will not be. As I argue that electronic-aided publishing technology encourages its users, even demands, that they recognize that text is more than words, the format guidelines allow me only limited opportunity to reveal the options available to writers. These constraints are evidence of the print culture's continuing dominance in an increasingly electronic-based society.

What Is Electronic-Aided Publishing?

The myriad variations of electronic technology cannot be discussed as one and the same, nor can they all be handled in a limited study. Each has unique characteristics and each influences the rhetorical situation in different ways. Therefore, I have chosen to concentrate on a technology which results in a printed document, the desktop system, or electronic-aided publishing.

First, the term "electronic-aided publishing" must be distinguished from the term "electronic publishing," which has been used to describe the production and distribution of both online as well as printed documents (Porter, 1994). For the purposes of this study, however, the umbrella term "electronic publishing" is too broad and includes more

services and technologies than I wish to cover in a limited study. I want to distinquish between the technology used for the publication of print documents from that used for publication of online documents.

For this distinction, I am depending on the definitions for electronic publishing (EP) and electronic-aided publishing (EAP) provided by Donald Hawkins and others in their 1992 article in *Electronic Networking*. They define "electronic publishing" as "the use of electronic media to deliver information to users *in electronic form or from electronic sources*," but not as a traditional print document (Hawkins, Smith, Dietlein, Joseph, & Rindfuss, 1992, p. 38, emphasis added). EP includes online information such as databases and CD-ROM, hypermedia and hypertext, electronic mail, computer networking and conferencing. In contrast, "electronic-aided publishing" is "the use of electronic means to format and produce a *conventional information product*" (Hawkins et al, 1992, p. 38; emphasis added). EAP includes integrated desktop applications and hardware such as scanners and laser printers as used to produce a traditional print document.

My focus on printed documents, and the technology which produces them, may seem questionable in light of recent developments in electronic technology. Desktop systems now include such online technologies as hypertext and networking. Hypertext, or hypermedia, has been touted as the writing and reading space of the future, especially with the development of programs like *Storyspace* for creating interactive fiction in hypertext (Bolter, 1991). Developments in networking allow for synchronous discussion on the network, and facilitate both conferencing and collaborating among individuals. Obviously, these online systems are fertile ground for research and study. But with the excitement about the potential of electronic publishing, electronic-aided publishing technology has been neglected. An examination of *Computers & Composition* and anthologies addressing issues in computers and writing reveals only a few articles specifically critiquing electronic-aided publishing technology. In spite of the wealth of

articles on electronic publishing and hypertext, and on computer-assisted instructional aids and word-processing, the members of this community have generally not discussed electronic-aided publishing nor visual rhetoric. (Although I will not deal with the World Wide Web in this study, its incorporation of visuals and graphics into its pages supports my argument for a visual rhetoric.)

Even though Bolter (1991) and Landow (1992) anticipate the marginalization of the printed book, and Heim (1987) laments its loss in a paperless society, the medium of print continues to be a source of information and communication. The emerging electronic culture and the print culture are not mutually exclusive, but overlap and merge. Large databases, for example, exist online and have for some time. But a database may or may not be read online. A portion of the database may be extracted from the archive and printed so that the information can be accessed away from the computer terminal. Collaboration and conversation may occur over a network, but the product of this effort may finally be a printed document. Messages received through network bulletin boards and discussion groups may be deleted or saved on disk, but many times are printed and retained by the receiver. The limitations on available disk space may prohibit users from saving everything online; some items may need to be printed. Currently, printed documents remain as a method of storage and retrieval of information and communication.

The use of computers in composition classrooms also may result in a printed document and provides another reason to look at electronic print technology. Among my colleagues I have observed a concerted effort to make more use of the technology for the electronic transfer of documents and for online conferencing, especially in professional writing classes. But the final printed product remains a staple of these classes as it does in first-year and advanced composition classes. The anticipated paperless society, or even a paperless classroom, may not be a foregone conclusion. The print document has a

role in the emerging electronic culture, and the technology used to produce these printed texts needs to be examined and critiqued just as the online technologies do.

How Will This Study Be Conducted?

The methods used to conduct this study of technology and to identify the significance of electronic-aided publishing technology to rhetoric and composition include 1> an examination and analysis of the research and discussion of writing and publishing technologies, 2> an examination of the writing spaces provided by the interfaces of a computer system and its software applications, and 3> an interdisciplinary analysis of three views of text and writing which are not normally conjoined.

I begin with rhetorical analyses of researchers such as Ong, Eisenstein, and Bolter to examine pre-electronic and electronic technologies and the discourses about these technologies. After positioning the technology in an historical context, each researcher looks at the structure of the technology, the texts and textual structures produced, the various forms of text distribution which the technology promotes, and writer roles and responsibilities, presumed by the technology's form of production and distribution.

Ong's (1982) study of orality and literacy focuses primarily on implications of the development of the Greek phonetic alphabet. He demonstrates how writing altered and restructured human consciousness by changing the aural world of the oral culture to a visual one. Eisenstein (1979) studied printing press technology to show how that technology shaped and changed Western culture beginning with the Renaissance. The printing press helped to spread literacy and to shape a new trade, book publishing. It also fostered standardization, not only of the texts, but of language itself, helping to establish conventions in punctuation and spelling, for example. The permanence of print has provided a stability in text which was unknown with handwritten documents. Recently, electronic technology, specifically the computer, has challenged these print

conventions and the assumptions about text. Heim (1987) looked specifically at word processing, while Bolter (1991) explored the environment of electronic writing, especially hypertext, and the resulting changes in the concepts of writers, readers, and texts. Bolter and Carlson (1990) hypothesize that the online technology and its web of interconnected links is a better metaphor for the mind than the linear, hierarchical model promoted by print technology.

I continue the study with an examination of writing spaces of electronic-aided publishing, specifically those of three software applications, a word processing program, a drawing program, and a page layout program, available to writers on the Macintosh system. The methodology is a rhetorical analysis aimed at uncovering the ideology of visual design. I rely on the work of Selfe and Selfe (1994), who do a visual rhetorical analysis of the interface of the Macintosh desktop, looking specifically at its political and ideological nature, in much the same way as Barthes (1977) and Foucault (1970, 1984) analyze visual and spatial dimensions. Selfe and Selfe identify computer interfaces as spaces where cultures may clash and power relationships may be reinforced, as they attempt to find a democratizing educational space in the electronic writing environment. Before they, and other instructors, can do so successfully, the boundaries of the interfaces must be identified and understood. Selfe and Selfe reveal the corporate world upon which Macintosh interfaces, both desktop icons and other available symbols and artwork, are based. My examination will look at the writing spaces of several applications, and the tools and the options available to the writer.

I also draw on the research of theorists and practitioners in several different disciplines for a rhetorical analyses of various perceptions of text and writing. Besides the work in rhetoric and composition, I draw from critical theory, media theory, cognitive studies, information and graphic design, and professional writing to identify how print publishing, electronic culture, and visual design are conjoined by electronic-

aided publishing. Proponents of these different paradigms, with a few exceptions, have yet to acknowledge the contributions of the others. Two recent articles by Patricia Sullivan and James Porter provide an example of a method of working across different paradigms and fields to explore theory, practice, and research methodology in two areas. In one article, they explore the curricular status of professional writing by examining its role(s) within English departments (1993b). In the second, Porter and Sullivan (1993a) examine the various methodological paradigms, both quantitative and qualitative, which inform workplace research.

Using a similar method of interdisciplinary review, I will build a visual rhetoric of electronic-aided publishing. First, situating electronic-aided publishing technology within its historical context will identify the role of technology as a contributing factor in cultural development, human consciousness and text production. Next, identifying the general contours of electronic-aided publishing technology will establish the writing space it constructs, the texts it encourages, and the delivery system it promotes. Finally, reviewing various views of text and writing establishes the role of visual elements and visual design in writing and text production. Electronic-aided publishing technology functions in the print culture as it delivers printed documents. As electronically-based writing, it functions within the electronic environment, a dynamic and fluid writing space of impermanent text. As a graphics-based technology, it incorporates visual elements and design principles into the writing process, affecting the role and responsibility of writers, and altering the notion of "text" and "writing" to include visual language as writing and to include both verbal and visual formations as text.

Limitations exist in this study, however. My review of the influences of writing technologies does not examine actual writers or teachers. My study is built around the question of how the form of the technology influences individual writers, but I can not predict exactly what writers will, or will not, do with the technology or how they will

respond to it. They may recognize its potential, adapt it to their own needs, or resist it. Although I do not explore in any detail social, political and ideological contexts of the development and use of technology, neither do I ignore or dismiss those contexts as inconsequential. They are significant to any discussion of rhetoric and composition, and have been receiving attention by members of the profession. I have isolated the issue of technology in an attempt to examine the ways in which one particular technology may influence writers and affect the conception of text and writing. Finally, although I am relying heavily on so-called "technological determinists" (as some critics have categorized Ong, Eisenstein, and McLuhan) for my discussion of the potential effects of electronic technology on humans, I want to situate myself in a less deterministic position. Whatever part technology may play in how we do things, not only in writing, but in other processes also, technology does not function alone. It is situated within social, cultural, and historical positions which affect how and when technology is developed, used, and accessed.

Outline of the Study

This study begins with a discussion of the significance of various technologies, such as writing and print, to rhetoric and composition and to the culture, and continues with a description of the technology being used to produce the study. Finally I will examine the principles of visual design which are incorporated into electronic-aided publishing technology.[3]

Chapter 2 will review the literature from several disciplines—including rhetoric and composition, speech communication, and history—and some of the dominant theories of

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[3] The final step in this study should be a detailed examination and critique of software applications, for they, too, can influence the writer. However, these applications are changing and developing very rapidly and should be the subject of their own study, and probably not in a dissertation, a forum which has trouble being up-to-date. See LeBlanc (Ed.) *Computers and Composition* Special Software Issue, 10 (1992).

the relationship between rhetoric and technology. The purpose of this review is 1> to establish how technology used in writing and publishing processes may influence the culture, human consciousness, and the production, distribution and reception of documents; 2> to identify the features of the print culture which define our current understanding of "text"; and 3> to provide an example of the methodology I use in my own examination of electronic-aided publishing. This review incorporates theory and research on four communication technologies: writing, print, broadcast media, and electronic publishing.

Chapter 3 will describe one electronic-aided publishing system and some of the writing spaces of that system, to provide an example of the options available to writers. An examination of the opening screens of three software applications provides an example of one electronic-aided publishing system and will enable the readers of this study to see what writers see as they open each application, to anticipate what decisions writers may want to make before they begin to write, to recognize how these screens and decisions can influence writing, and to identify the visual nature of each writing space.

Chapter 4 will provide a critique of one of the assumptions of the print culture which is challenged by the technology of electronic-aided publishing, the significance of visual elements to text. The work of both Foucault and Barthes in critical theory, of Buchanan and Kinross in design studies, of Arnheim and Fortune in cognitive studies, and the research of Barton and Barton, Bernhardt, Kostelnick and Sullivan in professional writing will provide the basis for arguing for the consideration of the visual. As I discuss various design principles, I will incorporate examples from the software applications featured in Chapter 3.

Chapter 5 will summarize the views which are brought together by electronic-aided publishing technology and argue that this conjunction of print and electronic cultures

with visual design gives electronic-aided publishing technology a significant place in rhetoric and composition. The study will conclude with implications for computer interface design, for pedagogy, and for research.

CHAPTER 2

INFLUENCES OF WRITING TECHNOLOGIES

The purpose of this chapter is to review research and studies done by theorists who subscribe to the view that technology, including writing and publishing technologies, can influence the writer, to present opposing views to those theories, and to summarize alternative views of technology. The print culture relies primarily on printing press technology for its definition and understanding of text and writing and represents centuries of tradition in the production of text. Theorists, researchers, and practitioners in the print culture have, for the most part, either ignored technology, treating it as transparent, or believed it to be neutral, having no effect on the production of text. However, there are theorists in a variety of disciplines (including rhetoric and composition) who recognize the role of technology in text production and distribution as more than a tool, and as having the potential to influence the writer and the text.

The chapter begins with a discussion of the views of several theorists who have recognized technology as part of the rhetorical situation and have identified certain effects and influences of the technology used for communication. The four technologies I discuss are 1> writing, 2> printing press, 3> broadcast media, and 4> electronic writing and publishing. I consider the work of Walter Ong and Eric Havelock on the shift from orality to literacy, Elizabeth Eisenstein on the printing press, Marshall McLuhan on electric media, as well as recent research on electronic writing and publishing. I also introduce some critiques of the views expressed. Although McLuhan does not focus on writing technology, his views on the influences of electric technology, specifically television, are important when considering further advancements in electronic computer

technology, particularly the use of video, and when considering the relationship of visual and verbal elements in text and writing (the subjects of Chapters 3 & 4). The different technologies discussed here provide a sense of progression in writing technology, moving from oral culture to the computer age.

In the next section of the chapter, I present alternative views of technology. To those who choose not to discuss technology, or who simply do not think about it, technology is transparent. It has no influence on a writer or on the production of text, and therefore, is not an issue. Others, some of whom would prefer technology to be transparent, are willing to recognize that writers use a technology, but see it as merely a tool, as neutral. The tool, in this view, does not affect or influence composing strategies or theories of rhetoric. Although the members of the print culture have not dealt extensively with the issue of technology, the advent of the computer and concerns for its use has encouraged some, like Heim (1987) and Ohmann (1985), to examine and critique the use of computers and electronic technology as a source of information, analyses which point to specific problems. The computer and its writing spaces have forced some rethinking of views on the transparency of media and evaluation of the current technology.

<div align="center">Terms</div>

Before beginning the discussion of writing technology, I want to establish how I am using the terms "print culture," "electronic culture," "technology," and "delivery." "Print culture" refers to the views of a community in composition and rhetoric and a body of research and theory which is focused on the writing and production of texts based on assumptions of printing press technology (see Berkenkotter, 1991; Dobrin, 1989; Fulkerson, 1990; Heim, 1987; Neel, 1988; Nydahl, 1990; Ohmann, 1985; Sudol, 1991). Rooted in the literacy movement which accompanied the development of the phonetic alphabet, producing written text in the print culture is the responsibility of the writer,

and formatting decisions are those of the printer/publisher. Texts are primarily verbal, and visual elements are subordinate to language. The significance of technology to writing is minimal, and could be negative. Although the views of technology differ, the print culture generally regards text as written discourse, primarily verbal, conforming to traditional notions of the book. "Electronic culture" refers primarily to computer composition specialists who advocate and support the use of electronic writing technologies and whose research focuses on the effects and influences of these technologies (see issues of *Computers and Composition*; also Handa, 1990; Hawisher & LeBlanc, 1992; Hawisher & Selfe, 1989, 1991; Holdstein & Selfe, 1990; Selfe & Hilligoss, 1994).

"Technology" is a term which generally identifies the instruments, tools and other equipment used for a given process. For the purposes of this study, I am using a broader notion of technology which includes not only the tools, but also the skills, concepts, processes and environments within which the tools are used (Bolter, 1991; Ong, 1982). "Writing technology," then, refers to those tools, skills, concepts and processes used to communicate through the written word.

One last term which needs to be discussed is "delivery." Recognized as essential to the oral presentations which are the hallmarks of classical rhetoric, delivery for modern written discourse has been more difficult to define and assign significance to. Welch (1990b) argues for consideration of technology as one of the modern interpretations of delivery. But delivery may also refer to the product (e.g., a printed page, or a hypertext screen), or to the distribution or publishing technology (e.g., the printing press, or an on-line text delivery system). This study of writing technologies incorporates issues about publishing technologies or delivery systems. One way in which print technology is distinguished from electronic writing technologies is that electronic technologies offer

choices in delivery, which, in turn, can integrate publishing decisions into the writing process and gives the writer additional responsibility for the finished product.

For the classical orator oral presentation, or delivery, was an integral part of the rhetorical situation; the impact of the discourse was immediate. Other technologies, such as print, may require that decisions regarding delivery be postponed until the manuscript is complete, delaying the publication and distribution of the discourse, and its impact and feedback. Electronic technology, on the other hand, can incorporate decisions about delivery into the writing process. Electronic-aided publishing technology allows the writer to make decisions once left to copy editors and proofreaders. And on-line text delivery systems give the writer the control of the distribution process as well. When a message is complete, a writer "publishes" and "distributes" the document by giving the appropriate command to send the text directly to the audience designated by the writer. Like the earlier oral discourse, these texts may receive immediate response. However, like printed documents, they may not be read immediately, or at all. The significance of writing technologies is intricately tied to publishing technologies, or delivery systems, for both the production and the distribution of texts are influenced by the technology, and may affect the writer.

The Development of Writing Technology

Many of the assumptions about "text" and "writing" which define these words in the twentieth century are based on the conventions of print, conventions we, as a culture, have come to understand as "natural" rather than as the result of an interaction between cultural and socio-political events and technological developments. The assumptions and conventions of the print culture are derived from the progression of technology from oral culture to the printing press, and are incorporated into early computer applications. But developing technologies and their corresponding influences do not occur in a vacuum. In the case of writing technologies, the demand for better

storage and retrieval of information probably spurred their developments. Token systems which began appearing about 8,000 BC enabled communities to exchange data, store it, and retrieve it. The systems were refined as necessary until signs replaced the tokens and early pictographic systems were developed (Schmandt-Besserat, 1986; Schumacher, 1986). As the population grew, as relationships between individuals and groups changed, and as societies depended on more information and communication, more sophisticated and complex technologies emerged and continue to do so today.

The following examination of theories of the significance of writing technologies and their influences on humans begins with the introduction of the phonetic alphabet in Greece, and the shift from the reliance on speech to writing, or literacy. A discussion of technologies will reveal two significant points: 1> Each new or advanced technology contains residue of the previous technology, depending upon the old to ease the transition to the new; 2> Those transitions may be difficult as new technology is met with skepticism, or deemed as threatening (or subversive) to the people and/or the society.

Shift from Oral to Literate Culture

The transition from an oral to a literate culture was a long, slow process, beginning with the introduction of the alphabet around 700 BC (Havelock, 1986). While the use of the alphabet spread, it did not immediately displace the oral tradition and its consciousness. Some 300 years later, during Plato's time, there was still some resistance to writing, and researchers such as Havelock (1986), Ong (1982), and Welch (1988, 1990a) identify this period as representing a clash of interiorized alphabetic literacy with orality and its traditions. Welch (1988) also notes the difficulty of separating orality from literacy and that shifts in consciousness seldom occur without struggle. The long-developing shift in the relationship between space and discourse is heightened with the development of Gutenberg's press and movable type (Ong, 1958). From the earliest

pictographic and hieroglyphic writing through the development of the alphabet, sound, which is necessarily fleeting, is given semi-permanence through marks fixed in space. The rhetoric of sixteenth century logician Peter Ramus is intricately tied to the notion that "speech" is a mark (letter) rather than a sound, a characteristic of orality. Ramus insisted "that the elements of words are not sound, but such marks; that is, not syllables but letters" (Ong, 1958, p. 308). Although the residue of the oral tradition is in evidence through several centuries in the transition to literacy, it is consistently eroded as knowledge becomes associated with visual apprehension and space rather than resting in the sensory details and sound. That association of the visual with knowledge is implemented most efficiently by the permanence offered by print (Ong, 1958).

"Orality" defines a cultural situation quite different from literacy, and uses a language of its own (Havelock, 1986). Rousseau's work on the origins of language valued the "natural" speech of primitive people, and although Rousseau did not identify "orality" or "oral culture" as such, his work influenced others. Levi Strauss would later attempt to identify a structure with the living habits of the primitives he studied. Unfortunately, as Europeans identified culture with literacy, the very use of the term "primitive" to describe the oral, nonliterate cultures was pejorative, reflecting an unwillingness to acknowledge oral culture as a formative social process. Russian anthropologist Luria observed nonliterates in two minor Soviet republics and his conclusions helped to identify orality as a distinct mode of consciousness with its own structure, organization, and rules (Havelock, 1986). Establishing orality as a structure, a system with social, cultural, and epistemological implications, then, helps to recognize the systems established by the influence of later technologies, a goal of this study.

The development of the phonetic alphabet, and the literacy which followed, allowed cultures to store and retrieve information in a new way, one which freed the memory from its role as database and encouraged new ways of thinking. A number of

pictographic systems have been documented as existing as early as 3,500 BC, but the most important step in writing is probably the development of the Greek, phonetic system, the first to contain vowels, providing total transformation of sound to sight (Gelb, 1963; Ong, 1982).

"More than any other single invention, writing has transformed human consciousness" (Ong, 1982, p. 78). Writing allowed different organizations and patterns of thinking, speaking, and knowing. With the capacity to write came linear thought, one of the significant changes from orality to literacy. According to Ong, "literate" human beings are those whose thought processes are organized and structured by the technology of writing (1982, p. 78). Once humans were able to write, logical thought became dependent on the "presentation of connected and sequential facts and concepts" and the sentence became the organizing principle (McLuhan & Fiore, 1967, pp. 44-45). Writing not only allowed for continuity (if interrupted a writer or reader can return to a specific point in a text); it also allowed thought to be organized in different ways. As a result, redundancies and other formulary patterns were no longer as necessary to help memory.

Hierarchical organization became possible with writing. The most important words or subject, or the most general term, could be identified and developed through discussions using specific details, in effect providing layers of thought and details. Other organizational systems can be identified also. Tebeaux's (1991) examination of Renaissance documents reveals textual cues and patterns of organization which would not seem to be possible without writing. The cues were visual ones, not aural. Texts were divided into sections, with primary and secondary divisions within each section. Topics or ideas were listed and numbered. The tables of contents identified the organizing structures, and indexes pointed to related information in a nonlinear fashion. Categorizing and cataloging were made easier by writing.

Other significant changes with the shift to literacy included the ability to analyze and to abstract. The formulary expressions which characterized oral knowledge were difficult to break up and analyze. While the "savage [i.e. oral] mind totalizes" (Ong, 1982, p. 39), the literate one can analyze and abstract. The knower became separate from the known, and knowledge would be shaped through comprehension beyond the immediate context, beyond the situation and its concrete images and sound. This abstracting ability, in turn, set up the possibility of "objectivity," or a distancing from the situation which occurred with literacy. Knowledge no longer relied on the individual memory, nor did it have to come from direct experience; it could be obtained secondhand through reading.

The impact of the aural, important in orality, was lessened as the visual became primary to writing. The alphabet itself exists only visually and encourages and fosters "the habit of perceiving all environment in visual and spatial terms" (McLuhan & Fiore, 1967, p. 44). The visual nature of literacy, however, may lead to a static view of language and the world, as opposed to the dynamic nature of orality. Writing can be uncontested and detached from the writer, as speech cannot be. A spontaneous dialectic is unlikely, and text can become fixed, stable, and irrefutable. The contrast between the dynamic nature of orality and the static nature of literacy is also the contrast between a "'true' mental act of knowing and an oral act of feeling and responding" (Havelock, 1986, p. 115).

The audience for a discourse also altered with the shift to literacy. The audience no longer has to be physically present in order to receive the words of the writer, resulting in the possibility of a much larger audience, and a largely unknown one, distant in both time and space. This distancing also means that the writer can work in isolation, without the immediate and spontaneous feedback afforded by speech and dialogue. Ong (1977, 1982) suggests that the lack of extratextual context not only forces a writer

to fictionalize the reader, but also requires a reader to fictionalize the writer. This distancing also depends on an adequate and reliable delivery system for distribution of the text. A speech, or oral delivery, to an audience or the face-to-face dialogue, which Plato favored, allows for immediate feedback, for rebuttal, and for spontaneity. Once "speeches" become written text, the audience becomes remote, and unavailable for immediate response. At the point of inscription, audience reactions to text and potential counter-arguments can only be anticipated.

Rhetoric in an oral culture was largely the art of public speaking. In a literate culture, the residue of orality remained in agonistic and formulaic expressions retained through commonplaces and topics. The transition to total literacy was slow, as new technologies were often looked upon with suspicion and concern. By the sixteenth century, though, rhetoric handbooks began to reflect literacy, although the traditional parts of rhetoric had been reduced to three—invention, arrangement and style. Memory was not applied to writing, and delivery was minimized (Ong, 1982). Memory was released from its responsibility to store knowledge, and could be channeled for other purposes (Havelock, 1986). Delivery became subordinate to language, an afterthought or mere packaging. The ethos of the rhetor came from visual sign in the text, not from the presence or the voice of the individual.

The view of literacy as a defining and determining trait of human consciousness has met with criticism. Bolter (1991), although he believes that literacy allows for analysis and reflection, finds Ong's claims for text-formed thought too strong. "Literacy is not the necessary and sufficient cause of reasoned thought" as identified by Western culture, but literacy does make a difference in the texts which culture produces (Bolter, 1991, p. 209). For Bolter, the distinction is the relationship between a person and his or her words.

> [Literacy] allows each of us to slow the insistent pace of spoken language, to control the rate at which we must produce or receive words. Writing allows

> us to weigh our own words or those of others. It is surely easier to appreciate a complex argument in writing than in oral presentation, to dissect the argument by moving back and forth through its points. (Bolter, 1991, p. 209)

Bolter seems to want to temper the vast claims that Ong makes for writing, acknowledging the significance of Ong's theory as he suggests a different way of interpreting the contribution and effects of writing, or literacy, to human and cultural development.

Other critics of Ong have been less generous. Ong has been criticized for ignoring the cultural and social contexts in which literacy occurs (Brandt, 1990). Brandt's criticism of Ong (and of Jack Goody, Deborah Tannen, and David R. Olson as well) is based on what she labels the strong-text explanation of literacy, one that has, through the work of these scholars, shaped our definition and understanding of literacy.

> In this [strong text] view [of literacy], people become literate by coming to terms with the unique demands of alphabetic writing, a technology that forces radical interpretive shifts away from oral discourse habits. Literacy, from this perspective, is said to entail a suppression of ordinary social involvement as the basis of interpretation and a reinvestment in the logical, literal, message-focused conventions of language-on-its-own. (1990, p. 13)

Brandt urges her readers to consider the underlying assumptions of the strong-text explanation of literacy: autonomy, anonymity, and textuality. Writing, in this definition of literacy, refers to textual inscription, not to the acts or activities of people writing, suggesting writing as artifact. The text is central to this point of view because literacy for the strong-text theorist is a technology, "a penetrating force that unnaturalizes and reorganizes all that it comes in contact with" (Brandt, 1990, pp. 22-23). The research, Brandt points out, is primarily dependent on the products of literate culture, and the focus is on the characteristics and traits of these texts. Instead, Brandt calls for the recognition that "[t]o use and understand language requires knowing how to accomplish language *and* its setting simultaneously," and that context is an embodiment of language and language is an embodiment of context (1990, p. 30). Brandt places intersubjectivity

at the core of interpretation and meaning in both literate and oral situations, and puts the writer and reader together "at the same 'place' in a text, . . . [a] social reality of their mutual making" (Brandt, 1990, pp. 30-31). Different from the strong-text perspective, this perspective stresses the interdependence of language and social context.

Brandt's criticism of Ong and strong-text theories is a valid and well-argued position, one which critiques the culture's text-based definition of literacy. Although I depend on Ong's text-based literacy for this study, the focus on electronic-aided publishing technology also will point to another limitation of the strong-text view of literacy: the privileging of the verbal over the visual.

Print Technology

The development of phonetic writing and the resulting literacy would eventually lead to other technologies and new methods for the production and distribution of documents. As people became more literate, the demand for documents increased until the printing press was invented and assumed most of the responsibility for publishing and distributing texts. Prior to the press, however, the technology for manuscript production was less mechanically complex, the handwriting of scribes.

"Scribal culture" (or "manuscript culture") usually refers to the period in literate culture prior to the invention of the printing press and movable type by Gutenberg in 1451 (Landow, 1992; Ong, 1982). This age was characterized by a heavy oral residue, much as each technology to follow would rely on the previous one. The term "scribe" is not easily defined, for the concept of the scribe takes on a variety of manifestations. The scribe might have been taking dictation from an author, might have been a clerk in charge of charts and logs, or might have been a "copyist," literally copying from another document. He could also have been the actual writer in the twentieth-century sense of the term. (See Minnis, 1984, for discussion of the medieval theory of authorship.) Scribes were necessary, probably because even in a literate world, one in which writing

was possible, not everyone could write or read. Scribal culture was more than simply a transitional age until the printing press was invented, and deserves to be researched and discussed. However, for this study, the influences and effects of printing press technology are more pertinent.

Eisenstein, in the preface to *The Printing Press as an Agent of Change* (1979), laments the lack of literature and research on the consequences of the fifteenth-century communications shift from scribal handwriting to printing press technology. In order to counteract this dearth of research, her book attempts to define not only the shift itself but also the context within which the shift occurred. While the shift to a different technology influenced social, political and cultural conditions, these conditions also influenced the way the technology was used and accepted. She quickly adds, though, that her study is grounded in Western European culture, particularly England and France, and the term "print culture is used in a special parochial Western sense" (Eisenstein, 1979, xiv). Eisenstein also answers the critics of some preliminary articles who have accused her of a "monocausal interpretation," "reductionism," and "technological determinism" for assigning too much credit to a technology—the printing press. In her own defense, she points to the title of the book: the printing press as "an" agent of change, not "the" agent of change.

Grafton's (1980) review of Eisenstein's methods and approaches to the history and influence of the printing press begins by acknowledging the importance of her text to cultural historians who "have persistently ignored [the] powerful influence [of the print shop]" and whose work is distorted by this oversight (1980, p. 267). But, in spite of the value of Eisenstein's work, Grafton identifies weaknesses in the work which may affect its value and credibility.

Grafton first questions Eisenstein's method, claiming that her reliance on secondary sources, often contemporary ones, neglects a rich tradition of early examples of both

scribal and print manuscripts and books. Her book is filled with descriptions and summaries by other writers and researchers, rather than the results of her own archival research. If this foundation is suspect, then so is the structure of her book. Instead of a narrative organization, Eisenstein chooses to present her research in a series of arguments, attacking other scholars and dismissing their conclusions and methods. The result is a one-sided, and often unpleasant, presentation. Even more of a problem are the ways "in which Eisenstein sometimes deploys the evidence that [other scholars] have given her" (Grafton, 1980, p. 272). When she argues that printing made possible the systematic historical study of the ancient world, she denies the existence of pre-print histories by Biondo and Bruni. "Both her lively survey of the change from script to print and her suggestive speculations about its intellectual consequences suffer seriously from her one-sided presentation of the evidence" (Grafton, 1980, p. 273).

According to Grafton, Eisenstein clearly wants to emphasize a radical break between the age of scribes and the age of print. But, in doing so, she tends to put a positive spin on the evidence that supports her thesis as she puts a negative spin on other views. The print shop was probably not as bright a place, nor the scribal office as dark a place as Eisenstein would have her audience believe. While print technology was significant to the changes in the Middle Ages, to the Renaissance and Reformation movement, to scientific and scholarly methods, the changes were beginning even in the scribal culture, and the transition of scholars and writers to print technology was cautious and slow (Grafton, 1980). As Grafton applauds the thesis that print technology was a significant factor in the cultural revolution of the Middle Ages, he cautions readers about the exaggerations and generalities of Eisenstein texts, and encourages historians to add to the knowledge base through primary, archival research.

Like Brandt's critique of Ong, Grafton's evaluation of Eisenstein provides another view on the significance of technology. Although not totally in opposition to Eisenstein,

Grafton serves to temper her claims for the influence of the printing press by pointing out the biases inherent in both her methodology and her conclusions. But, in spite of the problems of Eisenstein's work, she provides a comprehensive historical context for print technology, that Grafton acknowledges, which is important to this study. Her methodology, like mine, does not always rely on primary sources, a limitation I have already acknowledged (see Chapter 1).

Eisenstein's discussion of the transformation of literate culture from script to print does reveal several important and significant features of the print culture which have become the norm by which Western culture measures texts. More of a publishing technology than one of writing, the printing press has provided the dominant technology for the last five centuries and defines what Western culture calls writing and text. Printed texts would become the most valued form of writing as they displaced the medieval organization and expression of knowledge (Bolter, 1991).

The invention of the printing press, which allowed for mass production and distribution of printed texts, can be considered a major factor in the spread of literacy and of new ideas (Eisenstein, 1979). The various political, social and religious views now available to more people helped to change the face of Europe. Eisenstein (1983) credits the development of the printing press and the dissemination of the printed materials with the implementation of such changes as the spread of the Italian Renaissance and the Protestant Reformation, the exploration of the globe, increased access to knowledge, and alterations in family life and politics. Just as nonliterate cultures developed the token system to enable better record keeping, the invention of the printing press and the evolution of typography probably reflect a need of the time. The increasing knowledge due to exploration of the globe, the spread of literacy, the demand for better records and communication media, the desire for change, all of these things not only were impacted by the printing press, but, in a dialectical relationship, also

motivated the invention of the press. At the core of the various developments in technology is a need for data storage and retrieval. So just as the printing press influenced the culture and social organization, the needs of the culture could have spurred the invention of the press.

The influences of print culture are varied, ranging from influences on the text to human consciousness. Using Eisenstein's work supplemented by Ong and others, I have chosen four ways in which print technology could have influenced the language, human consciousness and culture and summarize them below.

Standardization

Scribal manuscripts did not follow particular conventions. Spelling, punctuation, and capitalization rules were virtually non-existent until printing made possible the production of numerous identical copies of a text. Although total standardization may have taken some time to achieve, sufficient uniformity existed from the beginning of printing. This standardization was not only necessary and important for textual documents, but affected graphical documents as well. Charts, diagrams, maps were also made uniform through printing (Eisenstein, 1979).

The capacity for writing, which enabled thinking in linear, hierarchical ways coupled with the ability to print uniform, identical texts made standardization possible. Dictionaries and grammars which described how the language should be used and the rules to follow were a direct result of the ease of publication and distribution made possible by the printing press technology. At the same time, printing technology and the mass production and distribution of documents deemed this standardization desirable and necessary (Eisenstein, 1979; Ong, 1982).

Typographical decisions would become significant with this new technology. Various typefaces offered more legible, readable printing than did the scripts of numerous scribes, and enabled rapid silent reading. This signaled a different relationship

between the reader and writer or "authorial voice" (Ong, 1982, p. 122). Print reduced writing to the cold and impersonal: machine-made, perfect lines and spacing, justified right margins, and none of the ornateness of script or personal touches of the scribe. The standardization afforded by print may have spurred literacy through mass production and distribution, but it distanced the reader and writer even further than alphabetic and scribal writing, which retained the residue of the oral tradition (Eisenstein, 1979; Ong, 1982).

Permanence of Print

What may have been the most significant result of printing press technology to the culture is the permanence and fixity of print. Scribal manuscripts, as Eisenstein (1979) reminds her readers, could be easily corrupted and any document intended as a reference guide quickly became useless. Data preserved on papyrus and parchment were not durable, subject to "wear and tear," and did not last long. Storage left them vulnerable to moisture, theft, fire, even vermin. The lack of a fixed and stable database of information remained a problem even in a literate, scribal culture. Printing made possible the preservation of texts; even though paper was less durable then earlier materials, paper was plentiful and the number of copies printed made the possibility of their total loss less likely to occur (Eisenstein, 1979).

But beyond the physical traits of paper, print "fixes" text in other ways. "Print encourage[d] a sense of closure" in the way that a handwritten text did not (Ong, 1982, p. 132). The visual and physical consistency achieved through print froze thought in such a way to make it seem final, as if it were "Truth." A text could become self-contained and autonomous, freed from its historical, cultural, social, and rhetorical context, set off from other works, a unit in and of itself. This fixity of print may have nurtured the formalist thinking in literary criticism. Formalism and New Criticism both identified the verbal work of art, the poem or novel, for example, as a "verbal icon,"

complete in itself, changing the role of the author and subordinating that of the reader. Writers became "authorial voices" rather than dialectic partners with the readers (Ong, 1982). But print also brought with it credibility and authority (Bolter, 1991; Welch 1990b). Even today, as the electronic culture emerges, "the goal of every serious writer is print, and ephemeral media simply help the writer reach that goal" (Bolter, 1991, p. 55). Bolter, Slatin (1990), and Welch, however, argue that this situation will have to change as electronic texts gain in number and credibility, and particularly, as the technology improves.

Reorganization

Early printers had to make editorial decisions concerning layout and presentation. These decisions resulted in two changes: 1> a shift to the visual, and 2> a shift in the way readers think. The way a reader reads and thinks may be guided by the arrangement of the content and information, the layout and design of a printed text.

Alphabetical order is one pattern of organization. It is used in reference books such as dictionaries and encyclopedias. In order to use one of these books, an individual has to know the alphabet in sequence, not simply as random letters. Indexes offer another pattern: the notion of "topic" or "subject" as an identifying structure was not possible before print (Eisenstein, 1979). These and other textual cues, such as the table of contents and section headings, suggest hierarchical categories, identifying for the reader what is important through highlighting and other forms of emphasis. A reader can use reference books in a number of ways, not always in a strictly linear fashion (Tebeaux, 1991).

The visual elements of the text also aid in the reorganization of thought. According to Ong (1982), writing situates words in space, but print locks them into a position, and position is very important. The design of a page, the position of the verbal elements in a visual space, can affect how a reader interprets the communication. In some of the early

books, the visual configuration did not always reflect meaning. For example, the title page of manuscripts and early printed editions often had a pyramid type of arrangement. The first word (oftern "The" or "A") was very large, with others becoming smaller. Because this first word was the largest, it was the most visible and hence the most important word on the page. But its importance comes from its position on the page, not its meaning. Eventually the visual impact of a word, or position on a page, would reflect its meaning. For example, in the modern pyramid formation, "The," even as the first word of a title, would no longer be the largest word because it is not the most important to the meaning (Ong, 1982).

Although visual design is often reserved today for discussion among information designers and professional writers, visual impact may be equally important to meaning in primarily verbal texts and can be achieved through emphasis: increased point size, underlining, use of italic or boldface type. The design or layout may identify the organizational arrangement of the material with section, or chapter headings designed to receive more visual notice. However, the decisions concerning information and visual design were often left to someone other than the writer, an editor or printer, for example, and sometimes only after the text was completed and edited. With computer technology, the integration of these visual elements into the writing process is possible and writers may choose to make some of those decisions themselves. (See Chapter 4 for a discussion of visual design in terms of electronic-aided publishing.)

Dissemination and Other Effects

A particularly significant feature of print culture, especially when considering delivery systems and publishing technology, is the availability and distribution of texts. Printing press technology made it possible to produce standardized copies of documents. It also made possible the production of hundreds and thousands of copies of documents, which, in turn, made texts available to more individuals in numerous

areas. Books essentially became "cheap and plentiful" (Eisenstein, 1979). At the same time, the economics of publishing and distribution became a factor. And today, as technology becomes more advanced and sophisticated, its availability and accessibility to the general public need to be factored in.

In areas where book stores and publishers were first established during the age of scribes, dissemination of both printed materials and of literacy was encouraged and fostered. But even as the invention of the printing press made wider dissemination possible, the availability of printed materials may have been limited (Eisenstein, 1979). For the printing press as well as the technologies which followed, immediate accessibility was limited to those who could afford it and to areas where it was available. Computers, or any other technology, "empowers only those to whom it is available" (Farrell, 1991, p. xi). "Who has access to a technology?" is an essential question to ask in an evaluation of any technology (Klem & Moran, 1991). And what happens to those who have no access to powerful tools which dramatically alter human thought and culture is equally significant (Ohmann, 1985). Today, these issues arise in reference to computers, but they might also have been raised during the development of the other technologies. Ong (1982), for example, itemizes four of Plato's objections to writing: 1> writing is inhuman; 2> writing destroys memory; 3> writing is passive and cannot defend itself; and 4> a written text is basically unresponsive. These arguments, or similar ones, are employed by Heim (1987) to oppose computers as a writing technology, and print was probably vulnerable to the same criticisms.

The dissemination of texts made possible by print provided a cross-cultural interchange of ideas. Books from various regions made their way into other areas, providing for a knowledge explosion fueled by a Renaissance encouraging the broadening of knowledge. Scholars were able to expend their time and efforts on several texts, rather than concentrating on one. Diverse systems of ideas and disciplines were

combined to create new systems of thought and new ways to think about writing (Eisenstein, 1979).

The writer was joined by other individuals to produce a document (Ong, 1982). The printing press helped to developed a new trade (publishing) and several new occupational groups—publishers, literary agents, proofreaders, copy editors, typesetters, illustrators, and indexers (Eisenstein, 1979). More significantly, print technology commodified the word as never before. Print encouraged the concept of private ownership of words and prompted the development of copyright laws and the notion of plagiarism. Although the early days of print retained much of the essence of the oral tradition in which a word was an event rather than a thing, by the eighteenth century copyright laws were beginning to take shape, assuring that words became property (Ong, 1982). Copyright laws continue to be a significant part of artistic endeavors in the electronic age of the late twentieth century. Writers, lyricists, recording artists, and film makers each have a financial stake in maintaining copyright protection. But, unlike the fixity of print, the high-tech electronic environments and creative spaces of the 1990s foregrounds new issues concerning copyright law. Questions about the ownership of messages and ideas posted through electronic mail bulletin boards and written into hypertext programs arise because these online texts can be altered and redistributed. Author and ownership may be more difficult to establish in such media.

The reception of documents, of books, was also significant to the development of the print culture. Readers were affected by the shift to print. On a positive note, more texts were more available and more legible, but negative effects were also apparent (Ong, 1982). Reading became a much more private affair. When only a few texts were available, the public gathered for readings, followed by conversation, critique and evaluation. But with the mass production of books, a reader could buy them, take them home, and read them at leisure. And because the reader was no longer in the presence of

the writer, the words may have seemed less those of an individual dealing personally with another.

The book functions in the print culture as a metaphor of the mind, a metaphor of linear, hierarchical thinking, fixed texts and still images. Relying on the Platonic separation of the mind from physical existence, Heim (1987) claims that the book models the mind. Bolter, on the other hand, argues that the mind reflects the dominant technology. With hypertext, for example, the mind becomes a "web of verbal and visual elements in a conceptual space" (Bolter, 1991, p. 207). Bolter prefers this metaphor to the hierarchical, linear model imposed by the book, identifying the web metaphor as recognizing the inter-relationships of ideas and thoughts occurring in the mind. Print technology was once valued as a way to preserve documents, and this technology and the metaphors it promoted, would dominate Western philosophy for 500 years until finally, with the advent of electronic technology, it would be criticized as too limiting (Bolter, 1991; Landow, 1992).

Electronic Broadcast Technology

Although the major focus of this study is writing and publishing technology, particularly computer technology, it is inappropriate to ignore broadcast technology. The developments and advancements in computer technology are directly tied to other electric and electronic technologies. For example, the development of transistors and printed circuit boards which allowed industry to make compact radios, smaller televisions, and hand-held calculators also enabled them to down-size the computer to fit on a desk, rather than taking up an entire room (Moreau, 1984; Palfreman & Swade, 1991). The impact of the aural and visual nature of broadcast media has certainly been as great as that of the printing press.

The importance of broadcast technology as a medium of communication, and its influence upon the user (or viewer), was the subject of McLuhan's work in the 1960s. The

global and cultural impact of the electronic media, primarily television, is expressed in

The Medium is the Massage.

> The medium, or process, of our time—electric technology—is reshaping and restructuring patterns of social interdependence and every aspect of our personal life. . . . Societies have always been shaped more by the nature of the media by which men communicate than by the content of the communication. . . . Electric technology fosters and encourages unification and involvement. It is impossible to understand social and cultural changes without a knowledge of the workings of the media. (McLuhan & Fiore, 1967, p. 8)

The development of electronic technology and the products of such media as television, radio and film, have significantly altered the way we view our world. These media thrive in the culture described as "secondary orality" (Ong, 1982). Based on literate culture, the oral element has once again become significant (Welch, 1990b). Television and radio, with aid of satellites, bring global news into homes almost instantaneously, shrinking the world into a global village (McLuhan & Fiore, 1967). In 1991, for example, Cable News Network (CNN) brought the Gulf War into living rooms in an even more dramatic fashion than the edited filmed images of the Vietnam War viewed twenty years earlier. Delivery, in media theory, can easily be understood in terms of the oral presentations in broadcast media. In addition, electronic technology includes the development of the latest writing and publishing technologies, run by computer systems, which can affect both the writer and the reader as it changes the production, distribution and reception of documents as well as the consciousness of the culture.

"Secondary orality" is used by both Ong and McLuhan to define the new consciousness created by electronic technology. This "new" orality relies on the spoken word, just as the old orality did, but it also is based on the literate, print culture, and the consciousness of literacy. As McLuhan (1967) points out, secondary orality brings a large geographically and culturally diverse population together, recognizing a global culture of sorts. But these media also reinforce the notion of closure so important to the

print culture (Ong, 1982). With a few exceptions, for example, a television show is a continuing series, and yet each episode is a story complete in itself. For the first time since the invention of the printing press, oral discourse assumes a prominent role in communication technology. And because of the residue of the previous technologies, the oral discourse is now structured by a literate mind. However, this orality does not have to depend on the memory for data storage and retrieval; it still has print. In spite of the importance of the video and visual to secondary orality, print continues to demand an authority and credibility which has not wavered (Welch, 1990b).

McLuhan's work on media and consciousness attributes strong persuasive power and influence to media, particularly the visual media of television and film. The medium transcends and envelops the content as it becomes the message. Although controversial and startling theories at the time, his theories might not be deemed so striking today. Most of us have witnessed the mesmerizing effects of visual images: on video games, in television programs and advertising, on film with its spectacular special visual and sound effects. Any verbal, oral message can be contradicted, subordinated, or overwhelmed in these highly visual media.

McLuhan's work in these contemporary media did not, however, neglect earlier technologies. He, like his one-time student and advisee Walter Ong, believed that "the script of a language (alphabet, ideogram) causes radically different ways of viewing the world" (Neill, 1993, p. 5). Havelock (1986) points out that, in the pioneering work *The Gutenberg Galaxy* (1962), McLuhan recognized a cultural crisis in modern European history (the development of the printing press and movable type) that would have complex and interrelated psychological and social effects. But, other reviewers have criticized McLuhan's lack of consideration of geographic, political, and historical situations within which the language and the culture operate as a weakness (Neill,

1993). Neill and Burke (1966) both cite contradictions in McLuhan's media theory and his lack of method as problematic.

Neill (1993) claims that McLuhan's prose was mesmerizing and often blinded his readers and reviewers to errors and contradictions in his reasoning and his theories. One such contradiction involves the major hypothesis: media have irresistible and mind-numbing effects on the psyche. But, Neill asks, how often are the effects of one medium canceled out by the effects of others? McLuhan's own solution is that the many effects of media will play off one against the other: "To resist TV, therefore, one must acquire the antidote of related media, like print" (1964, p. 329). Neill's critique attempts to show that the "variety of media in our society cancel out the psychic effects postulated by McLuhan," although he argues for continuing to look at the social effects of media (Neill, 1993, p. 37).

Burke questions the main emphasis on the role of instruments ("means, agencies" [Burke, 1966, p. 410]) in McLuhan's work on media. The implications of McLuhan's formula, "the medium is the message" (or "massage," McLuhan's own pun) dismisses the issue of content analysis and is such an oversimplification that contradictions must show up (Burke, 1966). Perhaps, Burke suggests, McLuhan should have focused on the question of "just what kind of content is favored by the peculiar nature of given medium" which would have allowed him to be more discriminating, avoiding the generalization which allowed for contradiction (Burke, 1966, p. 416). McLuhan's "muddled method" did have an advantage according to Burke: it caught attention (Burke, 1966, p. 416) and mesmerized his readers (Neill, 1993). Neill also points out McLuhan's failed attempt at a scientific method. In an attempt to validate his work, McLuhan wanted to be scientific, but dropped the "'testable hypothesis' facet and reverted to his own literary, poetic and notably unscientific style" (Neill, 1993, p. 1). Neither Burke nor Neill, however, are willing to completely disregard McLuhan's contribution to an

understanding of human progression to the mechanical age and into the electric, and later electronic, age.

Electronic Publishing

For some researchers and theorists, such as Walter Ong, technology is recognized as a further development of literacy, and like the earlier developments, computers also enable new ways of thinking and allow for thought processes once inconceivable (Ong, 1967, 1977). As I pointed out earlier, computers used as writing technology faced the same skepticism and objections that were leveled against writing and print (Ong, 1982). Also like other technologies, the transition to the medium of electronic text has not occurred overnight, and the residue of print continues to be seen in electronic publishing.

Like other technologies, computers have gone through stages of development, beginning with the computing machines used primarily for computations in the 1940s (Moreau, 1984), and continuing through the mid 1990s with such sophisticated hardware as multimedia workstations. Just as print once imitated the calligraphic styles of hand-writing, the transition to electronic media has been eased by using the familiar typewriter keyboard and imitating the look of the typewritten page in early applications for text production and editing. Now in 1995, electronic writing and publishing has progressed to a level of sophistication and advancement that enables the user to produce and distribute both print and electronic documents, and to distribute online documents locally as well as globally. Font choices and formatting options, and page layout and design features allow writers to produce either manuscript copy or final published documents which may not look at all like a typewritten page, although that look is still an option, and may be camera-ready for print publication. While the residue of the previous 500 years of the dominant print culture remains in definitions and conventions of text and writing, the expectations of readers and writers are being influenced by electronic text. Since the next two chapters discuss in detail electronic-

aided publishing technology in the production of print documents, the following

discussion centers on the online systems which define "electronic publishing." The term

"electronic publishing" may be used to refer to documents either printed or distributed

electronically (Porter, 1994), but is used in this study as electronically distributed text,

such as electronic mail (e-mail) and hypertext, as well as other texts sent electronically

for the purpose of reading, reviewing and responding, collaborating, and/or conferencing

(see Chapter 1).

Print technology enabled humans to fix words both temporally and spatially,

paving the way for the "book" as metaphor for human thought. The metaphors which

define computer-generated text are more dynamic. Electronic text is described as

"intrinsically fluid, malleable, protean" (Balestri, 1988) because its existence on the

computer screen allows for constant revision. Even after distribution, the electronic text

can change. Electronic messages on a network can be distributed, changed by the reader,

and republished and redistributed on the network. These changes can affect the meaning

of the message: clarifying terms, adding examples or evidence, or even arguing against

the premises offered in the original. The metaphor of fluidity connotes a dynamic, active

text, one that is flexible and open to change, as opposed to the static, perhaps stagnant,

metaphor for print. In a fast-paced high tech world of global economies and

communications, this dynamic metaphor may reflect or reinforce the constant change

which occurs throughout the world. But metaphors also limit phenomena, reducing it to

a characteristic feature, and may themselves become static, undermining greater

understanding of phenomena (Eldred & Fortune, 1992). The stable, fixed text, which is

characteristic of print was important for the once-predominantly-oral culture to be able

to store and retrieve its information, history, and knowledge in a permanent form. Now,

Bolter (1991), Landow (1992), Landow and Delany (1990), and McDaid (1991) among

others have found limitations to the "book" metaphor, the notion of text as linear and

stable, and the accompanying metaphor of the mind as hierarchical and linear. They prefer the nonlinear model of thought processes fostered by hypertext and the fluidity of the computer screen. But the dynamic metaphor for electronic text may limit its authority in some way, for the knowledge of the culture has been lodged in books and other printed matter for so long that the legitimacy of electronic texts has not yet been totally accepted (Bolter, 1991; LeBlanc, 1993; Slatin, 1990; Welch 1990b).

Another metaphor, that of speech or conversation, also drives our understanding of electronic texts. The language used when discussing networks is often dependent on the orality/literacy model (Eldred & Fortune, 1992). The following description of students' writing on the network is not atypical: "on the network, my students immediately lost all sense of decorum about what is appropriate to say or write in an English class" (Sirc & Reynolds, 1990, p. 56). The laxness might be attributed to difficulty with the sometimes primitive mail programs. But, another explanation may be the perception of the network as conversational, more like speech than writing, and conventions in speech are different from those in writing. Users may notice a level of language usage on both local and wide area networks more casual than typical written communication. Instructors may conceive of the discourse as speech, not writing, as a supplement to class discussion, reinforcing the perception of conversation. A dialogue, even in writing, puts us back into the arena of speech (Eldred & Fortune, 1992). Use of the terms chatting or talking on the network adds to the perception of speech and conversation. Whether or not this manifestation of language use is good or bad is probably not important, but making a distinction between speech and writing is, and being aware of an acceptable level of language use is also. The language and the metaphor used to frame and define a technology will influence how we use it, research it, and train others to use it (Eldred & Fortune, 1992). Recognizing the level of language use on the network will enable novices to become part of the conversation on those

networks, and should facilitate the discussions which instructors want to generate within their own classroom. Whether we perceive of the network as conversational speech or written discourse, the expectations of the readers and writers of network texts are necessarily different from the conventions of the book with which we are intimately familiar and comfortable.

Rhetoric of E-Mail

Besides questioning the print notion of permanent, fixed text, electronic writing violates many of the conventions of print. Subscribers to listserv groups may note in electronic messages errors which would ordinarily not be accepted in written communication. Typographical and spelling errors in messages, or strange breaks in words at the end of a line of text may be characteristic of the various text editing or mail programs used in electronic mail and other networking functions. Sometimes these programs make it difficult to revise easily and users allow for that inconvenience by overlooking the errors. Not all groups are as tolerant of these mistakes as others, and the user should be aware of the tolerance level of the various discourse communities on the network. Messages deemed to be of inferior quality or violating the group's discourse conventions may be ignored, just as those from marginal voices could be.

Keyboard mapping may also explain some of the errors on network messages, for it can differ from that of a word processing program to which the user has become accustomed, causing confusion, especially for a novice. Formatting choices may also be limited and graphics options may not be available, which, in turn, requires writers to find other methods to make their points. As a result, the use of "emoticons" has developed. These are symbols which serve to let a reader know what a writer might be feeling about a topic, such as :-) for happy or :-(for sad. From this simple use of the smiley face, many variations have developed, and some artists have drawn a variety of figures with the limited graphic elements on the keyboard (Hawisher

& Moran, 1993). The use of emoticons might be another manifestation of the orality/literacy metaphor of the network. Although the desire for revealing emotions and reactions exists, and the lack thereof may affect comprehension of the text, everything, including emotions, sarcasm, irony, humor, must be expressed through words and symbols.

Both writers and readers of electronic text need to be prepared to accommodate the new conventions into their own expectations of text. The literacy involved in reading and writing on the network differs from print literacy since some conventions associated with computer writing do not exist in the printed text. A major difference is the grammar of the screen as opposed to the grammar of the page (Selfe, 1989; Hawisher and Moran, 1993). Static in printed form, the "page" is in constant flux in a computer file. The screen functions as a "page," but with simple movement of a cursor, the beginning and ending of that "page" is quickly changed. Screens are "temporal windows on a virtual text" and exist only in the memories of the computer, reader or writer, unless they are printed (Selfe, 1989, p. 7). Because of this temporality, the screen text lacks the spatial-contextual cues which are the formal conventions of the printed page, such as size, page number, headings, and margins. Screens have fluid text, with easily modified margins. They have cursors which move from word to word, from line to line at the users direction, and they have windows for viewing more than one application, and menu lines to provide commands. These are features of the virtual text, not print (Selfe, 1989). Even the manner in which a reader moves through a screen text--scrolling vs. page turning--is different from print text (Hawisher & Moran, 1993; Selfe, 1989).

Ideal characteristics of screen-based writing include the use of shorter paragraphs (or screen-sized chunks), the use of color to visually represent hierarchy, and a new set of skills involving highlighting, fonts, symbols and graphic elements (Selfe, 1989). But, visual cues may be lacking--paragraph indentations, margins, or even capital letters.

Headings and subject lines become particularly significant in e-mail, giving readers the opportunity to skim their mailboxes and read a message or ignore it. The high volume of messages which a subscriber can receive makes these subject lines a necessity. The structure, language and style of the message may also be different from print. Some systems with "preview" or "scan" features may require that the important part of the message be placed first, highlighting the main part of message, and yet e-mail messages with a request at the end seem to have a better response. Simply having to consider organization and structure runs counter to the perception of e-mail as spontaneous and fluid (Hawisher & Moran, 1993).

For all of the positive, optimistic expectations for networking—communicating globally, conferencing and collaborating online, empowering marginal voices—a negative side to networking exists—"flaming" or "outrageous and often hurtful language transmitted as part of the e-mail message" (Hawisher & Moran, 1993, p. 631). The same anonymity which is perceived as empowering to marginal voices can result in a self-absorption which negates the responsibility for ethical behavior on the network and a loss of the constraints and inhibitions provided by an audience, whether real or imagined. But, the network users must be reminded, an audience does exist, and so does a record of every message sent via the network, as well as a system operator who may read whatever is written (Hawisher & Moran, 1993). Network users need to be aware that their private correspondence or conversation is not necessarily privileged and they must act responsibly and ethically. This ability to monitor the system might also be considered a negative aspect of networking. If we perceive the networks to be casual and conversational, more like speech, then the monitoring of messages, like tapping a telephone or eavesdropping on a private conversation, is suspect. And as networking in organizations opens up communication lines to all individuals, boundaries of rank and hierarchy are, at least partially, eliminated. Subordinates can "drop in" at any time

electronically, while face-to-face meetings can be limited by protocol, by closed doors, and by unlisted phone numbers (Hawisher & Moran, 1993). Although the dominant discourse of technology has associated technology with progress, with positive and beneficial results (Barton, 1994), researchers and specialists in computer-generated writing have more recently questioned and critiqued electronic writing technology for pedagogical, social, cultural, and political implications. While the various applications of networking are generally viewed in a positive light, the critiques of the technology enable us to recognize its limitations and account and respond to them.

Before discussing the metaphors and conventions associated with another online publishing system, hypertext, I want to discuss a potential limitation to online systems which can apply to all forms of electronic writing and publishing: the quality of the screen display for reading online.

Screen Display

Originally, computers were expected to have a positive effect on writers, but studies prior to 1989 "both acknowledge and emphasize that change or lack of change in writers' behaviors or products cannot be attributed to computers alone" (Hawisher, 1989, p. 45). Not unlike the other technologies, the influence of the computer as writing technology is determined by a number of factors, including the instruction received and the situation in which the writing occurs. An important consideration for all computer-generated writing is the quality of the hardware, and, in the case of online systems, the screen display is particularly important.

The impact of the hardware on the comprehension of text, particularly screen display, has been documented by Haas (1989), and the problems in reading and comprehension of on screen texts manifest themselves in several ways. Writers can't see an entire page at a time, or perhaps they can not detect errors. They rely heavily on printed copy because they can't move quickly to a specific place in the text when reading

on screen or they don't trust their ability to read for errors. Haas's work deals with studies done through 1986, and to some extent, in 1995, the technology has improved to alleviate many of the problems of reading on screen. Full page monitors are now available, and for systems with smaller monitors, page preview and zoom functions allow the writer a better view of the text as a whole. Some systems now allow the user to have more than one file open at a time, making reading and revising across files more accessible. Formatting, which varies from program to program, may be easier to accomplish as some programs, such as Microsoft Word, incorporate those options into text production. The once standard green-on-black CRT displays have been replaced to a large extent with high resolution displays that replicate the more familiar black-on-white printing, an expectation and convention of print technology. With these improvements, writers should have less dependency on hard copy and be able to make decisions about editing and revision with the text online (Haas, 1989). But, the problem might also have been alleviated as writers have become more accustomed to reading online and have begun to accommodate the technology, both its positive and negative aspects, into their own writing process.

The lack of visual cues, which are common to printed text, may also make reading online more difficult. Users in academic and business settings which depend heavily on electronic mail and conferencing for communication and discussion need to anticipate the potential difficulties. Printing hard copy for messages and texts from e-mail accounts may not be practical or feasible and, to some extent, defeats the purpose of using online publishing. Of course, messages that users deem important may be saved either online or in hard copy, but the bulk of the e-mail will be read and discarded, never to be printed. In the case of conferencing or collaborating, comments and revision suggestions can be incorporated into a text without printing a hard copy. So, reading

from the screen must be comfortable for the writer who depends upon these online documents.

Hypertext/Hypermedia

Hypertext technology provides a system of reading and writing which is nonlinear, is intended for on screen activity and is nearly impossible to retain in print form. More so than even electronic mail, whose messages can be printed and saved, hypertext files are created and linked in such a way that printouts would defeat the entire purpose and design of the hypertext. Like networking, this notion of electronic distribution and reading has different conventions and expectations than the book.

The terms "hypertext" and "hypermedia" have been used interchangeably, but a distinction has also been made between programs which depend primarily on text for information and programs which include other media, such as sound, photographic images, or video (Joyce, 1988; McDaid, 1991; Shirk, 1991). Both terms refer to nonlinear computer-based writing, or the non-sequential arrangement of text-based information. Hypertext is a collection of individual files, called nodes or fields which are linked in various ways to each other and to the user interface. Designated buttons or specially formatted words on a hypertext screen provide the user with the possible options for movement through the stack. The control and placement of these links is the responsibility of the author, but the decisions for movement through the stack is, in most cases, at the discretion of the user/reader (McDaid, 1991; R. Selfe, 1992; Shirk, 1991). This freedom given the reader could cause confusion, and, therefore, requires the writer/author to have well-designed, carefully planned structures and networks of links to accommodate different users and their various needs. Composing hypertext encourages creativity as it combines a variety of delivery methods and structural models (Shirk, 1991).

Hypertext can be simple, allowing the reader to make choices and gather information quickly and efficiently. A library database allows users to search for items in a several ways, providing bibliographic information, location, and status. Hypertext can also be limited to a primarily linear movement through the files. The Apple Tour, for example, which is used to acquaint novice computer users with the Apple system and its mouse, is basically linear, while still allowing users some choices. Once the introductory part is complete, users see a list of the various stages in the process and may start at any one of them, helpful if the user is interrupted or cannot do the tour in one sitting, but within each step, the movement is linear. Users have other choices too: they may practice various tasks at the direction of the computer, or move on without practice, and may exit the system at any time. On the other hand, hypertext can be very complex, linking dozens of files in dozens of different ways through the use of highlighted text or buttons, and moving the user along any number of paths through the text. Choices in a hypertext will only be as unlimited as the author chooses them to be, or the system memory allows.

A hypertext may function with different levels of interaction also. HyperCard (Apple's hypertext application) allows the writer to set the "authoring" capability--in varying degrees from "scripting" to "browsing"--which determines how much interaction the reader is allowed within the hypertext. At the author level, the reader can make changes to the hypertext, forging new links and adding or commenting on text, in effect becoming an "author" of the hypertext, although writing scripts is not an option at this level. At the browser level, the user can only read through the stack choosing certain pathways and ignoring others.

The concept of hypertext is not unique to electronic technology, although the term refers to the electronic version. In its simplest form, a hypertext might be a prose paragraph and a footnote--the link is the footnote number which directs the reader to

additional information, but may or may not be read. Intertextual references of this nature are familiar to readers in all disciplines, for the culture embraces the concept of ownership of text and requires writers to give credit to other writers and their ideas. Other forms of nonlinear text such as encyclopedias and dictionaries might also be likened to hypertext. Their entries include cross-references to other entries and the reader chooses the pathway through the information. The real difference between hypertext and intertextuality, besides the technology itself, is the vast amount of information which can be made available and the myriad links that may be created with an electronic hypertext.

One metaphor which drives the description of hypertext is this web of intertextuality (Bolter, 1991; Carlson, 1990; Eldred & Fortune, 1992). From the opening screen of hypertext, information can be accessed along different, interconnected pathways accessed through the readers' choices. These associations reflect more accurately, some believe, the intricate web of associations and information which make up a human's thought process (Bolter, 1991). But the web can also confine or limit our understanding of the hypertext. A web is recognized as having a center, a focal point from which a web is constructed. Evolving hypertext theory, in contrast, tends to put increasing importance on the notion of the "centerlessness" of the hypertext programs, and a web metaphor limits our understanding of the power of hypertext (Eldred and Fortune, 1992).

Ironically, as Eldred and Fortune (1992) point out, hypertext has also been called the "electronic book," triggering associations between it and conventional books, and providing an unsatisfactory and reductive application of the technology. Bolter (1991), too, ties it to book or print culture by referring to the electronic age as the late age of print. As theorists recognize hypertext as a "new medium for thought and expression" (Slatin, 1990, p. 870), they may also be constraining and limiting the understanding and

use of hypertext technology with the book metaphor. Hypertext differs in three ways from the conventional book: in the range of materials, in the nonlinear and nonhierarchical processing, and in its reliance on users for determining the pathways. Readers of hypertext may not be able to take full advantage of the technology if they are primed to "expect" the conventions and assumptions of the book (Eldred & Fortune, 1992). A less constraining metaphor is one of hypertext as a textual, topographic space to be navigated (Costanza, 1988; Bolter, 1991). And while the notion of geographic space and mapping contains its own politics, the topographical metaphor does at least open up for a better understanding of hypertext. The idea of writing space allows for the various conventions and expectations of a specific space to be examined and critiqued without the limitations and constraints of the book or the web metaphors (Eldred & Fortune, 1992).

Boundaries of Hypertext

The products and processes of electronic technology, and hypertext in particular, question the literacy defined by print and call into question assumptions about writing and reading processes and about definition and understandings of text. Early in *Writing Space*, Jay David Bolter sets the tone for his text and identifies the power of hypertext. "But the idea and the ideal of the book will change; print will no longer define the organization and presentation of knowledge, . . . for electronic technology [specifically, hypertext] offers us a new kind of book and new ways to write and read" (1991, p. 2). George Landow makes a similar claim:

> Electronic text processing marks the next major shift in information technology after the development of the printed book. It promises (or threatens) to produce effects on our culture, particularly on our literature, education, criticism and scholarship, just as radical as those produced by Gutenberg's movable type. (1992, p. 19)

This notion of a new literacy is well documented by Nancy Kaplan in "Ideology, Technology, and the Future of Writing Instruction" (1991). First, she claims, electronic

technologies change the textual environment. The boundaries of print are clear: text appears on pages that are bound together to distinguish it from other texts. These boundaries can include the book, or can be smaller, such as an essay or article bound with others in a book or periodical. But each piece has clearly defined starting and ending points, and although shorter pieces bound together as a book could be related, they don't have to be. In hypertext, individual works lose their clearly defined beginnings and endings within the larger database, and the reading activity is driven by the reader, not the writer (Tuman, 1992). Hypertext may inspire illusions of limitless links to infinite amounts of information, but like the physical boundaries of the book, hypertext is also limited.

First, limitations to hypertext use may be inherent in the display system, or screen. I have already briefly discussed some research on problems of screen display and reading on screen. In hypertext with its dependence on screen activity, screen resolution remains a potential problem area, even though display systems are being improved constantly. Unlike other online messages, hypertext can not be effectively put on paper. Users can print screens from the database, but the linearity of paper documents violates the non-sequential, non-hierarchical structure of the hypertext. The quality of the screen display is particularly influential to the success of the hypertext reading.

Similarly, physical boundaries exist within the hypertext program as well. The size of the "card," or page, of a hypertext file may be limited by the program or the screen itself, and therefore buttons and fields would seem to be limited by the space available. The field however may not be confined by the size of the screen, for the writers can create a scrolling field from which part of the text can be viewed while the rest is hidden, thereby circumventing the physical boundaries of the screen. The number of buttons or links within the field would seem to be limited only by the number of words used and the space available on the screen. Since any word or image can conceivably become a

link to another screen, the effect of the physical limitations of the screen is minimized. And yet, in spite of the perception that hypertext has no limits, the computer system itself may be the one limitation that challenges the creators of hypertext. Hypertexts running on a micro- or personal computer may have limited memory, both random-access and read-only memory, and available memory space can limit the amount and kind of data and potential of hypertext. Scanned images, for example, consume large amounts of memory space, and can limit the available memory for a program.

As with the other technologies, networking and hypertext affect the notion of literacy, the roles of readers and writers, and the expectations and conventions of text and writing. Passive readers of print documents can be active participants in the development of electronic texts, particularly hypertext. Writing becomes a more public, social activity with electronic technologies, and new metaphors for writing and knowledge acquisition and thought will be forged to accommodate the changes as we shift from the print culture to an electronic one. Even as the shift develops, we will retain the residues of the previous technologies. Orality manifests itself in the electronic era as secondary orality, and print remains with us, even as we move in some areas to a reliance on electronic distribution of text. Whether or not the paperless society, welcomed by some and lamented by others, ever materializes remains to be seen. As I complete this study, multimedia and interactive applications are more available for personal use, and what new literacies, new ways of thinking, and new metaphors for literacy and technology will emerge can only be speculated. The once primarily verbal Internet now has a World Wide Web which incorporates visuals and graphics. The acceptance of technology as having an influence on thought, on production, and on reception of discourse, is not universal. There are several other ways in which technology has been viewed.

Technology: Transparent, Neutral, or Harmful?

The previous section has summarized the theories of several scholars who maintain that technology alters human consciousness and influences the writing and publishing of documents. But this is only one view of the significance of technology to the writer and the writing and publishing processes. This section will discuss other viewpoints: 1> that technology is transparent; 2> that it is neutral or instrumental; and 3> that its influences are negative ones.

One view of technology treats it as transparent, or invisible, and results in discussions of writing/composing with no reference to the technologies involved. John Slatin suggests that the indifference to technology may occur because writers are accustomed to pens, pencils, and typewriters and are not required to think about them. "The technology [prior to the computer] is so mature that it's simply taken for granted, [and] it's essentially invisible as a technology" (Slatin, 1990, p. 873). He further suggests, as I do, that the nature of the electronic environment makes us aware of the technology and forces us to confront it. The writing spaces of computer programs that are shown in Chapter 3 are quite different from the blank page an individual either writes on or inserts into the typewriter. The problem with the assumption of transparency is that it invites acceptance of any technology without questioning the potential effects or implied ideological constructs (Haas & Neuwirth, 1994).

A second position is that technology is neutral: it exists for us to use, but has no inherent values of its own. We are aware of it; it may even limit our choices, but it does not restructure our consciousness. Feenberg (1991) identifies this view of technology as the "instrumental view": technologies are tools which serve users. Technologies are indifferent to the aims and goals of the user, are politically indifferent and deny cultural and social implications. Hawisher's (1989) review and analysis of research in computers and writing prior to 1987 identifies many of these studies as technocentric, often failing to account for cultural, social, and pedagogical contexts. The computer was first

perceived as a tool which would enhance and improve the writing process, but additional research has revealed less positive results. For example, the ease with which revisions can be made with a word processing program does not always insure that they will be done, or done well. The instrumental view also decontextualizes the technology, allowing for its use without considering the ideological implications. Tools, then, can be used for any purpose and in any setting with no differences. In other words, the content of a communication will be the same whether written by hand, on a typewriter, or on a computer, whether printed on paper or distributed online.

Postmodern critiques of the phenomenon of technology disagree with the many claims about the transparency or neutrality of media. Kinross (1989), through his work in typographic communication and information design, maintains that pure information is not possible. His study of railway timetables reveals how typography, page design, and the use of color are rhetorical devices which are linked to the publishing technology. The meaning is directly affected by the readability of the type, the arrangement of the information and the placement of visual cues. The technology, then, is not incidental to the language. (See Chapter 4 for a detailed description of Kinross's work). Zuboff's position is also clear:

> Computer-based technologies are not neutral; they embody essential characteristics that are bound to alter the nature of work within our factories and offices, and among workers, professionals, and managers. New choices are laid open by these technologies, and these choices are being confronted in the daily lives of men and women across the landscape of modern organizations. (1988, p. 7)

New choices are also open to writers as they determine the best methods of production and distribution.

In contrast to the instrumental view, the substantive theory views technology as embedded with ideological and cultural choices (Feenberg, 1991). Ong, Havelock, and the others discussed in the first part of this chapter represent this substantive theory.

They encourage a renewed interest in technology, and Ong, for one, argues for the re-examination of culture based on the insights concerning technology.

> Our understanding of classical culture now has to be revised—and with it our understanding of later cultures up to our own time—in terms of our *new awareness* of the role of media in structuring the human psyche and civilization itself. (Ong, 1981, p. 18, emphasis added)

But substantive theory also includes a negative point of view, in which technology is identified as controlling and undesirable.

Feenberg bases this negative side of substantive theory on the work of Jacques Ellul and Martin Heidegger and summarizes it as "[t]echnology constitute[d in] a new type of cultural system that restructures the entire social world as an object of control" (1991, p. 7). From this point of view, what the technology does to humanity and nature is more significant than its aims. Heidegger saw technology as a human activity and "no mere means" to an end (Feenberg, 1991, p. 12), extending this view of technology to a "technical restructuring of modern societies as rooted in a nihilistic will to power, a degradation of man and Being to the level of mere object" (Feenberg, 1991, p. 7). In short, a fatalistic view.

Representing the perspective of the Platonists and some members of the print culture, Michael Heim provides an example of substantive theory which emphasizes the negative effects of technology. The changes brought about by word processing forced Heim to think about and discuss the implications of the technology. He argues that media should be neutral, that they are means for communication and exchange of ideas, and are based "on the exchange between humans of some pre-given material" (1987, p. 43). Heim believes that technology should serve only as a means to transfer information through symbolization.

To Heim's dismay, he recognizes the possibility that computer technology could be controlling, that users could become so dependent on and conditioned to the technology that they cease to be aware of its influences. This conditioning and restructuring is

sinister to Heim: technology so transparent that the human mind loses control of it

(Heim, 1987). In one sense, this view is reminiscent of Heidegger's, that the restructuring

of society by technology leaves humans as mere objects to be controlled. Heim's negative

critique of electronic technology illuminates his own bias toward the print, or book,

culture. He laments the possibility of a paperless society, where books become "charming

mementos of a more person-centered age" (1987, p. 199) and where personal

involvement is minimal.

Drawing upon Plato's philosophy, Heim reinforces his arguments about the

primacy of words, of thought and speech, and the importance of writing, of literature,

and the print culture in order to reduce the perceived threat of computer technology.

And Heim uses the same technique as Plato did. Heim admits to writing his text, *Electric*

Language: A Philosophical Study of Word Processing (1987), on the computer with a word

processing program just as Plato, in the *Phaedrus*, used writing to denounce writing. Neel

claims that Plato's brilliant move—writing to argue against writing—undermines "the most

powerful system available to humanity, the system of writing," attempting to use writing

up and "leaving nothing for those behind him" (1988, p. 6). In many respects, Plato

succeeded, for Western philosophy is built on the foundation of Plato's work.

In the *Phaedrus*, Plato writes in the character of Socrates, claiming that the written

word cannot defend itself or explain itself, that it has no audience.

> Once a thing is put in writing, it rolls about all over the place, falling into the
> hands of those who have no concern with it just as easily as under the notice
> of those who comprehend: it has no notion of whom to address or whom to
> avoid. (275)

The truth, he continues, is found in speech:

> A discourse which is inscribed with genuine knowledge in the soul of the
> learner; a discourse that can defend itself and knows to whom it should
> speak and before whom to remain silent. (276)

Phaedrus asks "Would it be fair to call the written discourse only a kind of ghost of [oral

discourse]?" To which Socrates responds, "Precisely." (276). This dialogue affirms what

Plato believes, that speech is primary, that the role of rhetoric is the pursuit of truth, and that only through speech and dialectic can the truth be discussed and understood. But, ironically, as Neel points out, Plato's words are written, not spoken, or they could not be preserved to remind us for the next several thousand years that speech is primary and that writing is only secondary. Neel sets out to "silence" Plato's voice, and to "save" writing from philosophy by liberating it from both Plato and deconstructionist Jacques Derrida. Once so liberated, writing can be a legitimate field of study on its own (Neel, 1988).

Derrida would seem at first to appeal to those who wish to liberate writing from the Platonic tradition and recognize the significance of writing, in essence legitimizing what thousands of composition practitioners and researchers do—teach and study writing. But Derrida's philosophy goes too far the other way according to Neel. If Plato had a negative influence through his claims that truth cannot occur in writing, Derrida's demonstration that philosophy never escapes writing or rhetoric is equally negative.

> Thus from the perspective of rhetoric and writing, Plato and Derrida are two moments of the same maneuver. One argues that truth is a possibility and then sets out on a quest whose destination is the end of the human condition. The other shows that any sort of claim to truth conceals not only from its reader but also from itself the process of differance that forever prevents truth either from appearing . . ., or from having a place in which to appear . . . (Neel, 1988, p. 203)

Neel's purpose in confronting and deconstructing these two philosophies is an attempt to position composition studies outside of philosophy. He turns to the sophists (whom Derrida also calls upon) for his view of rhetoric as "the prior medium in which the possibility and impossibility of truth play out an endless struggle" (Neel, 1988, p. 203). Favoring a view of writing pedagogy which will engage students in strong discourse to persuade, Neel admits to his own inherent sophistry. Derrida's deconstruction of Platonic thought and logocentrism has encouraged, and should continue to encourage, composition researchers and practitioners to move past the neo-Platonic notion of

writing as divine inspiration toward more pluralistic and collaborative views of writing and writing pedagogy (Neel, 1988).

Like Heim, Ohmann (1985) critiques computer technology as having negative results. Technology, he claims, is imbued with the political ideologies of the powerful. He objects to the implication that technologies interact with people in "global, undifferentiated" ways when in fact technological determinism is a powerful ideology in itself. The computer may be an advantage for those who are already advantaged, but not for the marginal groups who have no recourse within the capitalist system. And Ohmann sees the potential of technology as a political question, not strictly a technological one. But it is also an economic question as recent attempts to link public schools in North Carolina to the state's "information highway" show. The cost of linkage is high and may be impossible for the state's poorer districts, essentially eliminating the very districts who were supposed to benefit the most, and further marginalizing already marginalized groups ("Tolls for computer link," 1995).

Discussions about computer technology and its potential influences, both positive and negative, then, have heightened our awareness of technology in general and its role in culture, in writing, and in restructuring human consciousness. As Slatin (1990) suggests, the configurations of electronic technology may in fact make it difficult to ignore. The technology may even intrude on the process of writing, becoming an active participant in composing. Users may be very aware of the hardware and the interface, especially since screens may be difficult to read or show only part of a page (Haas, 1989). Users may also become aware of the computer as the technology demands new responsibilities of writers. They become designers, typesetters, and publishers, for example, and have more control of the page (Sullivan, 1991). As Sullivan reminds us, "that act of controlling visual and verbal meaning changes the definition of writing and potentially challenges theories of composing" (1992, p. 137). If so, then, this technology

can no longer be dismissed or ignored and must become part of the conversation in rhetoric and composition.

There are others who disagree, of course. Discussions on electronic bulletin boards, or listserv groups, reveal a different point of view. Shroeder (1992) claims that the computer is essentially passive, just as all media are and maintains that "the interaction between a person and technology are the focus of journals like *Human Computer Interaction*," implying that rhetoric and composition journals should not discuss that interaction. Others are not convinced that the process or the product of word processing is substantially different from typing, looking at the computer as merely a sophisticated typewriter (Bowman, 1992). Neither the "interaction" between writer and technology nor the technology itself is significant and, as a result, they do not need to be the subject of further inquiry. Revealing their pro-print bias, these practitioners and researchers support a neutralist view: technology only functions as the medium for transferring information.

Indicative of the contrast between technology enthusiasts and its detractors is the conversation surrounding the use of computer-assisted instructional aids (CAI). Research and discussion of CAI show that researchers and practitioners want to use the computer to help the student. At first, the computer was generally seen as a writing tool which could have a positive effect on student writing. The computer facilitated writing and revising, making it easier and quicker. And instructors wanted computer programs to help the student at all steps in the process; invention aids, text analysis, style and spelling checkers, all were encouraged as aids for the student writer. Word processing itself was not highly rated as an instructional tool. Instead, instructors looked for the programs which aid instruction, invention, and analysis of student writing (Rodrigues & Rodrigues, 1989). The ability of instructors to program and to create their own computer instructional aids also seemed to be a priority. And researchers also promoted programs

to allow for computer-assisted evaluation for the instructors—mechanical, computational analysis of text.

David Dobrin (1989) critiques supplemental programs, or "computer writing tools," which attempt to digitize various processes such as invention, spelling, editing, proofreading and text analysis, and concludes that these processes are difficult to reduce to a set of rules which apply to every writing situation. However, he limits his critique to these writing aids and fails to consider the various components of computer technology (configuration of the monitor and keyboard, or the user interface, for example) and their effects on the writer. Dobrin does express a point of view about computers and computer-assisted instructions which others echo.

Dobrin "cheerfully," he claims, puts himself in the tradition of anti-technology, the tradition of Heidegger and Heim (1989, p. ix). He specifically objects to the process of abstracting and generalizing about writing which fails to consider the context of expression and experience, an objection which seems to arise from a concern about the technologizing of writing which the computer fosters and encourages. He argues that programs which try to replicate the activities of the human mind will fail because they respond to form rather than meaning. The computer should open up new possibilities for writers and not simply take over "boring and mechanical writing and editing jobs" (Dobrin, 1989, p. 156).

But Dobrin's objections also go deeper. Inherent in his text, just as in Heim's, is a skepticism not only of computer technology, but of the notion of writing as a technology. While Dobrin makes valid points about the software available for instruction, he limits his understanding of instruction in computer writing to programs he can find fault with. As he provides an important critique of those programs, he seems to dismiss the computer as a tool for composition instruction.

In contrast to Dobrin, Helen Schwartz and Joel Nydahl encourage the use of supplemental programs in computer writing instruction. Schwartz, in particular, is singled out for her continuing support of invention aids and networking in the composition classroom, recognizing the need for instructional aids which are compatible with students needs and abilities and the instructors pedagogical views and theoretical concerns (1987). At the same time, Schwartz is sensitive to the convenience afforded by "computer-managed instruction," and cautions us to see that computers are used with the students, their needs and abilities in mind (1990, p. 19). To that point, she encourages the development of tutorials based on a student's own work. If instructors rely on the presumed infallibility of technology, they not only put the computers in control, but the computer, and the instructor in turn, may be privileging one method or process. Flexibility is the key in a process as complex as writing (Schwartz, 1990). For Nydahl, the word processor is a "tool whose full instructional capabilities most writing teachers haven't discovered" (1990, p. 104). The advantage of using CAI is the development of higher order thinking skills in students. By writing their own CAI programs teachers can retain control of their teaching tools. Nydahl believes that the CAI potential of word processors can realize what Schwartz suggests: "sophisticated instructional aids in any writing context" (Nydahl, 1990, p. 907).

Ironically, Dobrin's criticism of CAI programs doesn't seem so far removed from Schwartz's and Nydahl's position. They each maintain that the context for the use of CAI is significant and that the software available may be imperfect. Dobrin chooses to give up at that point. Schwartz and Nydahl, on the other hand, as well as Lisa Gerrard (1989), John Theismeyer (1989), and Paul LeBlanc (1993) encourage a positive approach to finding ways to use the computer as an instructional aid by writing better programs or creatively using the capability of the word processor. The critiques of CAI by its proponents point out the limitations of the programs, but encourage and foster further

development of CAI programs which can be used to aid the student without giving them a mechanistic, simplistic or inflexible view of the writing process.

These and other researchers continue to examine and critique computer technology and are not content to dismiss the significance of any technology to human development. Kaplan (1991) laments that technologies prior to the computer have not undergone the scrutiny to which we have subjected the computer. For example, pedagogical delivery systems, including pens and paper, printed books, blackboards, projection devices, etc. have not been studied or critiqued for their ideological implications. Other critiques are questioning the potentially negative aspects of electronic technology, such as how marginalized groups may not be empowered by networked communications (Takayoshi, 1994), and how the technology can be designed or used to continue the oppression of certain groups (Janangelo, 1991).

The question of the values which may or may not be inherent in computer technology can lead to closer examination of the metaphors which govern its development and use. For example, a recent critique of computer interfaces reveals that capitalistic underpinnings, which Ohmann laments, exist in the Macintosh interface (Selfe & Selfe, 1994). The Macintosh system uses the "desktop" as its organizing metaphor, mapping implicitly and explicitly the values of a capitalistic culture. By associating with the corporate world, the desktop icons represent the values of professionalism familiar to the white-collar world: documents, files, folders. (Selfe and Selfe point out that the interface does not represent the world as a kitchen, a workbench or a subway station, all very different workplace environments than an office.) Selfe and Selfe's critique demonstrates the power of tools, that they can and do restructure "fundamental ways of thinking about and understanding the world, . . . [and] the metaphors with which we create and express the world" (Kaplan, 1991, p. 15). These structures are not natural, however, but are determined by the interaction of cultural,

political, and technological elements. Nor are these structures and the technology that helps to establish them neutral, for, as can be seen even in the simplest icons on the Macintosh desktop, ideology and values exist within the technology.

But as a society, we do not have to be limited by a unrealistically positive or a ominously negative view of technology. As computers increasingly become the instructional tool of choice in the composition classroom, and the writing technology of choice outside the classroom, it is crucial that practitioners in rhetoric and composition understand both positive and negative effects of the technology. Following initial optimism about the computer as an instructional tool, research has shown that positive results are not guaranteed. Negative aspects of electronic technology exist, and continuing examination and critique to identify how the computer affects writers and readers is necessary. One influence of the electronic-aided publishing technology which is the focus of this study is the impact of visual elements on both the processes and the products of writing, encouraging writers to be more aware of visual issues as they write and incorporating visual decisions with verbal decisions in a text. The next two chapters will discuss electronic-aided publishing technology 1> as a visual medium, one which integrates verbal and visual components, and 2> as a convergence of rhetoric and composition and visual design.

CHAPTER 3

A WRITING SPACE OF ELECTRONIC-AIDED PUBLISHING

The term "writing space," used by Bolter in his discussion of the electronic writing environment, is defined as "the physical and visual field defined by a particular technology of writing. . . . Each technology gives us a different space" (1991, p. 11). Ancient writers wrote on the inner surface of a roll, while the space of print technology is the white surface of a page. The writing space in the electronic environment is both the screen that displays the text and the memory which stores it for later retrieval. The permanence and stability of the printed text give way in the electronic writing space to fluidity and impermanence (Bolter, 1991).

Electronic-aided publishing technology represents just one application and use of the electronic computer technology available to writers. A writing space of this technology is different from the blank page of print or the screen of other computer technologies, providing options for writers unavailable, or less accessible, to them with other technologies, and at the same time limiting some of those options to the capabilities of hardware systems and software applications. While electronic-aided publishing is an electronic technology, it is also a point of convergence for the electronic and print cultures. It produces a printed text which conforms in many ways to the conventions and expectations of the print culture; for example, printing capabilities may limit page setup to conventional sized paper—letter or legal. But this technology does operate within the electronic environment; it may be networked to other computers, it can produce online texts, and it represents fluid, impermanent, and malleable text on screen. In addition, this technology with drawing, page layout, and spreadsheet

66

programs offers a writing space that integrates visual components of text into the writing process as few other technologies can. Because of its visual nature, it can influence writers and writing processes as other technologies do not, though the exact effects vary with the writer and the writing situation.

Several operating systems and countless software applications are available to writers, and the choices offered by the technology govern the writing space and the options offered to writers. This chapter will describe and discuss one instantiation of electronic-aided publishing technology, both hardware and software, which was used to produce this study as a document. It will also illustrate the opening screens of three software applications (a word processing, a drawing, and a page layout program) and discuss their interfaces. The purpose of this chapter is to illustrate and discuss the visual nature of this electronic writing space.

I maintain that the technology used to produce a document can influence the decisions which the writer makes in the course of producing text. Therefore, the potential of technology as well as the constraints imposed by it are significant to the writer, and makes critique of the technology necessary. Recognizing both advantages and limitations is important to understanding how the technology can be used. While the blank screen of a computer file may be reminiscent of the blank piece of paper which faces the writer, the commands that create computer-generated text are certainly different than handwriting and more complex than typing, even though the computer keyboard is based on a typewriter keyboard. Another reason for looking at this writing space is its graphical or visual nature. In 1988, John Ruszkiewicz suggested to readers of *Computers and Composition* that the computer technology which was being developed and used at the time, desktop publishing (or electronic-aided publishing), would need their attention. He called for recognizing the graphical and visual nature of the technology and its reshaping of how the book is written. This technology, he claimed, had the ability to

enhance and stimulate the imagination, and enlarge our understanding of writing and/or composing. He encouraged his readers to think of "more innovative uses for the *imaging of the word*" than merely creating better looking newsletters and reports (p. 10). The screen becomes a palette, and the applications encourage creating and merging images with text. Our view of writing may be altered by the integration of words and images, enhancing our visual sense and our understanding of the interaction of the senses (Ruszkiewicz, 1988).

The first section of the chapter discusses the historical significance of the use of icons, as well as the implications and inherent values of the metaphors used in computer interfaces. In the remainder of the chapter, I will describe and discuss the interface and writing spaces of the Macintosh operating system and three popular and common computer programs: Microsoft Word 5.1, Claris MacDraw Pro 1.5, and Aldus PageMaker 4.0.

Computer Interfaces. Icons. and Metaphors

Several reasons exist for looking at computer interfaces and the metaphors which govern them. I have presented arguments that technology is not neutral or value-free, nor is it transparent. The values inherent in a technology are identified through the metaphors which provide members of a culture with the means to understand the technology, such as the "book" of print or the "web" in hypertext. The desktop metaphor of one computer interface privileges the office and corporate values, as the use of icons foregrounds a revival of the relationship between visual and verbal components of text. The use of icons is not unique to electronic technology, but, in fact, has an historical precedent. And the icons themselves may force users to think about the technology as they write, and may not allow them to look through the technology at all.

Richard Lanham (1993) suggests that the pixeled print of electronic writing forces us to look at the symbols we create as well as looking through them. Lanham is

suggesting that electronic media, including writing technology, is not, and probably cannot, be transparent, for its very nature entices the writer to be acutely aware of the electronic screen and its dynamic nature. And Slatin (1990) reminds us that not only is electronic text fluid and impermanent, but the technology itself is unstable and always changing.

The use of icons is not new or unique to electronic writing. Both Lanham (1993) and Murray Krieger (1992) discuss the use of icons in ancient Greece called "ecphrasis" (also spelled "ekphrasis"). The early meaning given to the term, around the 3rd and 4th centuries AD, was unrestricted and meant a "verbal description of something, almost anything, in life or art" (Krieger, 1992, p. 7). It served as a rhetorical device to intrude the flow of discourse and force attention on a visual object which would be described in vivid detail. Its intent was to interrupt the temporality of discourse, and to freeze it for spatial exploration (Krieger, 1992). Lanham (1993) describes "ecphrasis" as "dynamic speaking-pictures in words" used to preserve the rich vocal and gestural language of orality. So the icons used in the graphics-based interface of the Macintosh operating system represents another manifestation of the alphabet/icon ratio and a return to the complex icon/word interaction of oral rhetoric. The integration of visual and verbal components of text and meaning which is available through electronic writing technology minimizes the transparency of the technology and makes us self conscious not only about the screen or writing space itself but also the text on that screen: the size and shape of letters, the movement of words on the screen, the pictures and words which enhance one another. The electronic space calls into question the print-based culture's assumptions and conventions about text, for the complex interaction of word and image has always existed, but it hasn't been as significant during the age of print. Some authors in the print age have attempted to force their readers to look at the technology. For example, according to Lanham, Kenneth Burke's "Flowerishes," or doodles, in which he

forces the reader to turn the book round and round in order to read the page violates the transparency of the technology—the weight and size and shape of the book itself is more evident to the reader—as the changes in typeface and size, and the circular, not linear, movement of the text challenge other print-based assumptions (Lanham, 1993).

As we strive as a culture to be democratic and egalitarian, the behaviors and actions we deem innocent may, in fact, be discriminatory. For example, we have recognized the use of the generic "he" as sexist and discriminatory language and now try to avoid it. We may find it necessary to question the motivation of some of our actions and behaviors. Dramatic presentations on television and film often challenge us, as individuals or as a culture, to question the inherent, and often transparent, cultural assumptions about people and situations.

We may also be motivated to question tools we use for writing and writing instruction. Cynthia Selfe and Richard Selfe (1994) have examined a computer interface and the desktop metaphor which governs it, looking for the political and ideological boundaries that are associated with computer-based composition. They succeed in describing an alternative vision of the computer, one which counters the typically optimistic, and reductive, view of the computer as a positive and progressive technology which will aid students' writing and empower marginal voices. The graphics-based Macintosh interface uses the desktop metaphor, framing reality "in the perspective of modern capitalism [and] orienting technology along an existing axis of class privilege" (Selfe and Selfe, 1994, p. 486). The reality represented by the desktop, or office, metaphor privileges white-collar, corporate culture. The objects (icons) on the desktop and terminology used continue the metaphor: files, folders, documents, windows, calculator, clock, desk calendars. The act of putting letters on the screen is referred to as "typing" and "commands" can be activated through keystrokes.

There has been little formal resistance to this interface to this point. But as computer technology becomes more accessible, how will users unfamiliar with the office/business environment feel about the technology? Metaphors, although useful for understanding complex ideas, can also be constraining, can put up boundaries that freeze a concept and limit it (Eldred and Fortune, 1992; Selfe and Selfe, 1994). Computer interfaces serve not only to reform and democratize, but are also "sites within which the ideological and material legacies of racism, sexism, and colonialism are continuously written and re-written along with more positive cultural legacies" (Selfe and Selfe, 1994, p. 484). And what these interfaces, as cultural maps, do not reveal is as enlightening as what they do reveal. They ignore ethnic, economic, and linguistic diversity of the American culture, even though the computer is often regarded as an egalitarian and liberating technology. Recognizing both the ideology of the interface and also the limitations of the metaphors which drive it is necessary for continuing assessment of computer technology for writing instruction. In our attempts to provide egalitarian education, we have to be aware of the tools we use, because tools are not innocent, nor value-free, just as our pedagogy is not.

The graphics-based interface of the Macintosh system uses the metaphor of the desktop and corresponding windows, folders, and files for the organization of the documents on the hard drive and floppy disks. In addition, comparisons to the typewriter and the business of typists, once an important aspect of office environment, are inherent in computer technology, for the keyboard itself is based on a standard typewriter keyboard and computer commands can be executed through keystrokes, and only through these keystrokes in some operating systems. The metaphor is further supported by a relatively recent file management program called Microsoft Office, once again generating an understanding of computers based on the office environment. While this metaphor may be accessible to white-collar employees, it may not be appropriate

for others whose knowledge of and exposure to that particular workplace is marginal or only negative. Imagine the desktop redesigned as a kind of bureaucracy. Our willingness to buy into that metaphor might be severely limited by a common view of bureaucracy as unwieldy and unproductive. On the other hand, with another metaphor the desktop might become a counter top in a kitchen with various cabinets and shelves available for storing information and some potential users might be more comfortable with this association. But, choosing a representative kitchen which is identifiable for all users can raise yet another set of cultural and social issues, for not every kitchen is exactly the same.

Originally, writing instructors imagined primarily positive benefits for writers using a computer, but that initial optimism has been tempered by research that reveals both negative and positive effects on writing. In much the same way, the seemingly innocuous metaphors of the computer interfaces have gone unchallenged until recently. It should be noted, however, that the metaphor of the Apple system is not completely office-oriented. Across the top of the screen are "menus" and a "toolbar," neither of which are directly connected to the office/desktop environment. Yet the icons on the toolbar and the concepts listed on the menus are part of the office and desktop. The purpose of the icons, to make many often used commands readily accessible, serves not only to make the technology opaque, but also to endorse the visual nature of text. Writers are reminded constantly of visual markers, such as typographic or formatting options, and those visual markers can become part of the writing process, not merely an afterthought.

The Macintosh SE

The computer which runs the programs I am using to write this dissertation is the Apple Macintosh SE. Repackaged and named the Classic in 1992, this machine is a compact-model Macintosh: a central processing unit (CPU) and 9-inch monochrome

monitor built in. Originally equipped with two disk drives, an internal hard drive (80MB) was recently added by the university. This system is also equipped with an Apple Super Drive, an external disk drive which is capable of handling the 1.4MB high density disks. The keyboard is a standard Macintosh one, without the function keys, cursor-control keys and arrow keys of the extended Macintosh keyboard. The system also uses the standard Apple mouse.

Although the Mac SE is an older machine, the addition of the internal hard drive allows the user to run many of the applications run by the newer machines. Further, the interface of this older machine does not differ from newer machines, and the metaphors which are incorporated into the system and the software remain the same. However, there are physical limitations to this particular computer. For one, the small monitor prohibits the user from seeing more than just a small portion of the page. Right now, as I use the computer, I can see only 8 lines of double-spaced text, although it helps that the screen display is black-on-white, mimicking the printed page. Microsoft Word (the word processing program) has a print preview command which allows me to view the page as a whole—either one page or two consecutive pages. I can "Zoom" in to see a small portion of a page to check details, but I cannot make changes in the text without closing print preview. A larger monitor which allowed me to view more lines of text would be an advantage, although a full-page monitor would be preferable.

Another limitation is that the printer linked to the SE is a 24-pin dot-matrix, which provides acceptable draft copies, but does not match the quality of the inkjet or laser printers. For printing final copies, I use a Macintosh Quadra 650 computer linked to an Apple LaserWriter. With this flexibility from one machine to another, the limitations of the older machine are less significant, although the speed of the different machines becomes apparent in simple operations such as spelling checks and saving files. And the SE is much slower as I open and access more windows. Because of its compatibility with

newer models and updated versions of applications, this system can be used to examine the visual nature of one electronic-aided publishing system.
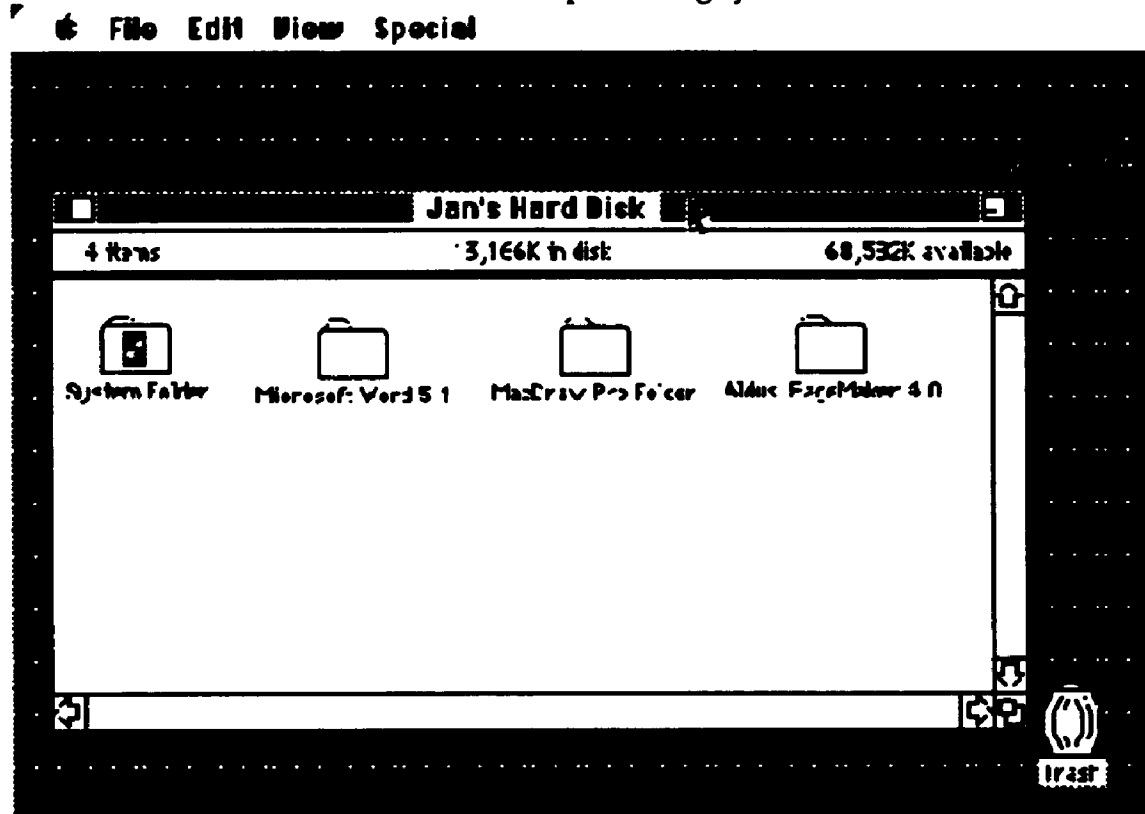
🍎 Fil̦e Edit Biew Special

Figure 3.1: Macintosh desktop

Originally the Macintosh was packaged with a text editing program, a choice of type styles, and a bit-mapped drawing program, programs integrated to allow the interchange of graphics and text among files and made it the centerpiece of desktop publishing (Ziv 1987). Figure 3.1 above shows the Macintosh desktop configuration with the hard drive window open. Each program's folder may be opened to reveal its representative icon and other files (see Figure 3.2 below for an example of the Word 5.1 folder and logo). Other features of the Macintosh system are the pull-down menus, and the mouse, the pointing device which drives the pointer arrow. The use of the pull-down menus and the standardization of functions, such as *new* file, *open* file, *print*, and *quit* application, across programs was heralded as a major benefit of the Macintosh design

(Ziv, 1987). In addition, the desktop is accompanied by accessories such as a scrapbook (a system-wide neutral zone for storage of data), a calculator, and a control panel (to allow for customizing the system).

Other Operating Systems

The Macintosh is not the only computer platform available for electronic-aided publishing, or other computer-supported writing. The IBM Personal Computer and its compatible systems (IBM PC/XT/AT family) are run by an operating system called MS-DOS, or the more recent OS/2. While the Macintosh is highlighted by simplicity and consistency among programs, the PC allows for operating flexibility through a wide variety of programs, printers and other accessories which can be added to the system. The DOS system originally was not driven by a pointing device like the mouse, but used keystrokes. Now, a mouse can be added. The text-oriented DOS environment is a single-task operating system, limits the ability to manipulate type without special print codes, and does not allow for interchange between bit-mapped graphics and text (Angermeyer, 1987; Margolis, 1987). Even though the DOS environment can be more complicated, its flexibility in long term expansion and customization is a plus (Margolis, 1987). Yet, it does not have the visual environment of the Mac interface, for it relies on verbal commands whether accessed through keystrokes or a pointing tool.

Microsoft Window environments replicate the Macintosh platform for the IBM PC and compatibles providing the interfaces necessary for the interchange of text and graphics. Like the Mac, keystroke commands are supplemented by icons, buttons, and menus, activated by a mouse. MS-Windows, for example, is a multitasking operating system, allowing for several applications to run at the same time (Angermeyer, 1987). This multitasking environment gives the PC more flexibility than with DOS and matches the visual quality of the Macintosh interface.

The UNIX system is also available for a variety of computer-supported writing, including electronic-aided publishing. This networked system runs on a variety of machines, both PC and mainframe terminals. It is a multiuser and multitask operating system, with sparse programs which can be customized and manipulated by individual users (Richey, 1987). Generally, the software available for UNIX systems has lagged behind Macintosh, DOS, and Windows, but by 1992, the ASCII character sets and monospaced typefaces, which once characterized UNIX systems, were being supplemented by graphics and image retouching programs, and other applications, used for electronic-aided publishing (Reynolds, 1992).

Each of these operating systems brings with it different interfaces, applications, and options for writers. An examination of the opening screens of three Macintosh programs will illustrate a writing space for the users of one system. In this system, the first decision faced by writers is the choice of program. They are not limited to word processing or text editing programs, but can opt to begin with page layout or drawing, fostering the notion of the visual, as well as verbal, text. This decision will depend on the type of document to be prepared and becomes part of the writing process. For this study, I begin with the word processing program and Figure 3.2 above shows the Word folder with the Word logo darkened and the program ready to open with a double click of the mouse.
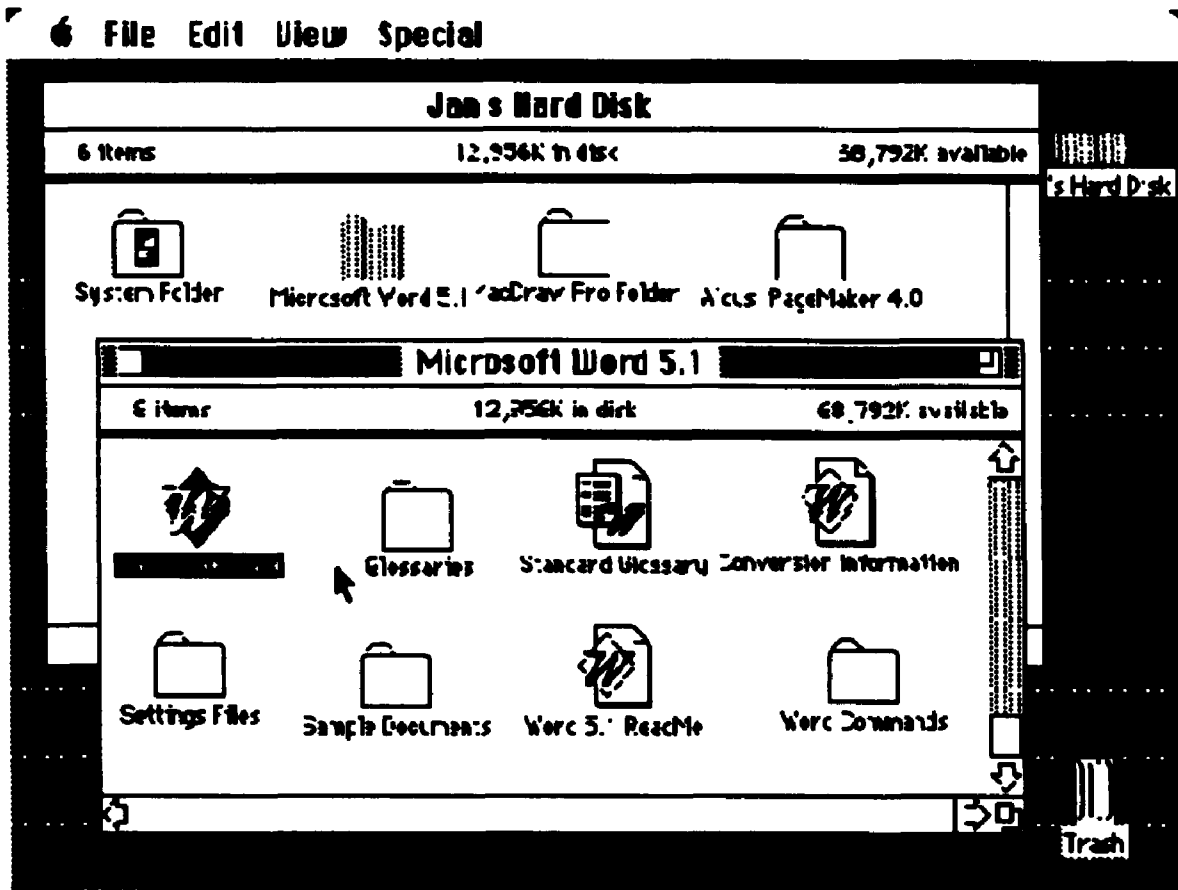
Figure 3.2: Macintosh desktop with Word 5.1 ready to open

Word Processing with Microsoft Word 5.1

Word-processing, the electronic production and manipulation of words, refers to the use of the computer to prepare a written document (such as letter or manuscript) and to the software program used to produce that document. Word processing programs come in many different configurations and can be used for a variety of tasks.

Microsoft Word 5.1, the program I am using, is a popular and highly regarded word processing program. It is used in the publication of a variety of journals: *Before & After*, a design and how-to magazine for computer graphics and layout; *Publish*, a journal about the technologies and processes of graphic design; and *The New Yorker*, a well-known literary magazine which switched to electronic-aided publishing in late 1990 (Martin, 1991). The 1992 *Publish* magazine's Reader's Choice Awards named Microsoft

Word as the word processing program of choice for Macintosh users for the 4th straight year, and second choice for PC users. Word generally receives positive reviews as it did early in 1992 with the latest updates both for Macintosh (Word 5.0) and for PC Windows (Word for Windows 2.0). Already considered "the best of the Mac word processing programs" (Spotlight, 1991, p. 85), these updates increased the capabilities of the current Word program and made them easier to use. Tests by the reviewers revealed "that [the programs are] also better than ever for simple layout tasks, with improved column control and built-in drawing programs. [The user] won't give up [page layout programs], but Word's formatting features are now powerful and accessible" (Raucci, Thomlinson, Worthington & Widman, 1992).

The opening screen of Microsoft Word 5.1 (Figure 3.3) illustrates a writing space which is far more complex than the plain or lined surface of an 8 1/2 x 11 inch sheet of paper, but it has become a common space for writing. Across the top of the screen are the pull-down menus, similar to the menus already seen on the desktop, but unique to the word processing program. Also, the toolbar now appears, which will be seen in the writing space of this and other applications. The toolbar consists of a row of icons representing the commonest operations, such as opening a new file, printing, saving, copying and pasting, and checking spelling. The user needs only to click on the appropriate icon to issue a command. The operations in the menus and on the toolbar may also be run from the ribbon and ruler icons, and some with keystrokes as well, providing options which will allow users to find the method they are most comfortable with. The toolbar may be customized by the individual; that is, the user can replace an icon and corresponding command in order to make it more convenient or usable.

These toolbar icons attempt to represent the verbal command through a picture. The second icon from the left on the toolbar, for example, shows a folder with an arrow to mimic its being opened; clicking on it will "open" an already named file. Moving to the

right, the scissors on the fifth button represent the command to "cut" a section of the file, followed by "copy" (two file icons), "paste" (a file on a clipboard) and "undo" (a pencil eraser). While these are not perfect word/picture correspondences, as icons seldom are, they are sufficient to make a connection.

While the icons themselves add to the visual nature of the interface, some of the icons represent options for visual elements of text. The third group of icons, for example, represent adding bullets, moving blocks of text, and creating an envelope. To the left of the icon for spell check (ABC above a check mark) are representations of commands for changing upper/lower case, adding borders, and raising and lowering point size, all visual elements of text, and significant to the look and design of a page.

This toolbar, although typically seen at the top of the computer screen, can be placed vertically either left or right of the screen, or can be hidden. Repositioning or hiding the toolbar changes the screen configuration and provides yet another writing space. Screens larger than the one I am using will have additional icons on the toolbar, providing access to even more formatting options. Finally, users can customize the toolbar, replacing seldom-used icons and the corresponding action, with other icons and commands. This will not only change the look of the toolbar, but can increase the use of the toolbar. For example, I can replace the "create envelope" icon with one for "print preview," a command I use quite often so that I can see a whole page or two pages and consider the margins and spacing on the page. The "look" of a document can be judged even with the limited viewing space of this particular screen display.

Below the menus and toolbar, and taking up most of the screen space, is the file window. Figure 3.3 illustrates the opening page of a new untitled Word document. This screen has both the ribbon and ruler showing, although either one or both may be hidden. The icons, like those on the toolbar, provide easy access to many of the operations.
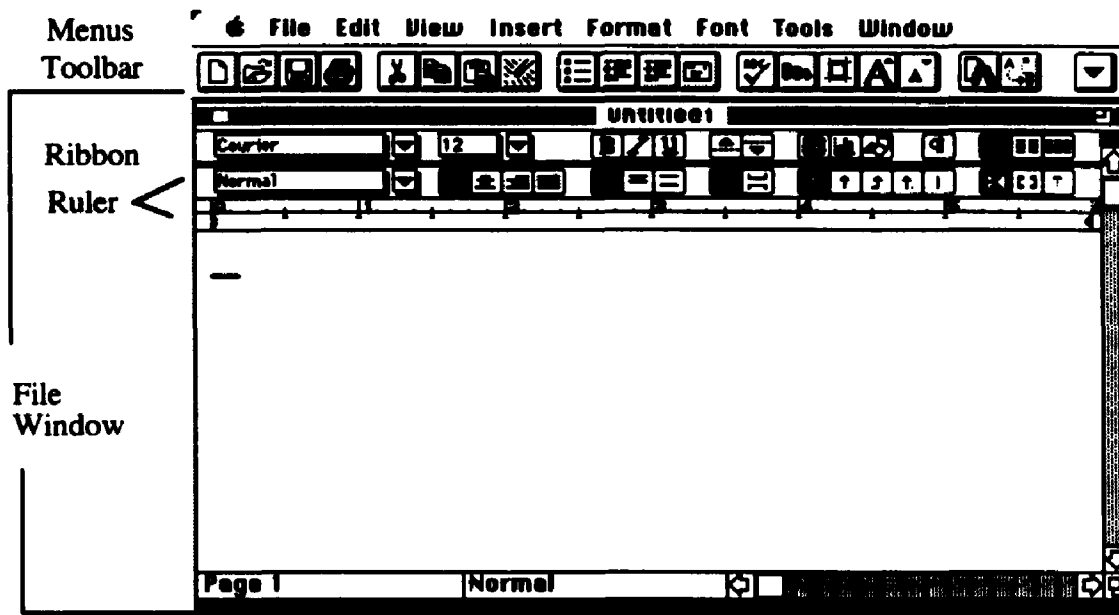
Figure 3.3 Opening Screen: Word 5.1

The ribbon identifies the font (Courier) and provides a pull down menu (the arrow) for other font choices. To the right, the point size (12) also has a pull down menu for changing it. For point sizes not listed in this menu, the writer can use the pull-down menus: **Font** or **Format/Character**. The next three icons to the right represent methods of emphasis—bold, italics, and underline—followed by two icons for superscript or subscript and three icons for inserting a table, a graph or a picture, which can be drawn in the program. The ¶ icon represents the outline view which shows paragraph markings, and, finally, the right end of the ribbon has three icons for the number of columns (1, 2, or 3) the writer may wish to set the text in.

Below the ribbon, the ruler also provides other formatting choices or commands through the use of icons. Beginning at the left again, "Normal" names the style presently in use (named also at the bottom of the screen) and the arrow indicates another pull down menu to select other styles the writer has created. A writer may want to define a style for "Headings," for example, which might center the text and underline it. Continuing to the right are four icons to represent text alignment, three for line spacing,

and two for spacing between paragraphs. The next five icons may be used to insert tabs and vertical lines, and the three icons at the right end of the ruler can change the active ruler scale. Through the menus, toolbar, ribbon, and ruler, as well as keystrokes, Word provides a variety of ways for the user to issue commands according to the individual user's preference. These choices for issuing commands also makes the formatting and design capabilities of the computer more obvious, perhaps making the text and the way writers think about text more visual.

The shaded bars on the right side and bottom of the screen allow the writer to scroll up and down and left to right. The double box on the bottom right corner allows the writer to change the size of the window, the lines across the top will move the window (so that another window may be viewed at the same time), and the upper left box closes the window. All of these commands are activated with the mouse, and all reconfigure the writing space.

The file window in Figure 3.3 shows that this writer will be writing in Courier 12 with single spacing and left text alignment. This file has already been changed from the default font setting (Times 12). Other default settings can be customized, including line spacing, cursor movement, and reaction time of the click of the mouse.

Like toolbar buttons, those on the ruler and ribbon and the various icons on those buttons help to create a visual interface as they also encourage the consideration of visual issues as part of the writing process. But, also like the toolbar, the ribbon and the ruler can be hidden from view, once again changing the look of the writing space, making it less visual. But even then, the instability and fluidity of the text doesn't change. Writers can still change fonts and sizes, can still add borders and bulleted lists, can still cut and paste to revise text. Formatting and visual options are part of the writing process in Microsoft Word regardless of the configuration of the writing space.

The writing space for Word 5.1 is quite different than the paper which had served writers before the computer. Not only is the text fluid and impermanent, the writing space offers the writer several options which affect the visual presentation of the page. As word processing programs have developed, their writing spaces have become more complex, allowed the writer more choices, and encouraged new responsibilities. The commands I have described are not the only ones available to the writer, but reveal a few of the options the writer has in the writing space of one word processing program. However, one similarity between print and electronic spaces remains: the blank page to be filled by the writer.

One of the strengths of Word 5.1 is the drawing capability not available in earlier versions. Although limited in scope, this drawing capacity makes it much easier for the writer to incorporate illustrations into the verbal text. Instead of running another program and transferring the drawing back into Word, drawing and inserting an illustration can be accomplished with fewer steps. More complex representations may require an appropriate drawing or spreadsheet program, but these, too, are easily imported into the Word document.

Another plus of the Word program, and especially important to this study, is that formatting and layout decisions are treated as extensions of word processing rather than as separate functions. Formatting options can be integrated into the text as it is written. Columns and tables and other layout choices can be used without reformatting an entire text, allowing and encouraging these decisions to be a part of the writing process. For example, the writer can create a table (see either Table 1.1 in Chapter 1, or Table 4.1 in chapter 4) with a simple command from the Insert menu. The command outlines the rows and columns on the screen. Writers can easily add to text on any row or in any column, moving freely around the table with arrow keys. The size of the columns is also under the writer's control and can be changed through the icon at the far right of the ruler.

> This sentences is highlighted by a single line
> shadow box border with 10% shading.

Figure 3.4. Text with Border

Borders can be drawn around the table, and around other blocks of text as well. Borders can be used to highlight text (Figure 3.4 below) or to outline tables and other graphic representations. The border operations can be accomplished with a few clicks of the mouse and several options are available: different rules, shading within the box, and even a shadow box effect. After clicking on Insert/Borders, a dialog box provides the options for the user. Word reinforces the significance of the visual component of writing by providing easy access to the various options through its interface. The icons of the toolbar, ribbon, and ruler serve as a constant reminder of the formatting and layout options available.

Drawing with Claris MacDraw Pro 1.5

Painting and drawing programs are distinguished from one another by their orientation. Painting programs are bit mapped; that is, they are made up of black-and-white dots and can be edited pixel by pixel. Drawing programs, on the other hand, are object oriented and are stored in the computer memory by shape. Words, like images, are stored as objects and can be moved around and layered just as shapes can be, allowing for flexibility. For a novice, a drawing program is enough; for a professional, a painting program which allows the user to create and alter images in precise detail is more appropriate (Aldridge, 1987). Aldus FreeHand and SuperPaint have been the popular painting and drawing program choices for the Macintosh system, and Corel/DRAW and Publisher's Paintbrush for the PC, according to the *Publish* magazine poll (Readers' Choice, 1992).

A writer might choose a drawing or painting program for several reasons. Visual invention can be facilitated with the drawing programs, which can be used to diagram processes and show relationships between items. Flow charts, organizational charts, and simple illustrations can be created. Although Word includes a drawing capability, not all word processing programs do, and the writer may require SuperPaint or MacDraw, two popular drawing programs, to augment a system.

The drawing software I am using is Claris MacDraw Pro 1.5, an update of the original MacDraw program. Generally Claris wanted the graphics more accessible, and this update gives the user more control over lines and spaces, allowing the creation of more sophisticated artwork (Picarille, 1992). The opening screen of the drawing program is different from the word processing program. Not only are the tools and icons different, but the layout is also. (Figure 3.5 below is the opening screen of Claris MacDraw Pro 1.5.)
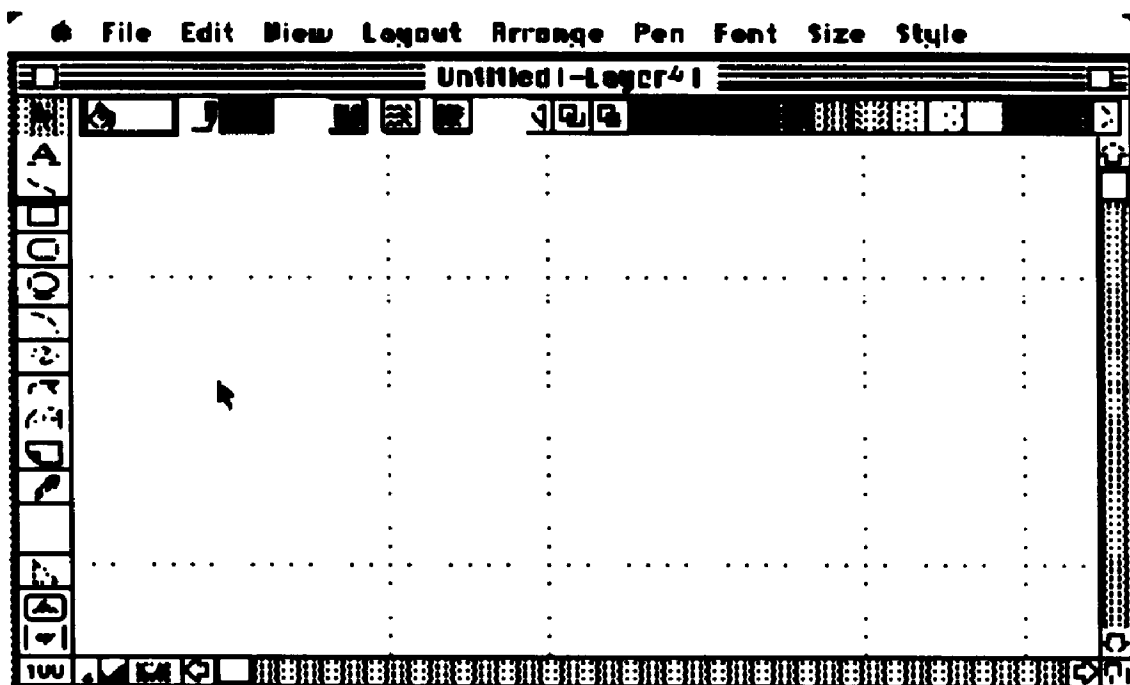

Figure 3.5. Opening Screen: Claris MacDraw Pro 1.5

The first difference that the writer will notice is that the opening screen is marked by gridlines, which can be locked or unlocked, to help the writer align the text and drawings. These may be hidden from view, changing the writing space. (The gridlines on the illustration below are not evenly spaced; this distortion occurred when I reduced the size of the original screen picture.) The toolbar along the left side of the screen allows the user to write text, to draw lines, and to draw various shapes. The tools are derivatives of those used by graphic artists and designers (Aldridge, 1987). Among the tools provided is a print tool ("A") so that text can be created. However, the user would probably find it difficult to "write" in this program--in the sense of sentences, paragraphs, etc. The print tool is intended primarily for labeling or other naming techniques, not for long blocks of text.

At the top of the file window at the right, the writer will find the patterns which can be used to draw lines or fill shapes. The paint can at the left indicates the chosen pattern (in this example, solid white). The number at the bottom left of the file window shows how much of the screen is in view and the icons to the right allow the writer to zoom in on certain parts of the drawing. Like the Word screen, the scrollbars to the right and at the bottom of the file window allow the user to move freely around the file.

The page setup command (found under the File menu) is different also than both Word and the page layout program, Aldus PageMaker (discussed below). Seen in Figure 3.6 below, the dialog box gives the writer standard size pages to choose from, and does not offer the option of setting margins. Page orientation can be changed from vertical to horizontal, as in both Word and PageMaker programs, while page sequence and slides are options unique to the drawing program.

In this Macintosh system Microsoft Word, Claris MacDraw Pro, and Aldus PageMaker are connected in several ways. They each have pull down menus and a toolbar. Tools and their icons are consistent across programs, although some have more

options. For example, MacDraw Pro, has more options and drawing tools than Word or

PageMaker. The menus and tool options change with each program, as does the look of

the blank "page," yet the screen layout is similar and many of the commands are

identical. Dialog boxes, such as Figure 3.6 above, are familiar to the Macintosh user.

Many options are handled through dialog boxes; page setup, place, and print
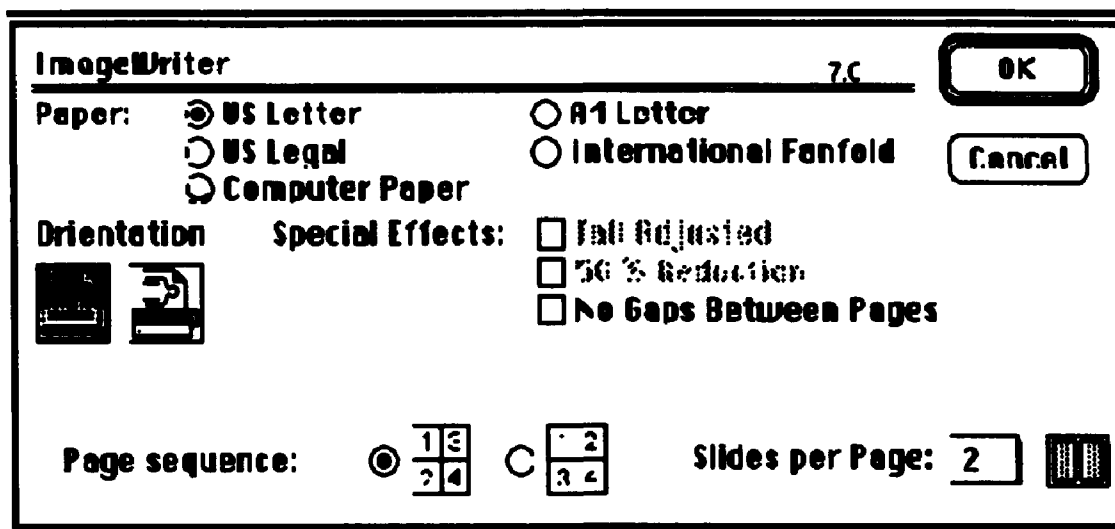
commands are just three examples.

Figure 3.6. Page setup options: MacDraw Pro

Text and graphics can be moved within a file through the clipboard and the cut

and paste commands, but these are overwritten with each new command. A file or a

drawing can be moved from one program to another through either the place command

or the Scrapbook. (The figures, or "screen shots" in this chapter, for example, were first

placed in a MacDraw Pro file for changes and then inserted in the Word file.) It would

also be possible to import the screens into a PageMaker file, then import the Word text

file, producing the entire chapter, or document, in PageMaker. Making this choice would

allow me to place the illustrations in specific locations in the document, and wrap the

text around them. The connections between and among the programs allows many

options for the visual presentation of text.

Drawing programs, such as MacDraw Pro, present a different writing space and option for producing text from word processing programs. Unfamiliar territory to many writers, the writing space of a program like MacDraw Pro privileges the visual and expands the notion of text and writing to include visual elements. The metaphors of drawing programs are the artist's palette and the tools of the graphic designer. Unlike Word with its fixed lines and boundaries, the writing space of the drawing program is unstructured. Writers move into a different paradigm for text as it becomes visual representation and a different paradigm for writing as it becomes collage art. The writing tool is only one many available, encouraging drawing rather than writing. The space of the drawing program constructs writing as visual representation.

Page Layout with Aldus PageMaker 4.0

In yet a different writing space, page layout programs bring design issues into writing and foster the notion of writer as publisher. Page design and layout, once limited to paragraphing, indenting, and headers and footers in word processing programs, is one of the software applications for electronic-aided publishing. Aldus PageMaker 4.0 is described here, although other page layout programs are available, including Ventura Publisher and QuarkXPress (used in the production of *Publish* magazine). While the programs may differ in available options and tools, the metaphor and paradigm of a page layout program is the primary consideration for this study.

Page design applications construct the writing space in the publishing/journalistic layout paradigm. Issues of design in terms of the underlying grid or framework, font choices and size, and visual interest are foregrounded by this space. Page layout itself involves more global decisions than word processing or drawing: the look of an entire document including headlines and section headings, the placement of graphics and text, the use of white space, and the consideration of other design principles are necessary. Formatting often involves more than a centered heading, or underlined sub-heading. The

use of facing pages means that the layout may not be limited to the two or three columns of one page, but text and graphics may violate the usual "page" markings for added interest and readability. For these reasons, a knowledge and understanding of visual design principles and practices and readability issues are important for designing documents.
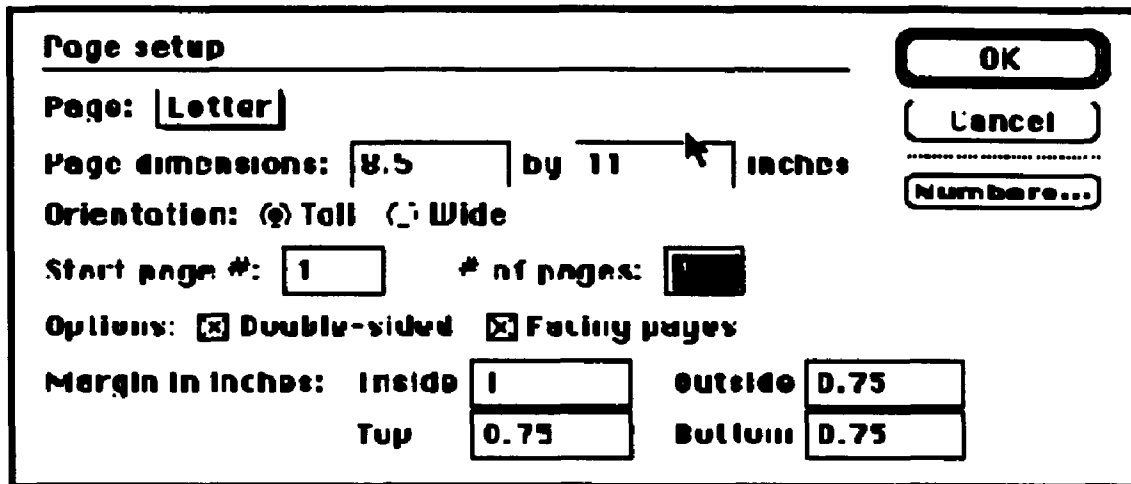
Figure 3.7. Page setup: PageMaker 4.0

The writing space of PageMaker differs in several ways from the other two programs discussed. To begin, the first screen that appears to a writer is the page setup dialog box (Figure 3.7). Before revealing the writing space of the PageMaker file itself, the program allows the writer to make several decisions about page size and orientation, as well as setting the margins. One difference from the Word program is the use of the terms "inside" and "outside" rather than "left" and "right" for margins. This change accommodates the options "double-sided" and "facing pages." The inside margins may be on either the right or left side, depending upon the number of the page. Once these setup decisions are made and the user clicks "OK," the new file will open (Figure 3.8).

Again, the writing space is different from that of both Word and MacDraw Pro. The writer sees the outline of a full page (with margins as a dotted line) ready to be filled with graphics and text, both of which may be imported from other programs. From

this screen the writer can place text or graphic any place on the page. The writer chooses the place file and finds the file to import into PageMaker. Once the command is given, one of the icons in Figure 3.9 appears on the screen and is ready to be placed within the margins of the page. Once placed on the page, the text or graphics can be moved to a set position, although it remains fluid and can be changed until the writer decides the text is fixed, and prints it.
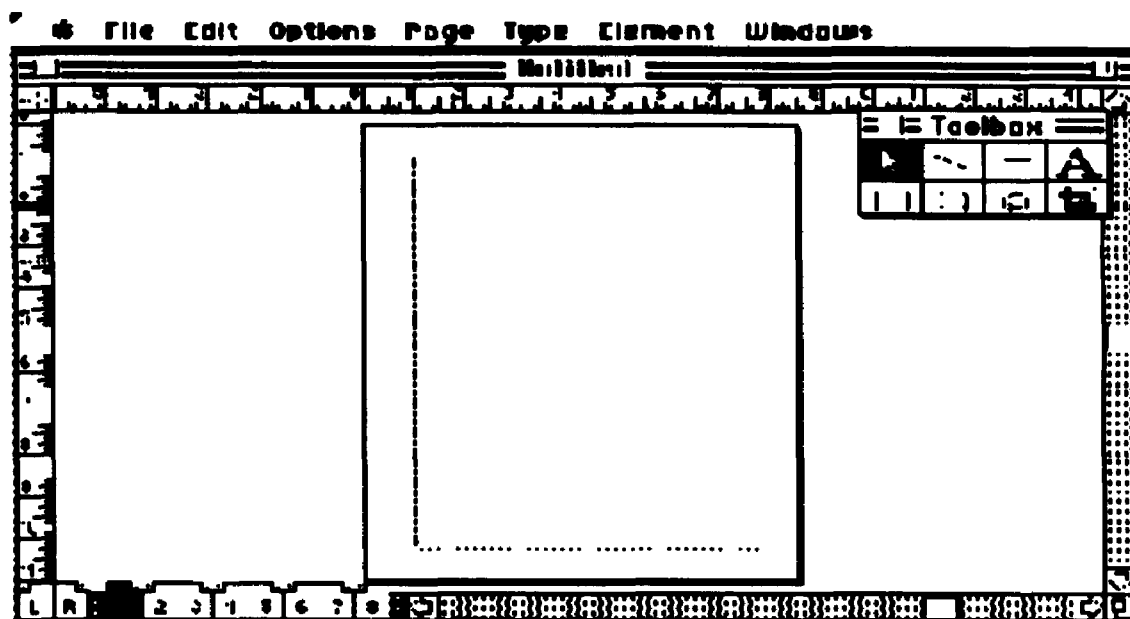

Figure 3.8. Open file: PageMaker 4.0

The drawing options and tools are more limited than those in a drawing program, but the primary function of the program is page layout. Complex drawings, graphics, and pictures may be imported from drawing, scanning, and spreadsheet programs. Although text can be created in PageMaker, the limitations of the print tool make it preferable, and easier, to write text in a Word file and import the file for arrangement into PageMaker. Short pieces of text, such as headlines, headers or footers, borders, etc. can be created in PageMaker and repeated on each page. Like the drawing program, PageMaker encourages the user to recognize writing as more than verbal text, and even

more than text plus visual representations. Writing in this space becomes designing, that is integrating words and pictures to create a text.
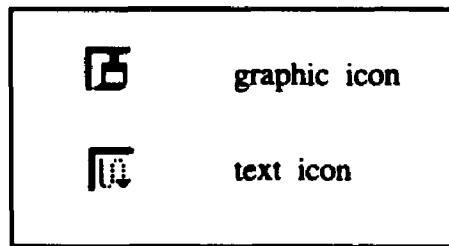

Figure 3.9. Place icons: PageMaker 4.0

In Figure 3.8, the bottom left of the opening screen of PageMaker shows the number of pages in the file. This particular screen illustrates an 8-page document with page 1 as a left side page. Adjustments can be made to change it to a right side page, and to insert and delete pages. The writer can treat facing pages as two separate pages or as one unit, placing text, graphics, or borders and rules in violation of standard margins. But, a variety of templates are offered by the PageMaker program, and the writing space of the program can change depending on the writer's choice of templates.

To facilitate placement of text and visuals, the page view can also be changed, altering the writing space in yet another way. The page may be seen actual size; less of the page is displayed on screen, but changes, especially in text, are easier to make, and precise placement of text and graphics is possible. As the writer uses the program more, layout and design decisions may become a more familiar part of writing.

The writing space of electronic-aided publishing heightens the writer's awareness of the visual dimension of writing and the decisions about look and design of a page. The tools and options of PageMaker, MacDraw Pro, and Word, by virtue of their accessibility, can be instrumental in integrating formatting and layout decisions with text production. Text may be understood as more than words, and writers may begin to

think of themselves as designers, or artists, working with both texts and graphics, and as publishers, both creating and publishing documents.

Obviously, these three programs are not the only ones available to writers, nor are they the only programs of an integrated electronic-aided publishing system. The choice of programs and combinations of applications will depend on the needs of the user (Condon, 1992; Sullivan, 1992; Taylor, 1992). In addition to the word processing, drawing, and layout programs which I have described in this chapter, an electronic-aided publishing system may also include a spreadsheet program, like Microsoft Excel, for charts, graphs, and illustrations for presentation of data, which constructs yet another writing space. A scanner, scanning software, and applications which enhance scanned images may also be an important addition to a writer's system. Other options may include "clip art" to aid the designer with visual images and a presentation program for making transparencies or posters. Finally, the system will usually include a laser printer in order to produce "camera ready" copy. The 300 dpi resolution of inexpensive laser printers may be acceptable for many writers, but for a more professional quality reproduction, a writer will need to invest in a higher resolution printer (600 dpi, for example).

Whatever the system, the writer is faced with a variety of writing spaces, challenging the definitions of "writing" and "writer," of "page" and "text." The metaphors and paradigms which define the programs vary as the writer moves from composing verbal text to drawing to designing a publication. The writing space of this one instantiation of electronic-aided publishing technology is not necessarily constant, for each application, and even choices within an application, fosters a different understanding of writing. Although writers may use an electronic writing space to produce a traditional print document, this technology allows, even encourages, a writer

to produce a document which incorporates a variety of visual elements, typographical decisions, and formatting options. This technology allows writers to create texts in different programs and to integrate those texts in yet another program in order to produce a printed document, making it a point of convergence for the paradigms of writing, art, and design. Electronic-aided publishing technology not only bridges the two cultures, print and electronic, but encourages the writer to incorporate visual elements and visual design principles into the printed document.

CHAPTER 4

INTEGRATING DESIGN AND TECHNOLOGY

INTO THE RHETORICAL PROCESS

Since the development of sophisticated software for word processing and related programs and the hardware advancements in computer systems, scanners, and high-resolution laser printers, writers have been able to exercise control of both the visual and the verbal components of text. Chapter 3 illustrated the writing space of one instantiation of electronic-aided publishing to reveal the visual nature of that space. Microsoft Word 5.1, the word processing program, treats formatting decisions as extensions of word processing, not as separate functions, and employs icons for visual access to various commands. By their very natures as drawing and page layout programs, Claris MacDraw Pro 1.5 and Aldus PageMaker 4.0 also foreground issues of a visual nature. As part of electronic-aided publishing technology, all three programs allow for both verbal and visual texts to be exported and imported across programs for effective use of the various applications. With these types of applications, writers have options for creating both visual and verbal texts, integrating those elements into a variety of documents.

I have already argued that electronic-aided publishing technology bridges the print and electronic cultures, producing and distributing both print and on-line documents in an electronic writing space. However, the visual nature of the technology can encourage the writer to design texts, and can foreground visual issues previously reserved for specialists. Information designers and technical and professional writers who design documentation, pamphlets, brochures, and newsletters have long realized the

significance of visual elements, such as layout and typography, to text, and these principles have been applied to texts produced by print technology. Electronic-aided publishing technology provides writers the opportunity to integrate graphics with text, and to consider layout and design choices. Writers can be designers and publishers with increased control over their texts and the publication and distribution of those texts. Although the potential exists with the technology, writers can draw from a variety of disciplines for methods of encompassing visuals into the different stages of the writing process.

The purpose of this chapter is to discuss the discourse about the visual dimension of text and writing as treated in the literature and research of several different areas—postmodern thought, cognitive studies and visual thinking, design studies, and professional writing, including technical writing and publishing—and to illustrate the possible treatment of visual design issues within the writing space of electronic-aided publishing technology. Each of these areas can contribute to a better understanding and increased knowledge of visual rhetoric, helping to situate both visual design and electronic-aided publishing within rhetoric and composition. The sections of the chapter will focus on

1> postmodernists such as Michel Foucault and Roland Barthes, who recognize the impact of the visual on text production and comprehension, and the application of their theories to print advertising and to graphic representations

2> cognitive studies which tie visual thinking to intellectual development and composing

3> design studies, particularly the work of Richard Buchanan and Robin Kinross, who argue that all objects are rhetorical and that shape, look, and design affect the development, production, and use of products

4> technical and professional writers and publishers whose ideas about the readability and design of documents might be applied by all writers and who integrate technology and visuals.

Together these theories offer an interdisciplinary view of text as more than pages of print which depend primarily on verbal language for meaning. They expand the print-driven notion of text to include visual and graphic representations, different media, objects, organizations, and systems.

Postmodern Views of the Visual

Verbal text—words—have been given priority in the print-dominant Western culture and discussions of "text" are often limited to language, without placing any particular significance on visual elements. But postmodernists, particularly Michel Foucault and Roland Barthes, have striven to expand the notion of text to include more than written, primarily verbal, documents and to include visual texts. Critiques such as theirs have been extended into different disciplines. In geography, for example, maps have come under close scrutiny for the distortion and manipulation of data and the inherent cultural and political biases in their configuration (Barton & Barton, 1989, 1993a, 1993b; Monmonier, 1991).

Foucault: Space and Power

Foucault's broad view of discursive formations and his recognition of the significance of spatial arrangement reinforce the view that both the visual and verbal are rhetorical—that is, are situated within a particular time and place for a specific purpose and audience. The significance of space and spatial arrangement is the subject of discussion in "Space, Knowledge, Power" and, in this interview, he points to the eighteenth century as a time when architectural space became a "function of the aims and techniques of the government of societies" (1984, p. 239). During this period

political treatises included discourse about the significance of architecture to the art of government, and to the order of society and its maintenance, convincing Foucault that this new attention to architecture was linked to the urbanization of the nations and the problems presented by industrialization. Industrial growth created spatial problems: urban space, the confinement of large numbers of people within a limited geographical space, increased the potential for dangers and threats such as epidemic and revolution (Foucault, 1984). The increasing significance of architecture was not necessarily the responsibility of the architect, however, but of others, "political men" as Foucault calls them, who saw architectural space as a tool for governing.

Problems, then, may exist where the exercise of political power intersects with a particular space (Foucault, 1984). Architecture is not in itself powerful, for example, and neither are bridges or railways, but the institutions which control buildings and designs and structures are. Railroads, as well as other methods of mass transportation, may have been designed with the idea of freedom and efficiency of movement in mind, but are subject to the control of individuals who may have different agendas. Europe was particularly sensitive to the changes engendered by the development of the railroad as a network of communication and transportation. Questions were raised about the potential influence of crossing national boundaries: changes in language, in cultural norms, or in behavior. Could the railroads increase universality and lessen the threat of war? Germany, for one, proved they might not. For example, during World War II, Hitler's government used the railroads not only to transport troops and supplies in its attempt to conquer and rule Europe, but also to transport vast numbers of Jews who were removed from their homes in Germany and its conquered countries to the concentration camps. During wartime, railroads and other methods of transportation and communication have not been used to improve or establish relationships across

geographical boundaries, but to wage war with a more efficient movement of troops and supplies.

In much the same way, buildings designed and built to house government offices and meeting rooms may be used by either dictatorships or democracies. The power rests in the purposes of those who use the building, not from the space created by the architect or engineer. However, like the computer interface which privileges the business office environment, the architectural space may not be totally innocent of value or ideology either; spaces can be designed to facilitate a particular use more than others.

Space, Foucault claims, is "fundamental in any exercise of power," and architecture can be used to reproduce social hierarchies (1984, p. 252). The Panopticon is an example of an architectural space that supports Foucault's argument for the significance of space to the discursive formations of a culture. The Panopticon, a prison model created by Jeremy Bentham, illustrates visually the power structure of an institution. The Panopticon's arrangement incorporates a central tower of an annular building which is divided into cells, each extending the thickness of the building and having both inner and outer windows (Figure 4.1). The various occupants of the panoptic structure are isolated from one another and open to an unseen observer; the residents, or inmates, would always be in the view of someone representing power, although the resident could not see the viewer (Barton & Barton, 1993b). Be it a school, asylum, factory, or prison, the inmate or resident is always under the scrutiny of an individual representing the power structure. The model itself privileges a hierarchical relationship, but the decision of how to use it is not in the hands of the architect.

Foucault uses Bentham's panopticon as the "paradigm of disciplinary technique" (1984, p. 18), a model of defining power arrangements and a visual order of the mechanisms of power and a social as well as visual space. The panopticon brings together power, control of the body, control of groups and knowledge, and locates

individuals within a hierarchical and visible organization. Not only is the resident of a

Panopticon in view of the controller, but the controllers are also in view of those in the

central position (Foucault, 1977, 1984). For Foucault, the Panopticon represented the

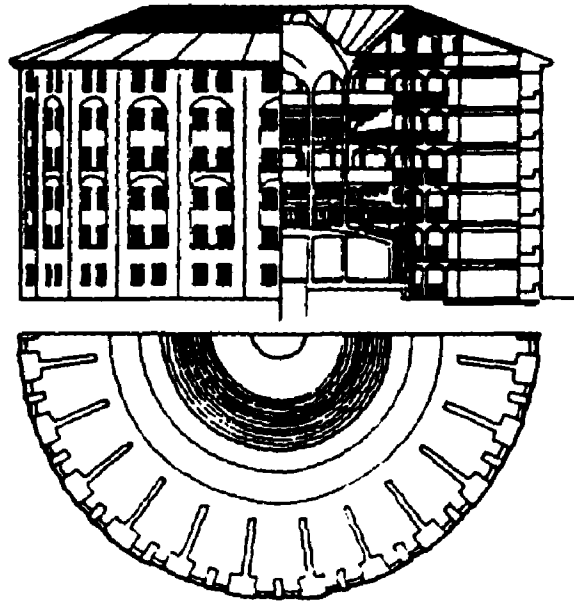ultimate exercise of power; everyone is caught in its machinery.

Figure 4.1. Panopticon design

In Bentham's view, the Panopticon was not only utilitarian, but also efficient; it

could be used for a number of purposes with no standard of judgment for any particular

program. But, Foucault recognizes the Panopticon as a normalizing structure, as more

than utilitarian or efficient, but as "a system of finely gradated and measurable intervals

in which individuals can be distributed around a norm . . . which both organizes and is

the result of this controlled distribution" (1984, p. 21). These technologies of

normalization help the society deal with anomalies in an impartial way: dangerous

social deviants, such as prisoners or the insane, can be isolated. The power in the

panopticon, then, is both inclusionary and exclusionary, both empowering and

disempowering (Barton & Barton, 1993b).

Discursive formations, including institutions and the shape and form of those institutions both verbally and visually, are significant to those who come under their purview. The visual, spatial arrangement, such as that exemplified by the Panopticon, should not be separated from discourse, although it often is. The visual arrangement augments the verbal formations, reinforcing and maintaining the power structure. In a panoptic prison, for example, the guards not only have been given authority through their position in the hierarchy, but also through their position in the physical space. Today, architectural spaces which isolate individuals don't have to be panoptic, for security cameras can be placed to survey all parts of a space, seeing a population as a whole or as individuals and replicating the visual and spatial control of the Panopticon. Ignoring visual and spatial formations denies total understanding of discursive formations and their influences and effects. This recognition of power in the visual is significant to writers who control, to some extent, how readers will respond and comprehend a document.

Barton and Barton (1993b) suggest that visuals within a text can be seen as a site of power inscription, and the modes of panoptic surveillance, both synoptic and analytic, can be applied to both the design and assessment of technical visuals. The synoptic view represents that of an entire population, and the analytic, the close scrutiny of an individual; both views are possible in the panopticon. Graphic representations in text should allow for the same two views of information (Tufte, 1983, 1990). Maps and pictures, for example, provide synoptic power. Roland Barthes claims that "pictures . . . are more imperative than writing, they impose meaning at one stroke, without analyzing or diluting it" (1970, p. 10). The filmed and videotaped images from television coverage of the *Challenger* explosion are an example of this synoptic power. The whole story is suggested from a few frames of the spaceship exploding mid-air. At a synoptic level, the picture of the *Challenger* explosion alone provides a story; yet, at an

analytic level, the story remains incomplete. Why did it explode? Why was it launched? Who was at fault, designers and engineers, management, government? And yet, it's difficult to deny the imperative of the picture. Even without the background, the image itself makes an impact on the audience, including the individuals who will later have to explain the explosion.

The map provides another example of the synoptic power of visuals: "the whole world can be brought within the purview of a single viewer" (Barton & Barton, 1993b, p. 143). Viewed holistically, a map may show large amounts of data for an immediate response. But, just as the use of the panopticon and its visual arrangement may not be innocent of ideology, neither are maps. The holistic view in synoptic visuals can be distorted, as it is on the Eurocentric Mercator map, for example, which shows the territory of the former Soviet Union to be about twice the size of Africa, when in fact Africa has more area. This map may serve the interests of white colonial powers (Barton & Barton, 1993a), or it might be useful to politicians who need to maximize the threat of communism by showing an exceptionally large area of Communist territory (Monmonier, 1991). While the society depends upon the "truth" of maps for geographical positioning, the map, like other visual and spatial arrangements such as computer interfaces, can be exclusionary. Monmonier's text, *How to Lie With Maps* (1991), describes a variety of uses for maps, uses which may exclude or distort the geographical space for a specific purpose, such as political propaganda, persuasion, advertising, or simply the attempt to distract a reader from a negative element.

Another issue in how maps are configured and what assumptions are made relates to the position of a compass direction. Consider the maps used by Americans: North is up, and the Northern hemisphere is pictured at the top--a superior position. But, consider the map Australians use: South is up, and Australia and other countries in the southern hemisphere are at the top. Americans would view this as Australia upside

down (Bosley & Settle, 1994). Another way of viewing the world is possible with a flat map with the North pole at the center. From this view, the close proximity of the United State and Russia is clear, even though on flat maps which put the USA at the center, Europe seems much closer. (Bosley & Settle, 1994). The visual component of text, then, although it may be perceived as secondary to the verbal element, may be used to confuse or distort the actual situation.

The analytic power of visuals comes from representations which provide specific data, exemplified by the table. While charts and graphs may show trends or other global understandings (such as percentages on pie charts), tables provide specific data, such as numbers, for detailed examination (Barton & Barton, 1993a). A map may provide an overview of the world, but tables and charts, or smaller, detailed maps would be needed to identify some of the characteristics of a political unit. Tables and charts accompanying maps could identify population, production of manufactured goods and agricultural products, and demographic and economic information, offering a more detailed picture of a geographic unit. But, the potential for distortion of data is always present. Like interfaces and structures, the presentation of data is not value free. Its visual representation is intended to be persuasive, to provide an interpretation of the meaning of data, and is therefore under the control of the writer.

Ideally, both modes of power are operating in visuals, for limiting the audience to only one mode takes away their power. Tufte (1983, 1990) advocates the micro-macro (or analytic/synoptic) design approaches which allow for both local and global comparisons, empowering viewers. Recognizing the analytic level as undervalued in graphic design theory which emphasizes synoptic features, Tufte endorses an unconventional design strategy, that of clarification through detail, and he privileges design which allows for the tandem operation of both synoptic and analytic modes.

Visual elements, such as graphical illustrations, are rhetorical and persuasive in much the same way as verbal elements are, and not only in printed documents, but in other discursive formations as well. Just as synoptic and analytic views, the ability to see globally and locally, can work together to empower a viewer, visual and verbal elements may both be necessary for complete understanding of a text. The work of Foucault has fostered critique and examination of the power of visuals. As geographers examine and critique maps, technical writers and information designers, for example, examine other graphic representations for their cultural conventions and ideology and can encourage others to examine the visual/spatial arrangements which exist in a variety of discourses.

A variety of strategies exist for the purpose of visual ordering. Historically, the use of the grid can be dated to back to the medieval period (Williamson, 1989). Grids are commonly used as a framework for page design and layout, and for drawing and sketching (Berryman, 1984; Williamson, 1989). Tables, a visible use of the grid, are generally defined in scientific, business, and technical writing textbooks as a methods of illustrating and clarifying specific numerical data. While other types of charts may show trends, tables are used when data need to be specific and presented in an orderly fashion for comparison and/or clarification.

According to Williamson (1989), the use and purpose of the grid has changed from late medieval times to the present. In the late medieval Christian world, the grid served not only as a matrix for placement of typography and illustrations, but may have also been important symbolically as a visual relationship between depicted objects, persons or events, remote in time and space, but linked spiritually. During the Renaissance, with its more secular view of the world, the grid served as a set of horizontal relations on a physical plan, and was particularly useful for the cartography which flourished at the time. The Cartesian grid, on the other hand, would come to represent not only structured

laws and processes, but also the process of rational thinking. In turn, the modern grid moved away from the dual emphasis in appearance and structure and became primarily structural—an ordering system which was universally valued, rational, and objective. Finally, the post- or anti-modernist often exposes the grid, and violates the structure, representing anti- or ir-rationality (Williamson, 1989). The grid is recognized as an important element in visual design today, a starting point for layout, for page and photographic composition, and for graphic representations (Berryman, 1984; Parker, 1990; Williamson, 1989).

Foucault probably had in mind the modernist grid when he discussed the table, *tabula*, for ordering and classifying. The grid, for Foucault, serves as a hidden network of identities, similitudes, and analogies useful in sorting, and classifying, and establishing coherence and order (Foucault, 1970). Foucault's grid is primarily structural, hidden from view, representing a network of elements. His work, especially *The Order of Things* (1970), attempts to order, or classify, the codes of Western culture, providing an example of an ordering strategies used not for visual purposes, but as structural.

This section of the chapter has presented one view of visual representations as a method of presenting and ordering information. But visual text involves more than adding graphics to verbal text. Ordering strategies are also important, whether in the abstract, as our cultural codes, or in the concrete, as in the evidence of how writers position text and graphics. Position, or placement, of both visual and verbal elements on a page can affect the presentation of the information. Just as grids allow us to classify things, and compare and differentiate between them, the verbal and visual elements on a page can be examined in a similar way.

Barthes: Rhetoric and Image

Barthes' (1977) critique of power in the visual centers on advertising and photographic images. Although Western culture often ascribes an autonomy to the

photograph, Barthes claims that it is itself a construction, and subject to connotative meanings. Several layers of meaning are embedded in the image and its text: the linguistic, the literal, and the symbolic (Barthes, 1977). The linguistic message is the attempt to stabilize the "floating chain of signifiers" and to establish meanings that are not evident in the image itself (Barthes, 1977, p. 39). The literal text is the denoted image with all connotations removed and the absence of any cultural coding, while the symbolic is connotative and drawn from cultural codes, readings which will vary with individuals. The cultural code serves to contextualize the image for an individual and give meaning to it.

With advertising and with photographs, for example, linguistic text anchors the visual meaning: "the text *directs* the reader through the signifieds of the image" (Barthes, 1977, p. 40). The image does not illustrate the meaning of the words, but instead the words refocus the reader's or viewer's eye and define the image (George & Shoos, 1990). Yet, while copy anchors and extends meaning, the text closest to the image does less to connote meaning: i.e., the cutlines under a newspaper photo may do less to anchor meaning than a headline, usually in larger text, above it (Barthes, 1977).

This relationship between text and image is illustrated by Diana George and Diane Shoos in an analysis of print advertising, specifically Benson and Hedges cigarette ads. The ads provide positive and pleasant, even sexual, images to encourage smoking. But, as in all cigarette advertising the Surgeon General's warning of health risks must be included. George and Shoos maintain that cigarette companies place these warnings in the ads to be ignored or unobtrusive. In one ad, the warning is placed for the specific purpose of obstructing the view of a picture, and forcing the reader to look around the warning. In contrast, the slogan and text about the product are given their own space and blocked as a headline might be (George & Shoos, 1990). This linguistic text and its placement anchor the image to the ad slogan and accompanying text, presenting a

positive image of the product and downplaying the health warning. To further deemphasize the warning, it is printed in exactly the same type and format as the warning on the cigarette package itself and this familiarity may also defeat its purpose (George & Shoos, 1990). Ironically, the visual impact of the warning is lessened, even negated, by its position on the page and its familiar style, and by its repetition.

Position of text and image is no minor issue, then. The meaning of a discourse is not derived solely from the verbal text, but also from the visuals which augment it as well as the placement of visual markers. Another example of how positioning and placement can affect meaning is evident in "The Food Guide Pyramid," originally called "The Eating Right Pyramid," a visual aid developed by the US Department of Agriculture to help Americans with improving their diets. Figure 4.2 is a copy of the pyramid and its accompanying text from a pamphlet which is intended to explain the pyramid and promote good dietary habits.

The use of the pyramid is a change from the traditional basic food group chart, intended to help improve American eating habits by showing clear priorities, something the original charts did not ("Pyramid topples," 1990). But, political considerations in the form of conflicts of interest within the authoring body, the Department of Agriculture, make this visual ordering interesting to examine.

Notice that, the top, and smallest, section of the pyramid displays fats and sugars, foods which should be used sparingly (USDA, 1992). Each of the next three levels, as the pyramid gets wider, represents foods with increasing number of servings, with the grain group—6-11 servings per day—at the bottom. While this is a logical arrangement, smallest amount to largest following the natural shape of the pyramid, presenting the progression in this way could be questioned. For example, the top position, since English is read from top to bottom, is a superior position, and yet, with the pyramid the least desirable foods are pictured at the top. Without careful reading,

The Food Guide Pyramid

A Guide to Daily Food Choices

KEY
☐ Fat (naturally occurring and added)
▼ Sugars (added)

These symbols show fat and
added sugars in foods.

Fats. Oils. & Sweets
USE SPARINGLY

Milk, Yogurt,
& Cheese
Group
2-3 SERVINGS

Meat. Poultry. Fish.
Dry Beans. Eggs.
& Nuts Group
2-3 SERVINGS

Vegetable
Group
3-5 SERVINGS

Fruit
Group
2-4 SERVINGS

Bread. Cereal.
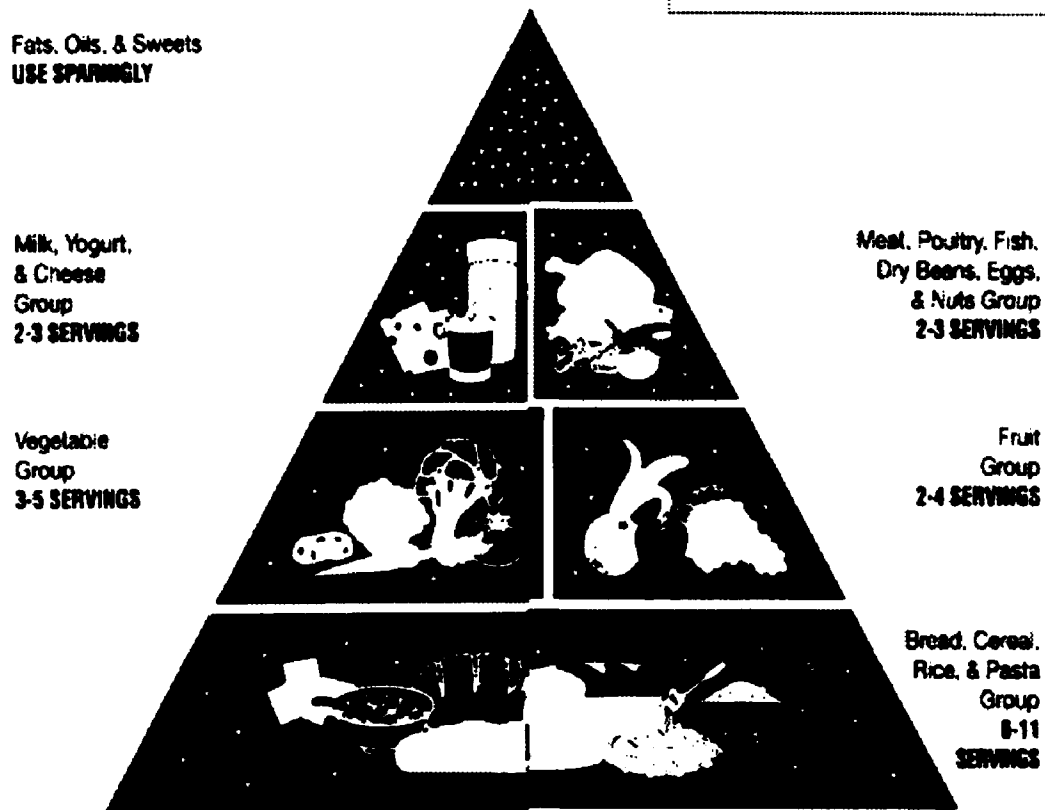Rice. & Pasta
Group
6-11
SERVINGS

Figure 4.2 US Department of Agriculture Food Guide Pyramid

the message might be misunderstood—the food group at the top is the most important, and least important at the bottom. Perhaps the pyramid could be inverted so that the grains group is not only the largest potion, but also the first and most important group. Of course, we would not then have a pyramid, but a "Food Guide Triangle," a legitimate but a less impressive connotation—pyramid conjures images of entombed pharaohs and their riches.

The pyramid itself is only one way of examining the visual impact of a text. Another is to look at the explanations of the pyramid. Within the pamphlet are a number of tables and charts, designed to clarify and explain the food guide. One such table is designed to provide help for calorie-counters and lists the number of servings from each group for a certain calorie diet. For example, a diet of 1600 calories or lower can include 6 servings from the bread group and 3 from the vegetable group and a 2200 calorie diet can include 9 bread group servings and 4 vegetable servings. However, after listing the number of servings for four of the food groups, the meat group is listed in "ounces." As individuals read the chart, they may not notice that the meat group listing is for ounces, not servings. The writer has primed the reader to expect that all listings are consistent, but may mislead the reader with the change in terminology. A total of 5 ounces of meat per day is quite different than 5 servings per day. A potential conflict of interest for the USDA has been identified, and could account for this potential misreading—the USDA not only is concerned about good health and American dietary habits, but also is in business to protect the interests of meat, egg, and dairy producers ("Pyramid topples," 1990). The conflict of interest may have enabled lobbying interests to succeed in undermining an otherwise effective visual aid. The positioning of items within the pyramid, as well as explanations and clarifying information about the pyramid, reveals how placement can be used by a writer to effect a particular reading of a text, and how visual language, like verbal language, is rhetorical.

Postmodern Critiques in a Visual Rhetoric

Postmodern theories offer to rhetoric and composition several ways to look at text. They expand the notion of text to include visual elements, to recognize the power of visual media, and to consider discourse as more than written documents, including also cultures, systems, and organizations. A film or an ad becomes a text, as does a judicial/penal system, a corporation, or a group of activists. And within a text, a graphical representation, such as a map or the Food Guide Pyramid, also becomes a text itself, and can be critiqued as it stands alone or in relationship to the rest of the text, revealing hidden power in the visual and definite purpose for its particular composition.

Postmodern critiques also examine the ideology and values inherent in a text and encourage us to look at the implications for understanding the text. Bentham's panopticon is an example of the institution as text. The culture's attitude toward "misfits," those individuals who needed to be isolated from others, such the criminal or the insane, promotes institutions which allow one group to control another, marginalizing them in society, and taking away certain personal freedoms. Maps also can reveal a cultural ideology which promotes one group or one view of another. The distortions of the Mercator map make Russia appear much larger in land size than Africa as well as other areas of the globe, suggesting white domination over blacks, or reinforcing the Cold War threat of Communist domination.

Postmodern views also encourage writers and readers to look beyond verbal language to visual representations and ordering strategies in the examination and critique of texts. In an ad, text is specifically positioned to control the reading and comprehension and to promote a specific view of a product. The ultimate goal is conditioning the reader to look for and buy the product. The Food Guide Pyramid is an example of a visual ordering strategy, the geometric shape of the triangle with the point at the top, which may be promoting a specific ideology. Here the placement of the text

within the pyramid may be intended to elicit a different response from what it seems at first.

Postmodern views, on the other hand, do not deal with any specific technology, particularly electronic-aided publishing technology, although Barton and Barton have recently begun to raise the issue in their discussions of visual representations. But, questions raised in postmodern theory can—and should be—applied to individual writing and also to technology. How is electronic-aided publishing technology used by individuals, and what are writers allowed to do with various applications? As a visual technology, both in configuration and product, electronic-aided publishing becomes a significant writing space—one in which visual and verbal components of text can merge. As a technology controlled by an individual, it brings with it new potential and responsibilities for the writer. Perceived as a democratic, egalitarian technology, electronic environments must be questioned, as Selfe and Selfe (1994) have already begun to do. Postmodern theories can provide ways to examine the technology, the cultures which produce and use them, and the texts they produce.

For a visual rhetoric of electronic-aided publishing, postmodern literature and research offers a method of critique and examination of the technology as well as the texts produced. It recognizes the importance of the visual elements, which in turn can heighten an awareness of the visual nature of the technology itself. Not only is the metaphor of the desktop a visual ordering for the computer, but the icons used in each of the various writing spaces help to order the capabilities of a program.

Microsoft Word in its various manifestations for the Macintosh has foregrounded the visual through the incorporation of formatting options into word processing. Formatting options may be afterthoughts, added to a completely verbal text once it is finished, but with the applications of electronic-aided publishing technology, the significance of visual elements may be realized from the inception of an idea. Drawing

programs such as MacDraw Pro can facilitate the use of visual representations, as can spreadsheet programs such as Microsoft Excel which make creating and importing visuals accessible and feasible for the writer. Page layout programs such as Aldus PageMaker allow users to consider the importance of placement and position of both verbal and visual elements. Various postmodern critiques can be useful in examining writing space in electronic-aided publishing technology, allowing writers to have a better understanding of how both visuals elements and technology are rhetorical.

Cognitive Studies and Visual Thinking

In Arnheim's (1969, 1980) arguments for recognizing the interplay between visual and verbal thinking, he critiques the long held views of some cognitive psychologists that reasoning is higher order thinking and sensory perception is lower order thinking. Typically, perception and thinking are treated by these psychologists as separate and unequal processes: the senses gather information about the outer world and an act of thinking involves processing that information, reflecting centuries of tradition which ridicule sensory reception as passive and useless without the higher active faculty— thinking or abstracting—which shapes and corrects the images (Arnheim, 1969, 1980). Art and artists who depend upon sensory perception are undervalued in the culture which equates scientists with reasoning, the higher order thinking.

Arnheim, however, claims that "thinking is impossible without recourse to perceptual images" (1980, p. 494), and draws upon the example of a young child drawing the picture of a tree. It takes what Arnheim calls "creative" or "visual structuring" to perceive order in the intricacies of a tree. This visual structuring occurs in two ways. One is the intuitive mode of cognition, available only through sensory perception in which the structure or order of an experience is recognized. In the intellectual mode, the various independent parts of the organized whole are isolated and

explored individually, also known as the scientific method. Intuitive thinking may be described as synthesis and overview and intellectual as individual and analytic.

Recent studies of the brain hemispheres show how the two modes of thinking occur in different parts of the brain, reinforcing the prejudices about the intuitive and intellectual modes of cognition and emphasizing their separateness. In fact, these two parts are symmetrical and should be given equal consideration. Instead of considering right brain or left brain dominance as mutually exclusive traits, Arnheim (1969, 1980) conceives of both intuitive and intellectual functions as interacting with each other in individuals, scientists and artists alike.

Others who would agree with Arnheim include Edwards, who sees the relationship between the two modes of thought as cooperative processing. The two hemispheres of the brain can work together, each contributing its unique ability and assuming appropriate tasks (Fortune, 1989). This cooperative processing is similar to the multivarious thinking which Adams associates with problem solving:

> as the two modes [of thinking] approach the subject from complementary angles, they represent it in different ways, and this more complete representation allows the individual to use more of the subject field to deal with it. The result is a richer problem representation and a fuller solution in tune with complete complexity of the problem. (Fortune, 1989, p. 150)

Fortune argues that as a result of the privileging of thinking and language in Western culture, visual thinking has been subordinated in the educational system. One reason for this subordination may arise from attempts to provide a model of cognitive and intellectual development. Such models as the one offered by Bruner, Oliver, and Greenfield (1966), suggest that a child's cognitive development occurs in three stages: enactive, iconic and symbolic. First the child explores the world through action, then through imagery, and finally through language (Arnheim, 1980; Fortune, 1989). Not only does this model reduce a complex set of phenomena, but also implies that at each successive level, the previous ones are forgotten. Bruner, particularly, credits language

with the ability to restructure and comprehend a situation, making language indispensable for the development of the mind, while Arnheim prefers to consider language as a reflective tool of a maturing perceptual capacity (Arnheim, 1980).

Fortune maintains, however, that the seemingly linear process of cognition as conceived by Bruner et al. is not straightforward or fixed. Like the composition process whose models identify prewriting, drafting, and revising as discrete stages in composing, discrete stages in the cognitive process are both cumulative and recursive. "Individuals do not completely shed cognitive abilities developed early and replace them with an entirely new set" (Fortune, 1989, p. 149). Instead the abilities are synthesized providing a larger range of development than is evident in the linear model. As cognitive abilities grow and expand with each stage of development, they are incorporated into the individual's cognitive process. Sensory stimulation, an early stage, is not replaced by the symbolic or lingual stages, but remain as part of the thinking process. As in composition, there are no clear divisions between stages of the process.

But, how, composition specialists may wonder, does this "visual" thinking manifest itself in the writing of what Bernhardt labels the "non-visually informative expository essay" (1986, p. 67)? The visual may manifest itself in two ways. One way encompasses both verbal and visual thinking, as writers call forth images, words and ideas in their apprehension of subject (Fortune, 1989). Sondra Perl calls this "felt sense": "When writers are given a topic, the topic evokes a felt sense within them. This topic calls forth images, words, ideas, and vague fuzzy feelings that are anchored in the writer's body" (1983, p. 45). And both visual and verbal images contribute to this sense which can be a form of invention, as the images trigger ways to respond to the topic.

The second, described by Bernhardt (1986), is centered around page layout: the arrangement of information on the page comes about because of visual thinking, and the use of visual elements, such as indents, paragraphs, and white space, to shape the texts.

Although Bernhardt's primary audience is technical and professional writing instructors, all composition instructors, in Fortune's opinion, can use page layout decisions as a method of organizing and communicating ideas to an audience.

And yet, a postmodern critique of the visual layout of the non-visual expository essay might point out that, although the visual elements are there, the student does not need to think about them. The layout and design decisions have already been made for them, and these conform to the publishing mandates of the print culture, i.e., the manuscript. The template exists already, and students are given no rationale or justification for using it. It is, however, a design they are familiar with, and, as I discussed earlier, familiarity can make an element transparent. The use of this template provides the first-year composition student an entry into the world of academic discourse and a method for producing successful papers throughout a college career. But, while other options are available, especially since many composition courses are taught in computer classrooms, students may not be taught how to access them, or be encouraged to use them. Most likely, the rationale for the design will not be discussed; the students will simply be expected to use it.
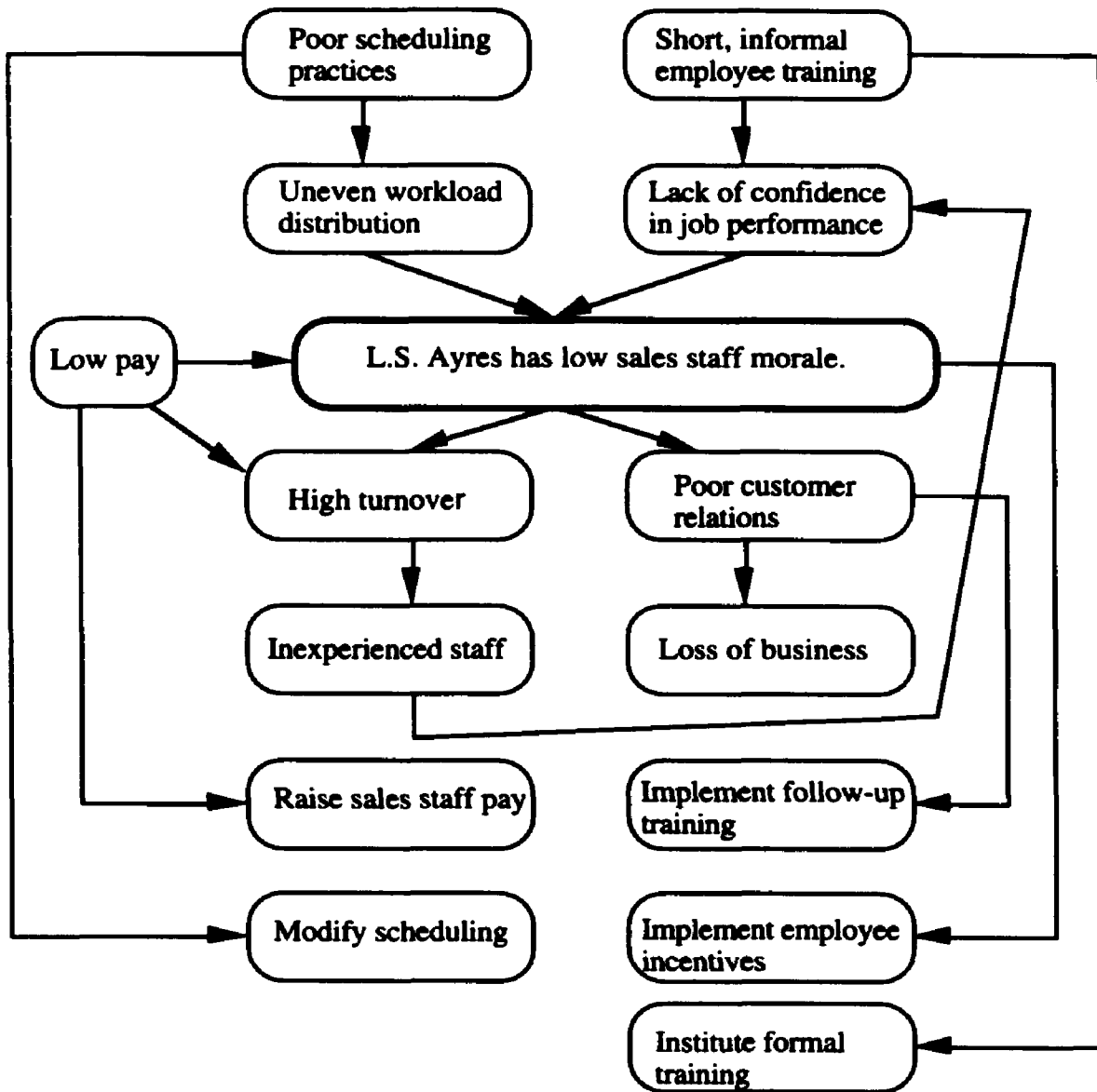
I would concede at this point that these visual elements can be a part of writing regardless of the technology used. Even a handwritten document can incorporate simple layout decisions: starting new paragraphs by indenting or leaving an extra line of white space. As an invention tool, students can quite easily draw and illustrate their ideas and feelings with pen and paper. In one page design class, my co-teacher and I asked students to map out their designs with pen and paper first so that these novice users would not be confined by their inexperience with the technology. With a design and layout already articulated, the students were more likely to experiment with various computer applications to achieve the look they wanted, rather than allowing the technology to dictate certain decisions. Drawings, diagrams, and maps may also aid

students to see relationships among their ideas and thoughts for an essay. Drawing and visualizing exercises as a part of prewriting can make visual techniques a natural part of the composing process as writers incorporate visuals to illuminate their texts, not merely as additions to text (Johnson-Sheehan, 1993).

Then, the question to be addressed here, is the specific role of computer technology in this visual thinking process. Fortune encourages the use of computer drawing programs, not because the images produced in sophisticated computer programs can be elaborate and complex, but because these programs "enable students *to combine text and graphics conveniently* and thus allow students to approach their ideas and develop their texts with a richness of perspective not available in verbal expression alone" (1989, p. 154, emphasis added). Although computer drawing can be very complex and sophisticated, a significant advantage to the computer drawing is that it can easily become part of the document. Not only does the dialectic encouraged by the combination of drawing and writing reflect the interplay of the intuitive and intellectual cognition forwarded by Arnheim (1969), but in a more pragmatic vein, students, for the most part, like using the computer and trying new things. For individuals who claim no artistic ability, the drawing programs allow them to draw simple figures and illustrations. Of course, this drawing can all be done by hand, but there may be a certain comfort for the so-called non-artistic individual that comes from being able to draw neat shapes and replicate them quickly with a simple command. In addition, drawings and diagrams or maps can be neatly revised. Users can easily move portions of a map to another part of the figure, allowing for new understandings of relationships and ideas. The program may encourage writers to "play around," to try new things, and to see the significance of visual thinking and visual techniques, bringing new meaning to the term "writing."

Basic drawing programs, such as MacDraw Pro, can be used for simple line drawings or more complex ones, with different geometric or free form shapes to show relationships and oppositions of ideas. They also are easily imported into a text, or both text and drawing can be imported into a page layout program such as Aldus PageMaker. Once in a page layout program, the text and drawings can be moved individually or as a whole into different positions on the page. In addition, the basic drawing program available in the latest Word programs allows users to draw and insert graphics at any place in the text. Figure 4.3 is an example of a visual invention strategy which is used to define a specific problem in a given situation. This process, developed for Business Writing classes at Purdue University by James Porter, asks students to identify a problem encountered in a business or organization in which they participate. In a step-by-step process, the students first identify a problem, consider possible causes of the problem, effects, additional problems and finally possible solutions. As students identify these various elements of a problem, they begin to reveal the relationships between and among these elements visually, using lines and arrows, shapes, and shading to distinguish one element from another. The goal of this exercise is not only to identify the actual problem, which may or may not be as the original one, but also to identify potential research questions and sources for detailed examination and analysis of the problem.

The specific example in Figure 4.3 begins with the identification of a problem at a retail department store, L. S. Ayres. The diagram centers on the problem of low sales staff morale. But, the initial problem may have been identified as low pay, which is off to the left and is seen as a cause of both low morale and high turnover. This process encouraged the writer to consider other factors in addition to low pay as causes of a more serious problem. Once the problem and its causes and effects are identified, corresponding solutions can be offered.

Poor scheduling practices → **Uneven workload distribution**

Short, informal employee training → **Lack of confidence in job performance**

Low pay → **L.S. Ayres has low sales staff morale.**

High turnover → **Inexperienced staff**

Poor customer relations → **Loss of business**

Raise sales staff pay

Modify scheduling

Implement follow-up training

Implement employee incentives

Institute formal training

Figure 4.3. Visual invention strategy using drawing program

By drawing out or visualizing the possible causes and effects of a problem, the writer may be better able to see potential relationships between and among the problem, the causes, and the effects, and finally form possible solutions. This strategy may even
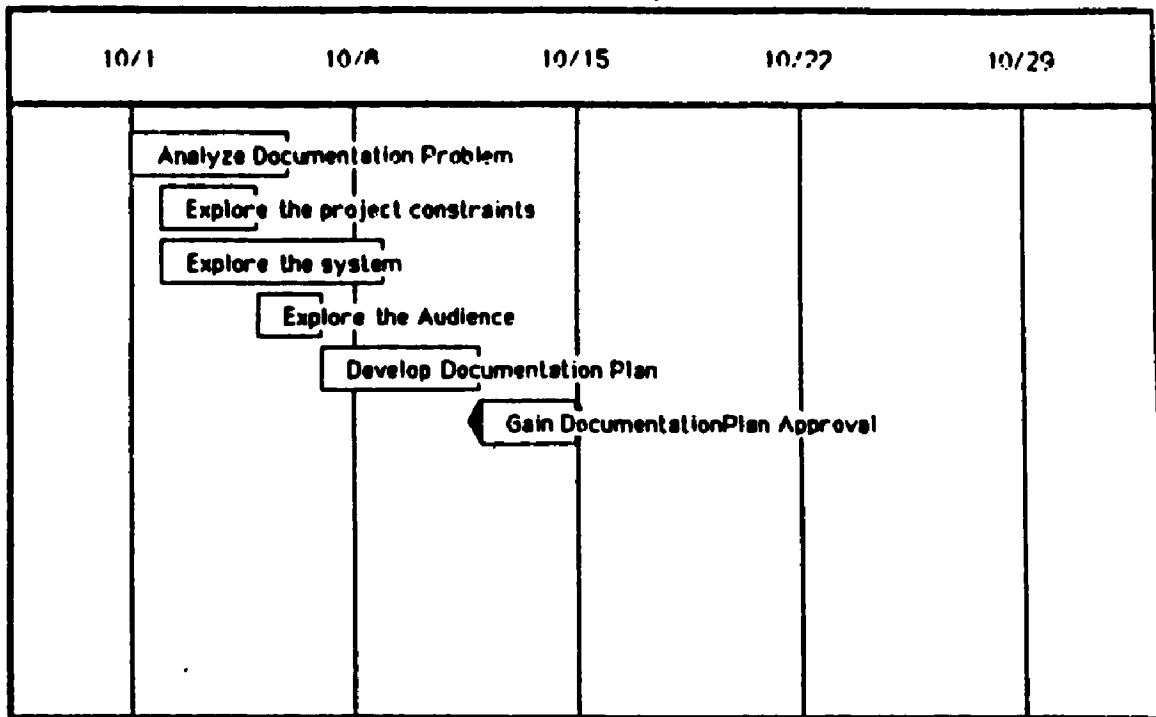
result in a reconfiguration of the underlying problem. In addition to its value as an invention heuristic, this diagram, with the specific causes and effects named, could also be incorporated into a report on the problem, aiding the reader in recognizing the complexities of the issue in a way that verbal text alone might not.

Another effective use of visual invention strategies is used in many business and technical writing classes: project management charts. Gantt charts and PERT charts which both identify schedules and deadlines of a variety of tasks involved in a project, whether individual or collaborative. The purpose of these charts is to provide a global view of a project, allowing both team member and team leader, and even a client, to visualize a process and identify time necessary for tasks. It also can aid a writer in organizing a manageable schedule, as well as keeping to that schedule, and often may be incorporated into a document. The examples in Figure 4.4 come from a coursepack designed and written by Patricia Sullivan and her students for the Technical Writing program at Purdue University. Not only do Sullivan and her staff encourage the use of visuals in students' documents, they reinforce that use with visuals in the instructional materials. The Gantt and PERT Charts are only two examples.

But technical writing and business communication are not the only place for visual invention. Composition courses with their focus on the traditional essay are fertile ground for visual thinking exercises and [re]consideration of the visual/verbal relationship in texts. Mapping out visually the movement of an argument can be useful to writers, allowing them to contemplate the relationships among their points of discussion, and perhaps identify new ways to engage the argument. The Toulmin logical system operates as a kind of visual mapping of arguments, and is a more traditional example of visual invention than those I have used above. The elements of Toulmin's model of argument—claim, warrant, data, qualifier, rebuttal, and backing—can be layed out to show the relationships between and among the elements. In fact, Toulmin

Gantt Chart — Proposal

10/1	10/8	10/15	10/22	10/29

Analyze Documentation Problem

Explore the project constraints

Explore the system

Explore the Audience

Develop Documentation Plan

Gain DocumentationPlan Approval

PERT Chart — Computer Documentation Project

proposal submission

chapter writing — user testing / user testing

chapter writing — user testing / user testing

chapter writing — user testing / user testing

chapter writing — user testing / user testing

chapter writing — user testing / user testing

Develop and revise rough draft

final user testing

final user testing

final editing

expert user testing

submission of document

Figure 4.4 Gantt and PERT Charts

diagrams a claim and its various elements in *The Uses of Argument,* providing a visual map of an argument (1958, p. 126).

While a drawing may be accomplished by pen or pencil on paper, the computer encourages the inclusion of these visual representations into a typically verbal text. The drawing software allows for imaginative and creative activity in individuals who might otherwise shy away from exposing their inability to draw. Decisions about visual representations and the placement of text and visuals can encourage writers to begin to think about "designing" texts, rather then simply writing them, and can foster a new understanding of the principles of design.

Cognitive Studies in a Visual Rhetoric

For a visual rhetoric of electronic-aided publishing, cognitive studies offer an understanding of how intuiting and abstracting processes help individuals "see" and comprehend the world, including the world, or writing space, of technology. Visualizing, drawing and mapping strategies allow individuals to combine sensory perception and languages for reasoning. The proponents of visual thinking are not specifically discussing writing or drawing, but the points they make about thinking and reasoning, and about the combining of perceptive and symbolic skills can be applied to writing. Just as Arnheim argues that thinking is not language alone, but also sensory perception, I would argue that writing and text are not confined to verbal language. Visual components exist in a text, whether in graphical representations or in formatting and layout, and writing, especially in an electronic writing space is a sensory experience, visual, aural, and tactile. The knowledge of how writers respond to and operate within the sensory world of technology provides a better understanding of the options for writers and the decisions they can make about those options and about writing.

Design Studies

"Design" is a term used in many different ways to denote many different types of practices, and is defined according to specific contexts, such as industrial design, graphic design, interior design, or urban design. Design, as Victor Margolin (1989) argues, is a valuable practice in many professions and should be realized as a subject of study in its own right, with a history, theory and body of criticism. Principles of design are embedded in various areas of study, but may have no theoretical or research components, with the sole exception of architecture. Design studies are important to rhetoric and composition because design may be seen as a central representation of cultural values, although its role has been marginalized. With new modes of inquiry, such as feminism, reception theory, semiotics, and others, the influences of design on various disciplines including literature, film, and architecture can be studied (Margolin, 1989).

For example, in literary criticism, reception theorists have recognized the complexity of communication, inscribing the receiver with some power in interpreting literary works. Incorporating this theory into a concept of design would identify designing as a creative act, a continuous and non-instrumental thought process, in which everyone may participate equally, both creator and audience (Margolin, 1989). This notion of creative act can be applied to writing, also, whether fiction or non-fiction. Writing involves more than simply putting words on a page, but also includes decisions about paragraph breaks, section headings, and other textual cues, at the very least. Some cues are verbal, others visual, but all are rhetorical. Design studies can be helpful then in understanding how the visual and verbal components of discourse work together, just as rhetorical issues can help designers.

Kostelnick (1989) finds many parallels between the process theories of designing and those of composing.

> Process theories of design broadly encompass visual thinking, both applied and expressive . . . As a medium for creativity and communication, design is

the natural counterpart to writing, one adapting the visual, the other verbal, language to diverse contexts and audiences (Kostelnick, 1989, p. 267).

Design and writing process movements have also seen similar shifts in emphasis: discovering solutions to problems with both verbal and visual communication, monitoring the creative process, recognizing the process as dynamic, not linear, and recognizing audience needs and expectations in problem-definition. In addition, both designing and composing realize a plurality of models; that is, neither process can be defined in one way, and both must continue to be sensitive to flexible, functional approaches to creative problem-solving.

Buchanan provides a direct link between rhetoric and communication and design: ". . . the themes of communication and rhetoric in [design] exert strong influence on our understanding of all objects made for human use" and design serves as a mediator between designers and their intended audience (1989, p. 91). Like a writer trying to communicate or persuade a reader, the designer is "creating a persuasive argument that comes to life whenever an individual considers or uses a product as a means to some end" (p. 96). And the elements that make up the design "argument" are technological reasoning (or logos), the character of the products (ethos), and the emotions (pathos). As in rhetoric, these three elements are employed to persuade the audience to use the product. Also as in rhetoric, these elements are not disparate, but are intertwined in complex relationships.

But, how objects exemplify logos, ethos, and pathos may need some explanation. Shaker furniture, for example, is a plain, simple style with clean lines, and little decoration. The furniture is serviceable and functional, but it also reflects the character of the people who design and make it: a simple, uncomplicated lifestyle, religious and unworldly. Punk clothing, on the other hand, resists conventions and traditions with rips and tears and unusual combinations of attire, "metaphoric expressions of what are

perceived to be the moral consequences of contemporary life" (Buchanan, 1989, p. 103). This clothing exemplifies rebellion and opposition to more traditional styles.

Consumers respond to products based on logos, ethos, and pathos also. Parents may hate the punk clothing their young teens wear; others might question the logic of buying clothes which are deliberately torn, faded, and/or worn out, especially at the cost of new clothes. It opposes the values many parents have tried to inspire in their children, but the parents' disapproval may reinforce the children's determination to wear it. The simplicity of Shaker and Amish furniture may not appeal to those who like decoration, such as in the ornamental and elaborate features of Victorian or Jacobean furniture. Even common everyday appliances vary in their design and character. Pots and pans, dishes, utensils, toasters, coffee makers may vary in design, in color, and in appeal. Some appliances reflect the late twentieth century high-tech society with sleek designs and contemporary colors, or a technological aesthetic, such as the acrylic telephones which expose and celebrate the mechanism. Other designs reflect a different aesthetic, as products might be designed to disguise their actual functions. Telephones are made to look like duck decoys, footballs, cartoon characters. Whatever the design, the products are rhetorical, and rhetoric and design are both architectonic: they organize the efforts of other arts and crafts, giving order and purpose to production (Buchanan, 1989). While Buchanan's argument is that design is rhetorical, that it communicates and persuades, others argue that rhetoric is a type of design.

Information design brings together several types of designers including text and technical writers and editors, linguists, graphic and typographic designers as well as computer engineers and psychologists. This group is concerned with the presentation and effectiveness and graphic and typographic communication, and with the needs of users. Whether or not information is neutral is a central issue for product designers (Kinross, 1989).

In spite of the claim by information designer Gui Bonisiepe that information without rhetoric is a pipe-dream, he suggests that some information is "innocent of rhetoric," naming specifically a railway timetable (Kinross, 1989, p. 131-132). Kinross, on the other hand, argues that even railway timetables, because they "organize and articulate and give visual presence to information, [and] use rhetorical means" are not, and cannot be neutral (1989, p. 132). His analysis of several railway timetables, both Dutch and British, shows how the various typographic elements (typeface and style, rules, symbols, spaces and color) mix information with rhetoric providing cultural data. Among the several points that highlight Kinross's critique is his discussion of the various typefaces used in the timetables and how they reflect traditionalist and modernist thinking, as well as the competitions among the typefaces designed by British, French and German typographers.

Typefaces can serve as cultural references, with the choice of the typeface revealing ideas and beliefs that inform the process of design (Kinross, 1989). For example, in the case of the railway timetables, Gill Sans, a sans serif typeface introduced in the 1920s, replaced the traditional serif fonts used throughout the nineteenth century. Gill Sans was chosen for the London North-Eastern Region schedules to provide a common identity for all printed matter, but also for its intrinsic value: as an anonymous reviewer wrote: "it is so 'stripped for action' that as far as glance reading goes, it is the most efficient conveyor of thought" (Kinross, 1989, p. 136). In other words, the clean, undecorated lines of the sans serif typeface make it easy to read, and dynamic, something a traveler in a hurry would appreciate. But, the same reviewer was careful to note that sans serif fonts may also pose reading problems in extended passages of text, a view of typography maintained even today (Brown, 1989; Parker, 1990).

The sans serif typefaces appealed to the modernists faith in simple forms and reduced elements for the purpose of saving labor, time and money, as well as to improve

communication (Kinross, 1989). The universal, plain style of modernist typographer Bauhaus, also about 1920, was designed to simplify communication, eliminating the use of uppercase letters, for example. But, the context for this standardization was Germany after World War I, and the simple designs of the Bauhaus school are intricately tied to Nazism. Germany exploited elements of modernism when necessary—particularly technical advancement and industrial production, but turned to neoclassic styles in both architecture and typography, borrowing authority and credibility for their government as well as their culture from classical Rome (Kinross, 1989). Nothing, Kinross concludes, "is free of rhetoric, [and] visual manifestations emerge from particular historical circumstances, [and] ideological vacuums do not exist" (1989, p. 143).

Typefaces, even those used in railway timetables, do not merely reveal informational data, but can reflect a culture's ideology and aesthetics, its historical and ideological frameworks, making some typefaces appropriate for certain types of communications, but not for others. Typography is one area of printing and publishing of increasing interest to writers now that they too have access to numerous font choices with electronic-aided publishing technology. As Kinross's discussion reveals, typographical choices are not arbitrary. The earliest type, for example, duplicated the script used by scribes, as part of the transition from manuscript to print technology. But, the scripts were elaborate and ornamental, and difficult to read in text, and today are reserved primarily for ornamental purposes, perhaps the first letter of a chapter (*Right Type*, 1988). Refinements and developments have brought more graceful and balanced typefaces, with cleaner lines. Typically serif fonts had been the most popular until the Bauhaus school of the 1920s developed the sans serif typeface, characterized by legibility and clear design.

With the computer technology and the font choices now available, writers are faced with new choices. Once the decision of printers and publishers, the choice of

typeface may be dictated by the writer—the typeface of this document, for example, Palatino, is strictly my choice in this document, in part for readability, in part for aesthetics. But these choices make new demands on writers and they may need guidelines and explanations in order to make good decisions. Some understanding of the fundamentals and the aesthetics of type, of basic design principles concerning typography and readability may be necessary for writers using today's technology. With the ability to print and distribute professional-looking documents, writers will require that basic knowledge of typography and design.

The decisions about typography are significant and can seriously affect the readability and legibility of a printed document. In one page design and desktop publishing class at Purdue University for upper division undergraduates using Macintosh IIsi computer systems with Microsoft Word 5.0, students would often mix a variety of typefaces and styles, making text difficult to read or spoiling the look of a page. The numerous font choices available to the students allowed them to be creative and to find a signature font to work in. However, they often used several different fonts in the attempt to draw attention to specific data, a strategy which often succeeded in destroying the readability of the text and continuity of the design. While the use of different fonts may seem interesting, reading may be difficult as the eye tries to adjust to the various sizes, shapes, and spaces on the page. Parker calls this "the ransom note school of typography" (1990, p. 149). His advice to designers is to exercise restraint by choosing a minimum number of typefaces and creating a hierarchy of information.

Brown's *in Print* (1989) devotes a major part of the book to the discussion of type, its history, and descriptions and aids of identification, and guidelines for use of various typefaces. It becomes clear very early in the text that typographic decisions are important in understanding how and when to use different typefaces and styles. These decisions may be readability issues, but also go beyond that. According to Brown, "an

inspired typographer looks at what type does to a message and lets the essence of a typeface play its part in the design. That means she must know a type very well, anticipating its rhythm on the page" (p. 39). Typographic decisions are not arbitrary—there is, or should be, a purpose. These decisions are rhetorical; they are situated in the communication and the technology. The decision of which typeface to use should be a thoughtful one based on the fonts available and the purpose of the communication. For example, *Zapf Chancery,* a script-like ornamental font usually reserved for formal text such as wedding invitations, may be the choice of novice page designers when italics of their basic font would be more appropriate. A less formal and elaborate font (such as Palatino) is a better choice for less formal situations and purposes, and in italics (*Palatino*) provide emphasis as it maintains readability. The clean lines and high-tech look of a sans serif font (Geneva or Helvetica) might be used in document for a technical audience, such as a resume of a technical writer or a software designer. Font choices are numerous and can create confusion if used arbitrarily. The choice of font should depend on purpose and audience for a document, not the whim of the designer.

Problems in document readability may exist due to the choice of serif or sans serif fonts. Serif fonts, such as Palatino, which is being used in this document, have serifs, or small strokes, at the ends of each letterform which serve both decorative and functional purposes. They add visual character as the guide the reader's eye movement from letter to letter (Parker, 1990). Sans serif fonts, on the other hand, do not have those strokes, providing a simple, clean look. Usually reserved for headings surrounded by white space, these fonts, such as Helvetica or Geneva, may be difficult to follow in the smaller point sizes.

Point size is another factor in typographic decisions. This text is being written in 11 point Palatino. The decision to use 11, rather than 10 or 12, was in part for readability and in part aesthetic. All three sizes are readable and legible and should

cause little, if any, difficulty for a reader. 10 point does seem somewhat small, but 12

point, in my opinion, seems to take up too much space, and leaves too much white

space in an unjustified right margin. 11 point, as a compromise, is pleasing to me

visually, and is legible to all readers. As do other elements of the text, the typeface and

point size give a particular look to the document, a look and design that I am

comfortable with. Figure 4.5 juxtaposes the three point sizes in Palatino type for the

reader's own comparison. However, 11 point type is not as readily available as some

others, since not all point sizes are listed in the most accessible menus, and requires

knowledge of the changes possible through the pull down menus. For example, in

choosing 11 point, I used the **Format/Character** menu; making this change is possible

through other methods, but ones that a novice user may not be familiar with.

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10 point

Problems in document readability may also exist due to the choice of serif or sans serif fonts. Serif fonts, such as Palatino, which is being used in this document, have serifs, or small strokes, at the ends of each letterform which serve both decorative and functional purposes. They add visual character as the guide the reader's eye movement from letter to letter (Parker, 1990). Sans serif fonts, on the other hand, do not have those strokes, providing a simple, clean look.

11 point

Problems in document readability may also exist due to the choice of serif or sans serif fonts. Serif fonts, such as Palatino, which is being used in this document, have serifs, or small strokes, at the ends of each letterform which serve both decorative and functional purposes. They add visual character as the guide the reader's eye movement from letter to letter (Parker, 1990). Sans serif fonts, on the other hand, do not have those strokes, providing a simple, clean look.

12 point

Problems in document readability may also exist due to the choice of serif or sans serif fonts. Serif fonts, such as Palatino, which is being used in this document, have serifs, or small strokes, at the ends of each letterform which serve both decorative and functional purposes. They add visual character as the guide the reader's eye movement from letter to letter (Parker, 1990). Sans serif fonts, on the other hand, do not have those strokes, providing a simple, clean look.

Figure 4.5 Comparison of point sizes in Palatino font

Although typography is an important element of design and readability, the structure of a document and the medium used to produce it converge with other rhetorical elements in the development of text. Audience, purpose, and subject matter help to determine which technology is best used in the production of a document. A newsletter, a manual, or a flyer, for example, require different design decisions than an essay, business report, or poem.

A flyer, or small poster, which needs to be viewed from a distance will not be effective if designed in blocks of paragraphed text, such as an essay. Its purpose may be to provide basic information to an, as yet, uninformed audience. For example, at a university, an organization wants to notify new students about their initial meeting and interest them in joining. Or a call for dancers to audition for a theater production needs to be posted. The flyer may be placed where many others are also posted, thus requiring attention-getting graphics or text. To produce this document, a writer may choose to use either a drawing program or a page layout program, depending on the type and amount of graphics and text necessary. An illustration with only a few words could be produced in a drawing program. On the other hand, a page layout program might be used more efficiently for scanned logos or pictures, or more variety in text styles such as reverse type (white on black). The sample flyer produced in Aldus PageMaker and shown as Figure 4.6 is one example. The design elements and the choice of technology are intricate parts of the writing process. The appeal to audience, pathos, is achieved with the eye-catching and interesting layout and typestyle (reverse). While getting attention is important, the substance of the message, its logos, provides enough information for an interested person to pursue the contact with the writer, whose ethos is also present through the type of information and appeal. This writer has included details, address,

SUMMER SUBLEASE

238 PIERCE ST

walking distance to campus, chauncey mall, etc.

2 BEDROOM

1 bath (3 people) • a/c • microwave• disposal

1992

may 15 thru august 15

$480

PER MONTH *plus utilties*

743-7360

call for more information

Figure 4.6. Sample Flyer

and a contact number so that claims, such as "walking distance to" specific places can be checked before pursuing the information any further.

Other documents such as a brochure or newsletter which combine blocks of text with graphics in a visually interesting layout may best be produced in a page layout program such as PageMaker. Text files in a word processing program can be imported and placed, just as graphics from drawing programs, charts from spreadsheet programs, and scanned images can also. PageMaker gives writers the opportunity to see each page individually or two pages at a time, providing a sense of the overall design or macro structure of the document. The writer can also look at a whole page at once or zoom in on sections of the page, in order to look at the details, or micro structure. Such details as the writing of the text file, the choice of typography, the placement of text and graphics, the size of the document, the use of color, the use of headings, rules, or borders, and methods of emphasis together make an impact on the reader, one that is both verbal and visual. Again, the appeal to the audience is not only through an appealing design, but through text, perhaps headlines and titles which also draw attention to a brochure's substance. But if the substance of the text is lacking in details, is poorly written, or ineffectively displayed, the audience will lose interest. The ethos of the writer is not only inherent in the writing, but also in the design, for a well-designed document has substance, appeal, and credibility.

Among the things that rhetoric and composition can take from design studies is the acknowledgment of the rhetorical nature of all objects—not only texts, but other things as well. As Buchanan (1989) claims, ethos, pathos, and logos are inherent in all objects of design, and the process of design as well as a designer's values, attitudes and philosophy help to shape design. In addition, in design studies, objects may be valued not only for themselves, but also for the responses they engender. Buchanan's position is clear: design, whether graphic, industrial or product, is a rhetorical process: it involves

reasoning, character, and emotion. Rather than simply making an object, a designer "is actually creating a persuasive argument that comes to life whenever a user considers or uses a product as a means to some end" (Buchanan, 1989, p. 95-96). This view of design as a rhetorical process also allows us to see rhetoric, or communication, as a process of design.

If we accept a rhetorical perspective for design, data once perceived as informational and neutral can now clearly be discussed as rhetorical, as combining cultural and political elements with persuasive techniques. Design studies do not deal exclusively with written texts, but, in a postmodern sense, view everything as text. A building, a room, a toaster, a book, all can be viewed as ways in which an individual or a culture operates. Each is situated in a specific time and place for a specific purpose, for a specific audience.

Brown (1989), Kostelnick (1989, 1994), Parker (1990), the *Publish* editors (1988), and Sullivan (1988, 1991, 1992) all recognize that the technology available to writers means that graphic design is no longer exclusively the purview of art directors and design professionals. Typographic decisions, text and graphics placement, the use of headings, and other design principles may now be left to the writer. And the expert as well as the novice writer will probably need some understanding of visual design principles to produce successful and effective documents. The choice of technological options allows writers to choose an application for creating a document, one that facilitates the use of both verbal and visual elements, and fits the purpose and scope of the document as it effectively communicates to an audience.

Writers in more specialized areas such as professional writing, already recognize that text is more than verbal, and writing is more than putting words together. They accept the significance of visual components and may use electronic-aided publishing

technology and its various applications for the production of visually informative documents.

Professional Writing: Technical Writing and Publishing

Technical writers,[1] as far back as the Renaissance have realized the significance of the visual to communication and meaning. Information designers, and other communication specialists as well, have already recognized the importance of the visual in various media. The visual media, television and film for example, depend on the strength of the visual image combined with the verbal message to communicate a variety of information, knowledge, and meanings to an audience. Although television and film theory have much to offer about visual rhetoric to a study of this kind, I will limit the discussion of visual design to traditional print documents, including how technical writers integrate visual and verbal language in documents, and how professional writers of two journals, *Publish* and *Before & After*, integrate design and technology in publishing.

Visual communication includes several different aspects of document design, including typography and text layout, and graphs and charts and other pictorial elements. I have already discussed typography extensively in an earlier section of this chapter, but will reemphasize here the importance of font choice and typestyle to readability and legibility issues. Like typographic decisions, other visual design decisions, such as those made in the creation of the sample flyer (Figure 4.6), are

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[1] "Technical writer" and "professional writer" are slippery terms whose definitions have been discussed and debated with no clear definitions emerging. Professional writing has been used interchangeably with both technical writing and business writing. For the discussion in this chapter, I use the terms loosely, technical writing as the term often used specifically by industry, especially for writers of documentation, and professional writing in the generic sense for writers whose jobs center on the production and publication of documents, whether technical reports, journals or newsletters. So, technical writing may be considered one facet of professional writing. (See Sullivan & Porter, 1993 for a discussion of professional writing as a workplace activity and an academic discipline.)

rhetorical and made with regard to audience and purpose and technology, for the ease with which visual documents can be produced is due in part to the desktop systems.

Technical Writing

Looking through copies of *Technical Communication, Journal of Business and Technical Communication,* and *Technical Communication Quarterly,* as well as other journals in the field, a reader will find articles which discuss visual elements of writing, specifically graphs and charts. Textbooks for technical and business writing classes usually feature a chapter on graphics providing students with the do's and don'ts for the visual presentation of data. But, the visual/verbal relationship in meaning is more than including graphs and charts along with text. It involves a complex range of issues for integrating the visual and verbal which Bernhardt addresses in "Seeing the Text" (1986) and which Sullivan (1992) recognizes as part of the publishing process, a process not often included in the term "writing." More recent editions of the journals and the latest anthologies include articles which view graphics and visual design through the lens of postmodernism. Barton and Barton (1989) identify a shift in our view of visuals from autonomous structures to structures embodying cultural and disciplinary conventions. Kostelnick (1993) offers visual communication as a complex social act. And, as I have already discussed, Barton and Barton (1993a, 1993b) combine postmodern theories and technical writing with their analyses of the ideology in the production of maps.

With the technology available to the individual writer, document design and layout no longer must be left primarily to a printer. Writers with appropriate electronic-aided publishing technology can write, design, publish and distribute documents on their own. The visual markers and cues in a verbal text are not unique, but the available technology brings the design element to writing in a way it could not earlier.

Visual design in technical writing is not a twentieth century phenomenon, nor is it a manifestation of the advanced electronic technology. Tebeaux (1991, 1993) has

described the use and power of visual language and presentation during the Renaissance. Her work argues that the techniques of formatting and page design and other forms of visual presentation which exist in non-fiction writing today have been in use since the late 1400s. The technologies which allowed for these techniques were, of course, writing itself, and the printing press.

Using a resource called the *Short-Title Catalogue, 1475-1640*, Tebeaux (1991) has drawn the following conclusions about Renaissance audiences and publications.

1> The variety of different forms of writing, including pragmatic, suggests a reading public with diverse interests. The existence of cheap pamphlets and books as well as expensive folios, suggests the audience had varied levels of education and income. Small, inexpensive volumes would have appealed to readers who could not afford the larger more expensive publications.

2> Widespread literacy and the demand for information resulted in manuals of short, easy ways to acquire many different kinds of information. Books of a moral and didactic nature, as well as works of literature, information, and how-to books printed in the English vernacular (as opposed to scholarly writing in Latin), books on finance, particularly accounting, for members of the new commercial class, books for the care of animals and birds, and for instruction in hunting and gardening, medical care, and crafts such as needlework and cooking: all were printed and distributed during the Renaissance.

The writing which can be called "technical writing"--usually how-to books--exhibits contemporary principles for information and visual design, showing the printer's awareness of audience needs:

- texts clearly organized to be used as a reference manual, rather than for sustained reading
- pages designed for easy visual access to illustrations

- glossaries included at the beginning of books

- reference manuals printed as small, compact octavos or quartos to be carried easily

- legible roman type used increasingly to replace script

Specific page design techniques for better readability, legibility, and accessibility included:

- table of contents

- headings

- index

- numbered lists

- marginal descriptive comments

- use of white space

- wide margins

To the instructor of professional/technical writing today, these are all familiar techniques and commonly seen in technical and business reports, in documentation, and in textbooks.

Bernhardt (1986) has recognized the visual apprehension required to read a text and called for a vocabulary for dealing with the visual elements of a page. He argues that experimenting with the visible features of the written text will increase awareness of organizational arrangements. Visually informative writing "encourages the writer to be exact about group related ideas, delineating beginnings and endings, and using cues to signal to the reader a graphic representation of cognitive organization" (Bernhardt, 1986, p. 67). Again, these visual markers are not only for the reader, but are important for writers as well. Examining the structures of written texts for visual features will help writers develop a better sense of categories, divisions, and logical progression. Bernhardt

includes advertising, texts for public audiences, informational pamphlets and brochures as those adopting visually informative strategies.

To critique a visual document, Bernhardt, using Gestalt theory, begins with audience and purpose. Choosing a fact sheet on wetlands provides an example of a document which must address diverse audiences. In this case, as with many environmental and public issues, the text was written for legislators, educators and students, and the general public. Not a public relations document, its purpose was to "convey important substantial information in an intelligent manner in order to influence the ecological administration of the [Great Lakes] region" (Bernhardt, 1986, p. 71). As composition specialists understand, multiple audiences and perspectives confuse the issue, imposing constraints and limitations upon a text which, in turn, influence its shape and structure.

The Wetlands document achieved its purpose through the use of several visual features, drawing attention to the fact sheet so that it would be read and kept for future reference as part of a series of fact sheets. To begin with, the paper was high-quality with well-defined print. The positioning of headings across the top and down one side with identifying symbols in the upper right hand corners helped identify the fact sheets as separate, yet tie them to a series. Layout issues center around the visual impact of the text on a reader. Balance has been defined as important in perception and the wetlands text achieves balance horizontally, vertically and diagonally, in Bernhardt's estimation.

> A horizontal axis balances the material above and below the widely spaced heading: *The importance of wetlands to the Great Lakes*. A vertical axis divides the lower half of the page, balancing the widely spaced headings along the left side against the explanatory material on the right. Finally, diagonal axes work toward symmetry; the lined margins on the top and right balance each other, the continuous text in the upper-left balances the shorter detached statements in the lower right, and the logo in the upper-right balances the spaced headings of the lower-left. (Bernhardt, 1986, pp. 71-72)

Balance is accompanied by continuation, achieved by clear black print on a light brown background; emphasis is achieved through the use of lists; and similarity is conveyed

through each distinct section and its boundaries, all important for the visual impact. Visual features take on the role usually reserved for paragraphing and verbal constructs in a traditional essay. Headings identify the general topics, typeface and size, and placement of headings reveal subordinate ideas and information. Parallel structuring and other syntactic patterns provide continuity and development. Bernhardt argues for the development of visual design vocabulary for written texts, a situation echoed by others and compelled by the available technology.

Tebeaux often refers to the printer—"printers and writers . . . chose format . . . " (1991, p. 250)—as she describes the visual elements present in Renaissance writing. With today's technology, particularly electronic-aided publishing, the responsibility for printing decisions may be in the hands of the writer/designer, who functions as both writer and printer (Kostelnick, 1994; Sullivan, 1991, 1992). Ruszkiewicz (1988) sees the introduction of graphic-based word processing software as a challenge to the text-based notion of writing and making of knowledge. I would argue, in much the same way as do Kostelnick, Sullivan, and Ruszkiewicz, that electronic-aided publishing technology, brings to all writers a new perspective on the interaction of the visual and verbal in text.

Visual Design and
Electronic-Aided Publishing Technology

Using the technology to design a document is possible with a number of integrated programs available for computer systems. Microsoft Word allows the writer to create columns or tables, or to draw borders (see Figure 3.4) around text. Drawing and painting programs allow the writer to create graphics and drawings and page layout programs allow them to import both visual and verbal texts to be integrated into one document.

As I have already discussed earlier, one way to begin designing is with the use of grid, a framework used in graphic design which serves to organize and brings cohesiveness to a visual text (Berryman, 1984; Williamson, 1989). Novice designers can

create a grid with pen and paper or use one in a drawing program to experiment with the layout of the text. In drawing programs a grid may be seen on the screen, and can be adjusted to different intervals so that lines drawn on the screen will follow the grid markings, making them straight and at specific intervals (see Figure 3.5). The boxes, or other shapes drawn, can then be moved around to different parts of the page so that the writer can visualize the layout of the text and graphics. The same function can be accomplished in a page layout program such as Aldus PageMaker, which also allows the writer to move blocks of text or graphics around for the best placement.

The grid helps to establish the symmetry which Bernhardt has labeled as important to design and visual impact, but Martin (1989) cautions that templates, especially those built into computer programs may not be used properly without some understanding of information processing. Martin outlines the four separate processes called chunking, queuing, filtering and abstracting, all parts of a visual preprocessing that precede reading and that help to identify the purpose of the document. An example of the visual preprocessing is illustrated in Figure 4.7: the template for a report, using headings and subheadings, short paragraphs and text to provide pre-reading information to the reader. Chunking groups information according to perceived separations, while queuing establishes sequence or hierarchy. Filtering identifies similarities and differences, and abstracting perceives relationships. The layout and design of a document can help the reader to quickly perceive the document, but an unappealing or poorly designed layout may be rejected by the reader.

Martin's discussion of the visual format repeats those visual elements and design principles which are discussed by both Bernhardt and Tebeaux and are common to design chapters in technical writing textbooks:

- use of headings to show organization and hierarchy
- use of white space, indenting, and spacing for hierarchy and organization

- use of lists and steps

- consistency in typeface, size, and style

- emphasis through point size, italics, bold
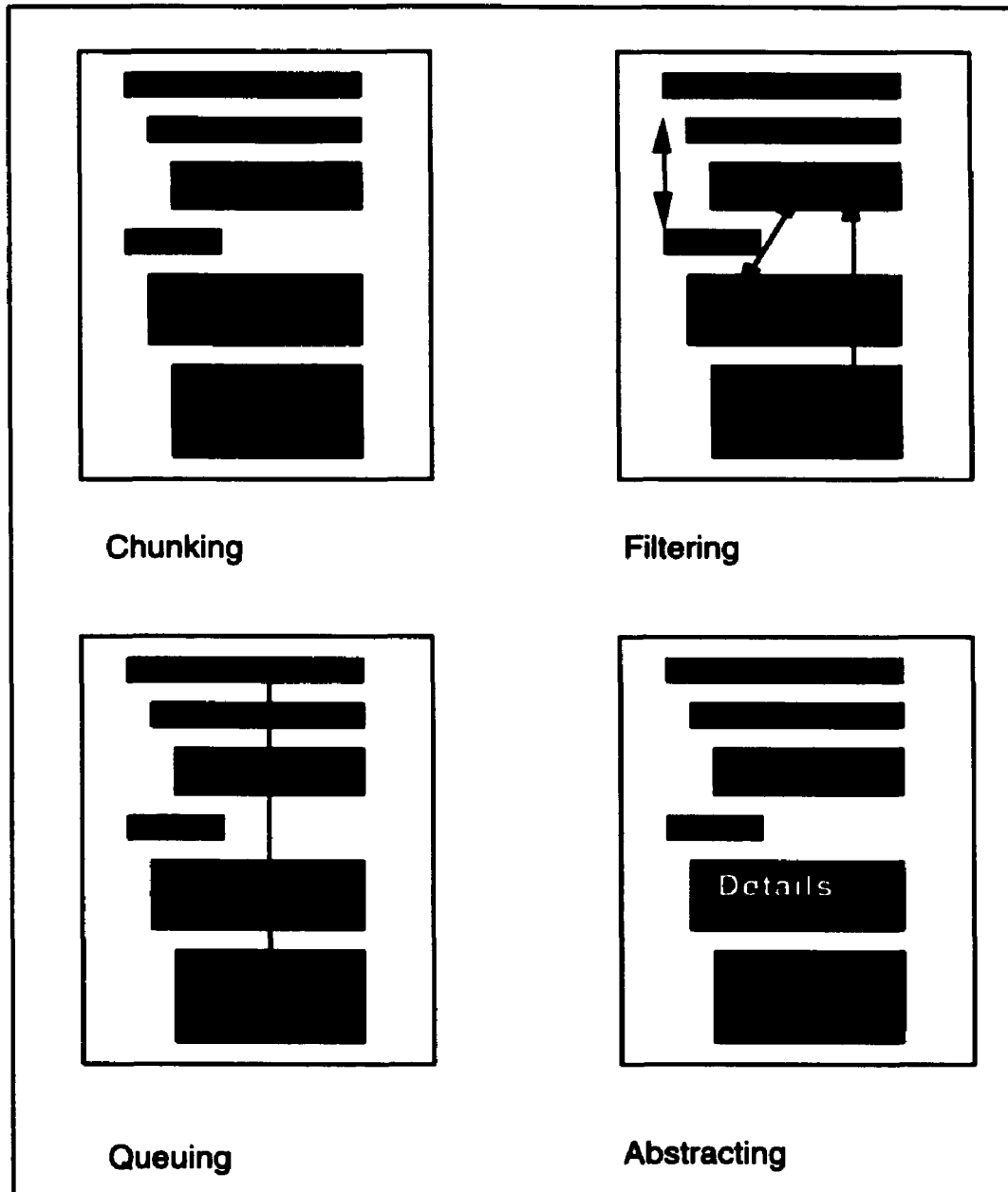
- graphic representations

Figure 4.7 Visual preprocessing of documents (Martin, 1989)

Each of these is important for the reader to engage with a visually informative text and can be accomplished with electronic-aided publishing technology.

Even if a writer has only a word processing program such as Microsoft Word, various visual elements can be incorporated into a text (discussed in Chapter 3).

1> If a writer does not have a full page monitor, the print preview command allows the writer to see the page as a whole. This preview will show the layout of one page or two pages side by side. The writer may zoom in to check specific sections of the page. This command then serves to help the writer with the visual processing of the text, helping to identify the visual impact of the document on the reader. Even with a full page monitor, print preview can be used to look at the visual effect of pages side by side as they might be seen in a newsletter or brochure.

2> The writer is able to choose the font, and decide on complementary fonts for headings and divisional text. Unfortunately, the numerous choices available could serve to inhibit the writer, making the decision more difficult than having to choose among only a few fonts. Or the writer might avoid making a decision and use the default font, which gives control to the computer programmer or the software designer. Finally, a writer could choose a new default font for use with all documents, regardless of purpose or audience.

3> With a choice of typestyles available, the writer can choose different methods of emphasis. Type can be put in bold or italics, or in all caps or small caps. Text can be underlined. Borders can be put around sections of text to draw attention to them, or rules may be drawn over or under text to separate them from the surrounding text.

4> The command which draws borders around text, also provides options for shading the highlighted section of text. Shading options range from none to 100%. (See Figure 3.4)

5> Text may be put in columns and tables can be created using Word. The number of cells in the table and their sizes can be controlled and manipulated by the user. Borders may be drawn around each cell, or be limited to rows or columns, or even the outside boundaries.

6> Finally, the drawing feature of Word allows the writer to draw and easily insert the drawing into the text at any place.

One significant factor in the changes in the hardware of electronic-aided publishing systems which directly affects the use of visual language is the development of the laser printer (Kostelnick, 1994). The introduction of the laser printer has resulted in a dramatic shift in visual language. Combined with software, the laser printer offers typographical flexibility and typographical control over visual style and tone unavailable with previous printers. As electronic-aided publishing technology continues the print tradition, it also revives the expressive, stylistic vitality of handwritten text, yielding a rich visual language and serving as a catalyst to change (Kostelnick, 1994).

Early micro-computers, especially those used in the home or classroom, were often linked to 9-pin dot matrix printers. Providing adequate draft quality printing, these could also be programmed to produce so-called "letter-quality" printing, which for the most part meant, the print was darker, looked like a typescript, and took a long time to produce, as the printer head would strike over the line several times. Later the 24-pin dot-matrix printer was developed, which improved the quality of the print, but, even in the "best quality" mode, retained the look of the dots of ink which formed the letters. The texts printed with the daisy wheel printer looked more like a freshly typed or printed page, duplicating the clean and dark look of ink, but still looked like one produced with a typewriter. While that look was once highly valued, many writers now want a more professional look to their documents. The dot-matrix printers were limited in choice of typefaces. Some had a choice of serif or sans serif, others may have a few

different serif faces to choose from. But often, the result of these printers was the Courier style, again duplicating typewriter print. Even inkjet printers which have become an economical alternative to the laser printer lack the versatility of the laser printer although it duplicates the look of the laser-printed page.

But as Kostelnick points out (1994), the real revolution in printing with computer technology came with the development of the laser printer. The laser printer allows for changes in the rigid, quasi-print medium of the typewriter and the earlier printers. What makes typographical and design decisions in electronic-aided publishing dynamic, and intuitive and open-ended is in part the printing technology that allows for such flexibility. The typewriter, for example, was revolutionary in its own way, mimicking print technology in the workplace, but was constrained by limited choices in line spacing, column width, and style (Kostelnick. 1994). The laser printer, which reads, spools, and prints the document designed and written in the electronic writing space, is as dynamic and fluid as the space it's written in. While limitations still exist in the technology (such as the size of the paper which can be used in the printer), the laser printer has helped to define the space and the products of electronic-aided publishing technology.

Electronic-aided publishing is not limited to a computer and a printer. With additional hardware and software, writers can scan photographs and other illustrations and pictures into a text, can create graphs and charts and choose the best way to display numerical data with a spreadsheet program, can create original artwork with a drawing program, and can design a page easily with a layout program. The writer with fewer programs may be able to accomplish many of the same goals with available word processing programs. The visual impact depends on the design principles which work to make a visually informative text and those design principles can guide the creation of text regardless of the technology. With CD-ROM technology and videos, multimedia can

become part of the document production, particularly the on screen interactive programs of hypertext and hypermedia. The electronic-aided publishing technology now available has made writers more aware of their responsibility to design texts which accomplish the writer's purpose and goals and meet audience needs and expectations in terms of both verbal and visual language.

Integrating Design and Technology

The interest in computers has spawned the development of a number of journals which aid individuals in learning about software and hardware, about new developments in systems for a variety of computer technologies, and about using that software effectively in creating a variety of texts. Two journals in particular illustrate the issues discussed in this study: the integration of design and technology. Both *Publish* and *Before & After* provide good examples of this integration.

While *Publish* presents and discusses new and updated technology, both software and hardware, and its implications for users, each issue of the magazine also discusses design. It includes reviews of new systems and applications, discusses new techniques of text production, and acknowledges innovative uses of design and technology. Sometimes design issues are the focus of feature articles, but the journal usually includes a short "Makeover" section, details of changes in the design of a text through the use of technology.

These makeovers may be in logos, in cover designs, or in the layout of a newsletter, brochure or similar document. For example, the makeover of the logo for Duncan Aviation (Figure 4.8) transforms a simple and static design into a dynamic one, reflecting a multifaceted aircraft-maintenance operation (Mauk, 1992). As the designer describes it:

> The cloud formation and *da* logo were only vague representations of Duncan Aviation's business. The new logo makes a concise statement about a company that knows its strengths and its audience and that offers

professional service. The airplane image is both striking and flexible. (Mauk, 1992, p. 86)

Figure 4.8 Duncan Aviation original logo, original sign, and new logo

Although an argument might be made for this makeover as example of design as "packaging," the impact of the logo is much more significant. The company's desire to change the logo comes from a change in the company itself. Corporate trademarks or logos embody in them a concept and a vision of the organization. The stylized plane, the new logo, promotes an image of a modern aircraft company, unlike the simple *da* logo, which could represent a number of companies with those initials. Duncan Aviation is an expanded aviation service with a line of aircraft products. The need for a new logo reflects a change in the substance of the company. The new logo is used on all company documents and correspondence as well as on labels and packaging materials. Brochures and other informational communications have been redesigned also to echo the company symbolized by the new logo. The stylized airplane reflects the company's ethos, that of a modern company, not one limited by out-of-date modes of transportation and service. While the look and appeal of the logo to the audience is important for it to become an identifying mark, the appeal is reinforced and substantiated by the company's performance and credibility, one that its clients are already familiar with.

A second makeover example (see Appendix A) illustrates the need for a new identifying logo and design when two maritime journals merged. The initial combining side by side of the two designs of *Seaways* and *Ships in Scale* was unsuccessful, looking cluttered and being confusing to readers. Creating a new logo and design for the journal not only satisfies design needs for a consistent layout and identifying schema for the

journal, but also considers audience expectations for an attractive, appealing and readable journal, as well as a design to highlight the high-profile authors contributing articles.

Again, the emotional appeal, or pathos, of the journal is important as a mode of identification for its audience. But the design achieves much more than a pretty package. The character, or ethos, of each journal is reconciled into the new one, maintaining the substance and quality of each journal and establishing an ethos for the new publication. The continued presence of substantial articles by credible and recognized authors remains an important and notable feature of the merger. While the redesign has been changed to make formatting and display more consistent and text more readable, the quality and substance of the articles has been maintained. In these makeovers, design and technology have worked with substance to produce an appropriate and dynamic image for the aviation company and unified the varying audiences for the merged journals, revealing one way in which design and technology are part of the rhetorical situation.

While these makeovers are the work of experienced designers, information and graphic designers are aware of the need and desire of computer users to learn how to do interesting, imaginative and creative things with their systems. *Publish* is only one of a number of magazines which address issues of information technology and visual design. In addition, the magazine is also a good example of that integration. The articles are divided into four sections—Process, Technology, Tools, and Dialog—which are color-coded, allowing the reader to flip through the pages more easily to the section of interest. Articles cover all phases of the production process, as well as the computers, printers, scanners and software which enable production and distribution, and incorporate visual representations, including illustrations and screen shots, to support the information. The page design also encourages the journal's diverse audience of both experienced and

novice designers and computer users by using color, appropriate typefaces and styles for text and headings, placement of quotations or representations which break up long blocks of text, as well as other design techniques. The purpose is not only to provide an attractive journal, but one with substance as well. And that substance is not neglected in discussions of process, for the writers continually work within the realm of rhetoric, recognizing that an appeal of audience goes hand-in-hand with quality writing and credibility.

Another journal which seeks to aid visual designers and desktop users is *Before & After: How to design cool stuff*, which also illustrates how design and technology are integrated. Unlike *Publish*, this journal is small, only 16 pages, contains no ads, and is devoted entirely to the "how-to" of design. Its purpose is not only to illustrate effective design principles, but also how to achieve certain effects and design with specific technology. The January-February 1994 issue, for example, explains how to create a monogram for a company, how to design and monogram stationery, and how to create a fax cover sheet, an origami invitation, and a coupon card.

Another article discusses the design, and makeover, of a bulletin newsletter, including building a grid and using a half column graphic. The tools and specifications for each project are provided (see Appendix B). For example, the newsletter is created with PageMaker 5.0 in letter format with dimensions of 51 x 66 picas. Orientation is tall with double-sided facing pages, four columns to a page with 1 pica gutters. With this information, even novice users of the program can begin to experiment with design and begin to understand its principles and effect.

Looking at the article reveals the variety of decisions which must be made. Some of these decisions involve the content, some the design, some the audience, and others the technology. All, however, are rhetorical, for both the visual and the verbal elements help to not only "sell" the newsletter and make it readable, but also to inform and

communicate interesting and important subjects. The audience must first want to pick it up in order to read it and must find it interesting and informative in order to continue to read it. Although the article itself does focus on design, the importance of the verbal text is not ignored—in the paragraph under the "before" example, this admonition to the writer appears: "Be careful how you *write*, too" ("Newsflash," 1994, p. 10). The designers recognize the importance of the verbal language as well as the visual.

Both of these journals not only write about, describe, and discuss visual design and technology, but they exhibit good design principles. They have colorful and imaginative layouts which draw the attention of the audience, and they include well-organized and easy to find information. Unlike other magazines, there are very few pages containing only text. Just as significantly, they both provide very detailed information about the specifications of the journals, and the tools they use for the journal itself as well as the various applications and tools used in different articles and for different features. Both are valuable resources for writers/designers. But, just as important in these journals is the careful attention paid to the writing. The instructions are clear and readily accessible to the interested reader. The "tricks" of technology are not merely used to create eye-catching designs and visuals, but also to feature good quality writing about interesting and important subjects. The ethos, pathos, and logos are all present, even if the emphasis seems to be on design and technology. The editors and publishers of both *Publish* and *Before & After* realize that communication is a goal of information designers and that design and technology works with the subject matter to create a well-designed communication.

Technical writing can offer to rhetoric and composition some understanding of the interplay of visual and verbal components of text. The visual cues that guide a reader through a text, and the visual representations which clarify the text must work with the text to create an effective document. However, the discussions in technical writing may

not apply to a specific technology, unless the writers are specifically discussing online documentation or hypertext.

Professional writers and designers can also offer an understanding of how technology and design are integrated in the production of a variety of texts, logos, pamphlets, newsletters, as well as pages of a journal or book. Their research and literature discusses all aspects of the writing/designing process, including visual design and technology with other rhetorical elements such as audience, purpose, and subject matter. The publications addressing information design, such as *Publish* and *Before &* *After* embody what I consider significant to writing: the integration of design and technology into the rhetorical process. Electronic-aided publishing technology facilitates this integration in printed documents.

Conclusion

Each of the areas of literature and research discussed in this chapter recognizes the significance of visual components of text, but each brings to rhetoric and composition a different view of the visual, and for different purposes. Table 4.1 identifies what we can take from each of these communities, as well as their limitations.

Postmodern critiques emerge in a number of areas, including literary and cultural theory, in textual analysis and even in geography. These critiques can be useful to rhetoric and composition as they provide avenues of discussion about what constitutes text and what role the visual plays. Their sensitivity to political issues and power relationships in visual/spatial arrangements can heighten our awareness of inherent ideologies in both the visual and verbal aspects of technology, pedagogy, research, and in our own and students' writing. While these theorists are not only discussing writing or communication, the theories can be applied to written discourse of any kind.

Table 4.1 Contributions of research areas to rhetoric and composition

literature/research area	contribution to rhetoric and composition	what limits the contribution
POSTMODERN THEORY	sees visual components of text as interrelated with verbal language; sensitive to power/politics of visual/spatial arrangement	defines all organizations, cultural, social, political, behavioral as texts, discusses all texts, not only written communication
COGNITIVE STUDIES	recognizes visual thinking as part of invention and comprehension processes	does not specifically discuss either writing or technology
DESIGN STUDIES	recognizes visual elements, layout and design, color, typography, etc. as rhetorical	discusses all objects, not limited to written documents
PROFESSIONAL WRITING: TECHNICAL WRITING	uses visual representations and cues as part of writing process, integrates design and writing	may underestimate role of technology in the writing and designing of documents, except in terms of online documentation
PROFESSIONAL WRITING: PUBLISHING	considers design and technology as significant to the rhetorical process; pathos, ethos, and logos are all part of design as well	may be perceived as focusing on technology and layout decisions for "packaging" rather than for content and substance

Cognitive studies have opened the way for an understanding of the role of sense perception and visualization in the thinking process. Although some theories tend to support a sensing/thinking binary, others identify a process which involves both sensory images and reasoning—once an individual moves beyond the enactive stage, that process is integrated with the iconic. An individual at the symbolic stage incorporates both of the previous stages into the reasoning, thinking process and visualization assumes a significant role in that final stage. While this body of literature and research does not focus on writing or the use of technology, the connections can be made. The role of

visualization in the writing process, and the significance of technology to this visualization, can be discussed in conjunction with cognitive theory.

Also in this chapter, I have discussed how design studies and the move to understand design as rhetorical can be inverted to see rhetoric as design. These studies, especially information design, recognize visual language as being just as important as verbal text. Visual elements such as typography, color, layout, are all seen as part of the design process, along with appeal to audience, credibility of the author and substance. In general, design studies deal with all objects as modes of communication, and a printed document is one of many objects which incorporate visual language. The technology referred to in design studies varies with the objects; in some cases, the studies deal with computers, in others they do not, but may deal with a manufacturing process. But, the rhetoric of design does include printed documents and can be useful to rhetoric and composition.

Professional and technical writers are acutely aware of how visual markers and graphical representations work in conjunction with verbal language to provide information. The literature in this area, including textbooks, technical reports, and reference materials, recognizes the use of visual language since the Renaissance. Designing a document incorporates all issues of the rhetorical process in this area, and, in fact, is very reader-centered, as the process often begins with audience analysis. The process of document design may be conceived as a problem-solving strategy. While for the most part, the literature in this area does not discuss any specific technology, that is changing as technical writers are beginning to discuss more often the use of hypertext and networked programs, and databases for online documents.

Finally, also in professional writing, publishers of journals in the area of graphic design and information design provide an example of the integration of both document design and technology into the rhetorical process. Not only do these journals present

issues of design as they relate to printed documents, and the technology available for use, they do not forget that the substance of a document is just as important as its appeal. In spite of their focus on design issues, which may seem to put design and appeal first, they discuss design as integral to text production, acknowledging the significance of subject matter, and the quality of writing, as well as the technology and layout decisions to a well-designed document. In this body of literature, design is not separate from technology, substance, character, or appeal, but all work together in a document.

This chapter has discussed various bodies of research and literature whose theorists recognize the significance of visual components and the potential contributions of each area to rhetoric and composition. It has also attempted to show how electronic-aided publishing technology encourages and fosters those visual concerns. Since electronic-aided publishing technology allows the writers to be designers, printers, publishers, and distributors, knowledge of the visual impact of a writer's verbal and visual decisions is significant to an effective document. Texts are not merely verbal documents, but visual ones as well. And visual elements, even something as simple as white space between paragraphs, are rhetorical, for they are important in the writing and reading of texts. Finally, this study develops an interdisciplinary approach to rhetoric. The various bodies of literature are each helpful in specific, yet incomplete ways. Together they provide resources necessary for rhetoric and composition to develop a stronger sense of the visual than it currently has.

CHAPTER 5

CONCLUSION: IMPLICATIONS OF A VISUAL RHETORIC
OF ELECTRONIC-AIDED PUBLISHING

The technology which has become a primary instrument of writing, the computer,

allows writers to make choices which were once out of their hands. The look and feel of

a document, driven by choices of paper, of typefaces and print styles, and of visual

markers, can now be the responsibility of the writer, and those decisions can be

incorporated into the writing process. While some writers will eagerly accept the

challenges that come with designing and publishing a text as well as writing it, others

may be intimidated by the increasing amount of choices.

In spite of the differences in the electronic writing space, print conventions and

assumptions about writing and reading continue to drive these processes in an

increasingly electronic culture. The quotation below, taken from the program of the North

Carolina Writer's Network 10th Annual Fall Conference (1994), reflects one of those

print conventions. One session is described as

> A workshop that deals with the proper way of writing a nonfiction book
> proposal including the correct format, the proper inclusions, *making sure the*
> *computer printout looks like it's typewritten* and just a hint about the research
> needed before the writer contacts the publisher . . . (emphasis added)

The look of the typewritten page, once the standard for written documents, still retains

a position of authority for some writers and publishers, and, ironically, electronic

technology allows writers to make their texts look as if they were typewritten.

Throughout this study, I have argued for situating both technology and visual

language in rhetoric and composition, and for recognizing their roles in the rhetorical

situation. I maintain that technology, as the modern equivalent of delivery, and visual elements and representations are rhetorical, for they affect and are affected by other rhetorical elements: audience, purpose, information, persuasive appeal. While this study has discussed technology and visual language as separate entities, they, like the other rhetorical elements, are not discrete, but are dependent on the others.

In Chapter 2, this study considered several different views of technology as well as the role of different technologies in human development and culture and their significance to writing processes, specifically alphabetic writing, printing press, broadcast media, and computers. Technology is ignored by some theorists, who treat it as transparent and of no significance to the writing process. Others believe that the medium of writing is neutral, that it is simply a tool of transcription with no inherent values of its own. A third view of technology recognizes that it has inherent ideologies and values and that it does influence humans and their culture, although the degree and nature of that influence is disputed. Some argue that technology is harmful, that users may become so dependent on the technology and conditioned to it that the technology becomes transparent as users cease to be aware of its influences. Looking at technology in a more positive light are researchers such as Ong, Havelock, Eisenstein, and McLuhan, who recognize the significance of technology to human development and culture and to writing. They encourage a renewed interest in technology and its effects and a re-examination of cultures in light of the technology. Although many of these theorists come from areas of study outside rhetoric and composition, within rhetoric and composition, computer composition specialists such as Gail Hawisher and Cynthia Selfe, co-editors of *Computers and Composition* and of several anthologies, Marilyn Cooper, Pat Sullivan, Helen Schwartz, Paul LeBlanc, Debra Holdstein, Joseph Janangelo, and Charles Moran, to name only a few, have accepted and built on the work of Ong and others as they research the effects and influences of computer technology.

Accepting the view of technology as influential, but not necessarily harmful or controlling, I examined in Chapter 3 one instantiation of electronic writing technology, an electronic-aided publishing system with several software applications. The descriptions and discussions of the writing space of each of these programs reveal that writing and text can be viewed in different ways, that they are not always focused on verbal language on a page. The visual nature of this writing space heightens the writer's awareness of visual language and expands the notion of text to include more than words. Drawings produced in one program and easily imported into another brings a visual dimension to writing. Page layout programs not only remind writers of this visual dimension as users manipulate words and graphics for the most advantageous placement in order to interest and inform the audience, but they also allow users to reconceive of the "page," changing its dimensions and its format to one appropriate to the information it contains and the audience it addresses. At the same time, this particular writing space, it must be understood, uses the metaphor of the desktop and the office environment to orient users, imposing on them certain values and ideology inherent to this environment.

Finally, in Chapter 4, with the significance of the visual nature of the electronic-aided publishing technology in mind, I called upon several research areas—postmodern theory, cognitive studies, design, technical and professional writing, and publishing—for their views and theories about visual elements. Each of these areas has something to offer rhetoric and composition for understanding the significance and role of visual elements to the writing process.

- Postmodernists do not limit the notion of text to writing alone, but offer a way to include visual texts. They also expand the notion of text to include cultural, social, political and behavioral organizations and constructs, and consider the interrelationships of visual and verbal components of discourse.

- Researchers in cognitive studies foster the view of sensory perception and symbolization as complementary processes, arguing against the binary of sense versus thought. They also recognize the importance of visualization in the thought process. Visual thinking plays a role in invention and reading processes.

- Designers have recognized the rhetoric inherent in information as well as in objects. Visual elements such as layout and design, use of color, typography are seen as rhetorical. For example, the choice of typography in a railway time schedule, a document usually seen as neutral, can affect the way it is read and received.

- In professional writing, technical writers since the Renaissance have used visual representations and markers to engage readers in informational texts, making them accessible and readable. The use of graphs, charts, and illustrations are necessary for the amplification of complex data, and visual markers such as headings, margins, bulleted lists, and indexes make text more accessible.

- Also in professional writing, publishers of periodicals use electronic-aided publishing technology to put together informative and aesthetically pleasing documents, supplementing the data and verbal text with graphics and layout to encourage reading and comprehension of information.

The literature of these different areas of research and practice does not, however, always discuss either writing or technology, but the discussion of visual considerations is important.

From this study of technology, an electronic-aided publishing system, and visual elements, I want to identify one way to look at the significance and role of an electronic technology to writing and situate it within rhetoric and composition.

A Visual Rhetoric of Electronic-Aided Publishing

A visual rhetoric of electronic-aided publishing would begin with the acknowledgment of the role and significance of both technology and visual language to the rhetorical situation, as well as a recognition that these two aspects of the rhetorical situation have not been examined or discussed as thoroughly as others.

As a writing technology, electronic-aided publishing influences the ways in which writers compose. For example, the writing space of this particular technology influences the decisions writers makes, limiting them in some instances, liberating them in others. Word processing programs provide a distinct writing space, different from a drawing, a page layout, or a spreadsheet program. Similar to a blank page of paper, at the same time it is also very different from that paper. The text is fluid and malleable, easily deleted, modified, or retained. The options available in one program may not exist in others, further influencing what can and cannot be accomplished. The print tool in a drawing or page layout program such as MacDraw Pro or PageMaker, for example, is useful primarily for short pieces of text. Writing a long passage with the tool would be inefficient; using a word processing program instead allows for production of long blocks of text which can then be exported to other programs. In much the same way, the simple drawing tools available in a word processing program are not intended for complex diagrams or illustrations, as the tools are more limited than in a drawing program. So a writing space is driven by options available in a program, and the options drive what a writer may do in that writing space.

Using electronic-aided publishing technology then, provides its own unique writing space and boundaries, different from the writing spaces of other instantiations of computer writing. Microsoft Word, one common word processing program, incorporates into its writing space formatting options which encourage writers to view visual markers, such as bold, italics, indenting, etc., as functions of the rhetorical situation, not merely

ornaments applied after the writing is completed. These formatting options and the resulting visual markers become part of the writing process. A writer can look at the screen, or view an entire page in "print preview," and see the effect of formatting decisions. If more white space is necessary, it can be added. If blocks of texts are too long, they can be changed to shorter paragraphs, or bulleted lists or headings may be added when and where appropriate. These visual cues are in part meant to create a readable, legible text, but they also may reflect a writer's decisions about the design and look of a page, and the presentation of the subject matter. (Although, in some cases, the page may actually reflect the default settings established by the software designer.) Whichever the case, the text does have a visual impact, positive or negative, and can affect the effectiveness and success of the document.

Any consideration of visual rhetoric also includes the use of graphical representations: charts, tables, figures, illustrations. These illuminate and clarify complex blocks of text which may be problematic without the visual aid. The choices writers make in producing these representations and placing them as well can influence how they are received and understood. A writer can position text to be highlighted or ignored, to draw attention to itself or to another part. Graphical representations may be created to promote a particular view, and can be positioned to do the same. Charts and illustrations are created generally to clarify data and improve comprehension, and yet, the choice of information that goes into the chart may present only a limited view of the data. Visual representations can be seen then as rhetorical, for depending on their purpose, as well as the purpose and audience of the document itself, they can be used to foster a specific, and perhaps limited, view of a given situation.

Visual elements, then, include both graphical representations and formatting choices; both are rhetorical for they influence and are influenced by other rhetorical elements. But, technology also comes into play here, for what technology can do, the

options which are available to the writer can, in turn, affect the way information is presented. In addition to that, electronic-aided publishing technology also reinforces the visual elements of writing through the visual nature of the writing space. The use of icons, for example, in the Macintosh and Windows environments fosters the notion that writing is a visual as well as a verbal undertaking, and that pictures may be as meaningful as words.

I would encourage researchers, theorists, and practitioners in rhetoric and composition to

- reconsider their view of technology and its influences and effects on writing
- examine the significance of visual thinking and visual language to writing and reading
- recognize the visual nature of writing space in electronic-aided publishing technology, and how that space can influence writing, and
- conceive of electronic-aided publishing technology as a transitional bridge between the print culture and the electronic culture.

Technology's Influences and Effects

The literature in rhetoric and composition by and large does not address the issue of technology. As I discussed in Chapter 2, the views of technology are varied, but few treat it as significant to the rhetorical and/or writing process. The exception is the researchers, theorists, and practitioners who are often called computer composition specialists. Their initial response to computer writing technology, as Hawisher (1989) points out, was to welcome it as a positive influence with resulting improvements in writing. But the research did not always support that view. Since then, research studies have been designed to reveal both positive and negative influences. Understanding what potential effects the technology may have on writers can help us to better serve our students. Writers may be influenced not only by the options they have available and

which ones they use, but also by the metaphors, icons, and interfaces of programs and computer systems themselves.

Even though students may not meet for a composition class in a computer lab or classroom, many are using computers. Anticipating what situations may occur or what problems can arise as a result of the technology can help us to do a better job with composition instruction. But, first, we have to acknowledge that technology can affect and influence the writer.

Significance of Visual Thinking and Language

The argument has been made by some theorists in cognitive studies for recognizing sensory perception as part of the thinking and reasoning process. Sense perception is not only one stage in human cognitive development, but is incorporated into later stages, the enactive and iconic. Visualizing and mapping out situations and problems can aid a writer in organizing and structuring a document, seeing relationships among lines of reasoning, and identifying lines of argument.

Mapping has had a positive effect on my writing. For example as I began this study, I tried diagramming a kind of time-line of technological development. This diagram changed many times as I worked through organizing and writing later chapters, undergoing several revisions as my project proceeded. The original map and its subsequent versions eventually became the basis for Table 1.1 which appears in this final version. Visualizing the situation, however, was a very important and significant factor in my writing process; seeing relationships actually drawn out was more effective than merely abstracting their existence. My students have used the invention strategy developed by Jim Porter (see Chapter 4) and found it useful for identifying various aspects of the problems they are researching. Visualizing and mapping can create new understandings of a situation, and technology allows those visualizations to become part of the document.

The process of visualization can help the writer, and at the same time, aid the reader in understanding material. Technical and scientific writers have recognized how numerical data is much less confusing when placed in a table or figure as opposed to a paragraph of text. Having a column of numbers next to another in order to compare the numbers and show differences along with an explanation is usually much easier to follow and to comprehend than verbal text alone. Along with graphical representations, visual markers and layout are integrated into a text, even without conscious decisions by a writer. Paragraph indentations, margins, typestyles, all help to define a text. These markers serve as visual cues for the reader to signal a change of material or a new line of reasoning, to provide emphasis, or to identify closure. Long paragraphs of text may be intimidating, while short paragraphs may be more inviting, or reveal a different pace of reading, or a different level of writing and density of material. Titles may be larger, or in bold, or all caps. Headings can be used to separate sections of a text. These visual markers can cue the reader, but they can also aid the writer in organizing the material. Visualizing a situation and/or using visual elements in a communication—business report, brochure, or essay—can affect how the material is written as well as how it is received and understood.

Visual Nature of the Writing Space

A significant identifiable characteristic of electronic-aided publishing is its visual writing space. The screen is not totally blank like a piece of paper, but includes rows of menus and icons. The screen in Word 5.1 may even appear cluttered to some writers, who then may choose to hide the ribbon and the ruler, although the menus and toolbar (which can be moved to the right or left of the screen) will remain. This screen configuration serves as a reminder to writers that formatting and visual options are available as part of the writing process. The icons themselves are visual markers for the

writers; they see options such as borders, fonts, bullets, cut and paste, and adding graphic elements, as they write and read.

The visual interface is highlighted by the movement of text on the screen. The writer watches as characters appear, disappear, and change, as blocks of text are repositioned to another part of a document or poured onto a page, wrapping around graphics or into columns, as diagrams develop and change and grow from a simple square to a complex relationship of causes and effects, of comparisons, and of hierarchy. MacDraw Pro, PageMaker, and Word, the programs discussed in this study, are all run on the Macintosh with System 7, a visual operating system. Other programs available also present visual writing space. The Microsoft Excel spreadsheet program opens with a worksheet, a marked grid into which information is typed, and then reformatted into tables, charts, or graphs, with a long list of choices. Scanning programs such as Photoshop allow writers to manipulate photographs or detailed pictures, to highlight certain features, to enhance shading or details, and generally to make the illustration effective for use in a document. The writing space contains a portion of the scanned image and options and tools for changes to be made.

Another important aspect of this writing space is the metaphor which governs its perception and use. The Macintosh interface is referred to and understood as the desktop, a highly suggestive term for the main menu screen, conjuring images of the business office with its desks, files, filing cabinets, letters, and hierarchy of positions. It has been read as a metaphor for capitalism and been accused of incorporating the ideology and values of capitalism through this choice of metaphor (Selfe & Selfe, 1994). The metaphor of the drawing program is the graphic artist's worktable, with its tools and toolbox, paint cans and brushes, caliper and drawing instruments, and a screen marked by gridlines. The page layout program might be seen as another worktable, similar to that used for newspaper layout. The whole page can be seen on the screen and

the text and graphics positioned according to planned layout, and even moved around as desired. The toolbox is similar to the drawing programs, but adds such tools as a cropping tool, which might be used for cutting the size of graphics, and also includes a print tool for editing text or adding headlines. Writers may no longer see themselves as only writers of words, but using a visual technology, can become artists and designers, incorporating verbal and visual language to support their data, make their arguments, and present their documents.

Transitional Technology

Electronic-aided publishing technology is only one form of computer-generated writing, but is significant to the study of rhetoric and composition because of its use in producing printed documents, still a primary product of composition courses. Although the writing space may be electronic, the texts produced and distributed are often traditional printed documents, incorporating characteristics of electronic writing with print conventions. The role of the writer changes from producing words to designing texts, integrating visual markers and visual representations with verbal text. Electronic publishing—E-mail and online, synchronous conferencing—does not typically deal with printed documents, nor do they need to incorporate many print conventions. Hypertext, because it is written and read on screen, demands different conventions still. But, electronic-aided publishing, systems which include a variety of programs for document development and printers for making professional-quality documents, inherits conventions of both the print and electronic cultures. The writing, dynamic and impermanent, is easily changed, deleted, repositioned, and previewed. But the printers and the page setup options conform to the expectations of the print culture, possibly limiting the size of the page, and including margins, footers and headers, and other conventions of print.

Because of the options available to the writer with computer technology, the reemergence of visual components as significant to text, the visual nature of the writing space, and the transition between print and electronic cultures, theorists, researchers and practitioners in rhetoric and composition should reconsider positions on technology and visual language which limit the understanding of technology to a tool for transcription and visual elements to packaging or presentational motives only.

Implications for Design of Writing Spaces

The design of the computer writing space has recently been critiqued as one with inherent ideology and values, not one of neutral territory (see Selfe & Selfe, 1994). I have treated the space of the Macintosh System 7 and accepted the interface up to this point as a pre-existing condition within which writers work. That is, the computer programmers and developers have controlled the interface and the writing space, not writers or instructors. But computer composition specialists such as Paul LeBlanc (1993) encourage instructors to do exactly that, to write the software which can be used for writing instruction. In this way, computer-assisted instructional programs (CAI) will be connected to theory as well as larger issues of literacy.

But, writing software which supports our own pedagogy and curriculum needs addresses only one issue of computer-based writing. Another involves the screen design and interfaces. As I discussed in Chapter 3, and as Cynthia Selfe and Richard Selfe have pointed out, the interface of the Macintosh system is governed by the desktop metaphor, one that is rooted in the office environment and, therefore in capitalism. Whether or not this is a "bad" metaphor is not the issue, but the limitations brought to bear on the user's understanding of the interface and the system are. Even with this underlying metaphor across Macintosh programs, each program has its own metaphor, imposing further limitations. MacDraw Pro contains the tools of the graphic artists, and PageMaker adds those of the person responsible for paste-up (a cropping tool, for example). The space of

the drawing program is a grid, and the space of the layout program shows one or two full pages similar to a paste-up board, and the space of a spreadsheet program is a columnar worksheet. So, while modifications exist in each individual program, the framework, or boundary, remains rooted in the office environment.

Selfe and Selfe (1994) suggest three ways in which composition instructors can approach issues of technology design.

- "encouraging a general level of critical awareness of technology issues" (1994, p. 496), and considering the writing environment of a technology and a facility as well. What does the software allow the writer to do, and how does the arrangement of the classroom or lab affect a teacher's style of teaching or expectations for group work.

- for computer composition specialists, becoming involved in software design, and

- contributing to an "ongoing project to revise interfaces as *texts*" (1994, p. 499).

This last item is the one which I would like to address. Failing to consider computer interfaces as maps of reality or ideological constructs prevents users and instructors from identifying weaknesses and limitations in the systems and programs. It is a mistake to assume that interfaces cannot be changed, can only ever be a desktop with toolbars and menus. Interfaces, Selfe and Selfe (1994) maintain, can be redesigned to consider a broad range of writers and users. They suggest that additional features may need to be incorporated. Composition instructors and other responders might appreciate a pen for writing in margins or a highlighter for coding documents. Readers might appreciate a read-aloud option, or an interface might be designed around another work environment such as a kitchen, workbench, or garage, to suggest only a few (see Selfe & Selfe, 1994).

Technical writers and other information designers might appreciate the addition of tools to a drawing or layout program. Blocks of texts are sometimes placed at an angle, but commands for text rotation do not always allow for desired angles and placement.

Another tool to allow for this type of placement would provide some other options for page layout. Print preview commands in word processing programs such as Word do help the writer visualize how the printed document will look, but viewing only one or two pages at a time is still limiting. Writers might appreciate seeing more pages, enabling them to get a better sense of the whole document. This feature might also be helpful for PageMaker; viewing all 4 or 8 pages of a newsletter can help the writer/designer to create a document which incorporates the best design decisions, ones that help a document to achieve high quality design as well as writing. Other features have only limited effectiveness. Putting a text in two columns in Word can occur by clicking on the appropriate icon, but the text doesn't appear in columns on screen in normal view. The same occurs in the side-by-side command: the user must change the view to see what the text and graphics look like.

Based on postmodern theories which question ideology inherent in texts, writers may want to consider the icons designed to represent various tasks. What is clear to the designer may not be as clear to the user. Icons are intended to support a metaphor, so if the metaphor is problematic for a user, so might the icons be. Once a user becomes familiar with icons, their meaning may become clear, but at first they may be confusing. The potential results are that users become familiar and as a result comfortable with them and oblivious to their ideology. Or if they do not understand the icons, they may simply avoid using them, but again may not question their inherent values. Icons for "open file," "insert table, graph or picture," represent items familiar in the business environment, but perhaps not in others, requiring a certain knowledge of that world. Icons will only be helpful if the user can identify with them, and redesigning interfaces and replacing metaphors may help to make access to computers more egalitarian.

Finally, on this issue of interface design, I would echo the sentiments of Selfe and Selfe. If we continue to accept computer interfaces as "givens" and refuse or neglect

thoughtful critique, no changes will be made, and software design decisions may continue to reflect ideologies we do not agree with or that limit access to the technology.

Implications for Pedagogy

The willingness of rhetoric and composition theorists, researchers, and practitioners to accept the significance of technology and visual elements to writing means that changes may occur in the ways they think about writing process and writing instruction.

1> The use of electronic-aided publishing technology can no longer be considered an advanced specialty; first-year composition students and inexperienced writers, as well as advanced composition students, technical and business writers, and desktop publishers all use the technology.

2> An electronic writing space requires a new kind of literacy for the user, making more cognitive demands. Electronic-aided publishing technology, in particular, encourages the use of visual thinking and visualization skills as well as verbal skills.

3> The dynamic nature of the electronic writing space and the options available to users can liberate a writer, allowing the freedom to explore various ways to produce effective texts.

4> At the same time, the characteristics of the writing space may complicate the writing process for the apprehensive user/writer, compounding already existing problems.

5> Visually appealing and effective documents may not be possible without some understanding of readability and design principles, suggesting another dimension of instruction and knowledge.

6> As electronic publishing (e-mail and online conferencing) programs increase the graphics capabilities of their applications, visual elements will have more impact and significance in these primarily verbal environments.

7> The further development and use of hypertext programs require the modification of visual design principles for screen display.

8> The use of programs other than word processing for "writing" extends the definition of writing to include a variety of tasks involved in the production of text.

These eight items represent a few of the implications for composition pedagogy and curriculum. Teachers in first year composition classes can use the technology to promote a more visual approach to writing by discussing the implications of various typefaces, or the arrangement and size of blocks of text, or the use of section headings and possibly sub-headings to establish hierarchy. They can discuss and demonstrate the options students have, encouraging them to experiment, and critiquing the results with both writing and design as criteria for evaluation. They can promote visual thinking by encouraging students to use drawing programs to map out their lines of reasoning, or diagram their argument, or illustrate a point. These visual invention strategies might become part of the paper, or may serve only as pre-writing.

Instructors can ask students to choose a document genre based on the audience, purpose, and scope of a document. Perhaps a persuasive argument could best be presented as a poster, flyer, or brochure. Teachers can use MacDraw Pro or PageMaker as well as Word to demonstrate the differences among the documents these programs will produce. Looking at a variety of texts as modes of presenting persuasive argument or storytelling encourages the student to think beyond the words and to discover the significance and role of design, visual elements, and technology in the production of an effective document for a specific audience.

Instructors of technical and professional writing students should also encourage the production of a variety of documents. Specialty publications such as newsletters, journals, or brochures requires the use of a variety of programs: page layout, word processing, drawing and painting, scanning, among other applications. Again, these

documents require thoughtful attention to audience and purpose through thought-provoking material and writing, design strategies which interest and engage the reader in the material, and production and distribution decisions which present the material in a professional manner.

Writers in business and technical areas, among others, also need to know how to produce good graphical representations. Electronic-aided publishing technology can reinforce the discussions of visual materials in textbooks. The students can play with charts they create to actually see what distortions can occur, and how the information communicated to the reader may be misleading or simply misunderstood. Critiques of visuals produced by students and their peers can serve to help them make the connection between instruction and application to their own work.

Instructors at all levels must be aware of the influences and limitations of the technology their students are using, whether in the classroom or at home. Dealing with various issues of design, use of visual elements, and choice of programs will liberate students from print conventions that may no longer be primary in an electronic culture. Even apprehensive writers and users can learn to use the technology to enhance and support their writing efforts; the technology shouldn't be seen as an sinister force we must deal with, but should be recognized for its potential at the same time that we acknowledge its limitations. Electronic technology has opened new understandings and metaphors of writing, reading, and learning, and we would do well to support our students as they contend with this electronic world, helping them to learn to use it wisely.

Implications for Research

For an already rich field which combines several disciplines, the inclusion of technology and visual design into studies in research and composition will make it even more interdisciplinary, incorporating such fields as ergonomics, design studies, and

publishing. As I discussed above, new pedagogical issues will need to be considered, and along with these come additional research questions. Some of the following series of questions have been explored in past or present research, but perhaps not in terms of either electronic-aided publishing technology or visual components of writing. Others suggest new research studies and issues in instruction and research. These questions are intended to suggest possible avenues of research for continued exploration and examination of the technology used for writing and the role of visual elements in texts.

1> What metaphors are used in the computer interfaces and how do these effect the writer? What changes need to be made in interface design? How are the icons used, if at all? What changes need to be made in computer interfaces to accommodate all users? What are the results when users have new interfaces? Has the desktop metaphor become so pervasive that changing it would not be practical?

2> How do inexperienced writers (and other groups such as apprehensive writers, adult learners, ESL students, or experienced writers) respond to the visual nature of this writing space? Do they make changes in fonts, use bullets, incorporate various typestyles to customize their texts, or do they opt for the default settings? Are they conscious of the visual markers which cue the reader to the hierarchy in the text? Are they aware of the use and placement of graphical representations to clarify text? What effects do design decisions have on their writing? What do they need to learn about designing texts to use the technology effectively?

3> What aspects of visual design are necessary for producing texts? How much instruction and knowledge in readability issues is necessary? in graphic design? in art? How are decisions about layout made and how do different designs affect the material? the reader? the document?

4> With technology and visual elements to help produce professional looking documents, will "writing" suffer? Should instructors teach visual design? Should they

teach the technology of drawing and page layout programs? Or do they allow the demands of the material and design to foreground what students need to learn about programs and how-to use tools in a program? What position do these programs take in relationship to other rhetorical elements, such as audience, purpose, persuasive appeal, lines of reasoning, and subject matter?

5> What training, background, and/or skills do instructors need to be effective teaching in electronic and visual environments?

These questions suggest only a few possibilities for further exploration. Continued research is necessary to identify how electronic-aided publishing technology is being used and what effect the graphic-based environment has on writers. Research into pedagogical issues, design issues, and technological issues will all be necessary to guarantee that our students get the best instruction in composition classes and enable them to function in an electronic and visual writing space.

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171

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APPENDICES

after

The masthead was drawn in Adobe Illustrator using Adobe Carta Semibold, Semibold Swash, and Semibold Expert. After converting the text to outlines, I adjusted each letter to tighten the kerning, then saved the masthead as an EPS file that could be imported into QuarkXPress.

A textured background of the hardwood commonly used on boats reinforces the nautical theme and adds depth to the cover.

Reducing the size of the photo draws more attention to it and helps retain the detail of low-quality photographs commonly used in the magazine.

SHIPS IN SCALE

USS WASP, 1806
Buss Aller

BUILDING A MODEL OF THE KINNERET BOAT
William H. Charlton, Jr.

MARINE ARCHAEOLOGY AND THE SHIP MODEL BUILDER
N. Roger Cole

Unity is achieved by using a typeface design similar to the cover logo on each department title. The blue-and-white bar above each logo is borrowed from nautical maps and charts to measure longitude and latitude.

By varying the kerning, leading, and size of the text in each headline, I can accommodate a variety of articles while maintaining a control "look" throughout the magazine.

Magazine articles are often written by noted historians and researchers, so I used reversed type on black bars to draw more attention to the writer's name.

J. A. KENDALL
A . S . M . A .

Appendix A: Maritime Magazine Charts A New Course

Maritime Magazines Chart a New Course

By Eric Baker

before   after

From an editorial standpoint, last year's merger of the maritime history magazine *Seaways* with the hobby ship-modeling magazine *Ships in Scale* seemed a perfect match. The combination attracted readers from a wider variety of professions and increased subscription sales substantially. But combining the two magazines' design schemes wasn't nearly as successful.

The use of two separate logos on the cover and a myriad of conflicting typefaces and layout styles throughout the magazine created a cluttered design that lacked unity and confused the magazine's conservative audience of ship modelers, maritime artists, nautical historians, and archaeologists.

I began my redesign with the cover, combining the two logos into a single masthead using an entirely different typeface: Adobe Caslon with Expert and Swash settings. The typeface in the existing *Ships in Scale* logo seemed more suited to a children's book or game than a publication about the history and model creation of old ships. The graph paper was an attempt to make up for this incongruity, but I believed that a new typeface—one that more effectively communicated a nautical theme and the historical time period in which the ships were built—could eliminate the need for a busy graphic and make the cover seem less cluttered. To unify the design throughout the magazine, I brought Adobe Caslon to the department titles, headlines, bylines, and folios, allowing for some variation through the use of small caps, italics, different weights, and old-style numerals. ⋒

70

Eric Baker, principal of Eric Baker Design Associates in New York, specializes in book and magazine production.

SEAWAYS'

ALSO IN THIS ISSUE:

Does your presentation, packaging, publication-or any other graphics project-need a new look? Send us a sample, and we'll put a guest designer to work. For details, see page 8.

No page says *read me!* louder than one full of tiny stories and lots of visual *variety.* It's irresistible like the back of a cereal box—something's going on in every corner!

For a designer, such a page presents one of the toughest challenges. With a name-plate, a half-dozen headlines, subheads, pictures, the company logo, address and phone numbers—*holy cow!*—two dozen elements are jostling for attention. How do you keep them from flying in every direction?

The easiest way is to first build a visible structure, that is, a set of column rules, to act as containers. Second, select just two typefaces, a very bold sans serif and a light serif, and apply them uniformly—one size and style for *this* kind of information, a second size and style for *that.* Third, exaggerate. For example, a deckhead can be *much* smaller than a headline, but *much* bolder—it's their vivid contrast that creates visual interest. Be a careful craftsman—it's impor-
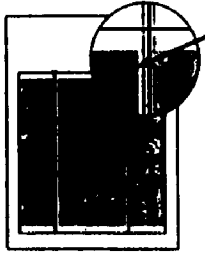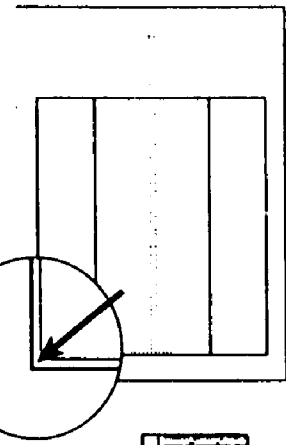
tant, for example, to space objects neatly. And as you work, keep an eye on the whole page, not just one spot, and make sure points of interest are uniformly distributed.

After that, it's up to your good eye.

Our subject is a one-page newsletter sent in by Mariellen Boldt, a first-year designer at the Sanford Insurance Group of Kalamazoo, Michigan. With a word-for-word make-over, let's see how these visual techniques turn her newsletter into what she wants:

Build a visible structure

GRID, COLUMN RULES IMPOSE ORDER
The more variety a page has, the more important its structure is. This newsletter has a visible structure. Set up a four-column grid (four columns are about as many as an 8½" page can hold). Draw a hairline box six points outside the margin guides—the margins have been sized to accommodate this (inset)—then draw vertical hairlines between the outermost columns as shown, so they touch the box. This leaves a wide center column for your most important story. The front-page box is, of course, shorter than subsequent pages.

PageMaker 8.0 setup: Page: Letter; Dimensions: 51 x 66 picas; Orientation: Tall; Options: Double-sided. Facing pages: Margins in picas: Inside 4p3. Outside 4p3. Top 4p6, bottom 4p6. Column guides: Four columns, 1 pica between. Vertical ruler guides: 3p6 and 47p3. Horizontal ruler guides: 16 and 17p6 from top of page. Type: Deckhead: 12/12 Futura Extra Bold caps. Triple-deck headline: 24/21 ITC Century Light Condensed. Big WOW: 36/36 Futura Extra Bold caps. Small head: 12/12 Futura Extra Bold caps. Text: 12/12 ITC Century Book Condensed. Bold text: 9/12 Cosmos Extra Bold.

THE ONE-PICA RULE
The more uniform your spacing, the better your work will look. Wherever possible, make the spaces around and between elements —text, horizontal rules, headlines and so forth —as close to one pica as you can.

The doublewide center column is designed to put each issue's headline story directly in front of the reader. It is a key visual contrast; leave an extra half-pica space on each side of the center text (inset). Center column is the ideal place for a big picture. If you don't have one, you can get away with setting the type bigger; try 14/15 or even 16/17 (above right).
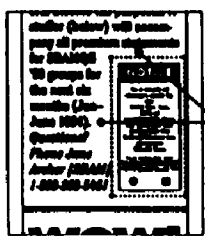
HALF-COLUMN GRAPHICS
On such a busy page, an effective way to keep visual interruptions to a minimum is to set graphics a half-column wide so the text flows smoothly around them. Against ragged right text (left), set the left text wrap standoff about 6p6 to yield the illusion of a full-pica gap.

Make bold type contrasts

SELECT TWO TYPEFACES
For your stories, work with just two typefaces, a very bold sans serif and a light serif; the more contrast they have, the more energetic the look will be. Futura Extra Bold and Century Condensed Book are ideal examples.

WHITE HEADLINES
You can create another level of visual interest by tinting a background. Typically, you'd reserve this treatment for an article of special importance. Reversing the type to white sends yet another signal: readers tend to see white type as a label rather than a headline. Because of this, white is ideal for a recurring item like, in this case, a note from the publisher. In spite of their color contrast, note the two headlines here are identical in size, style and spacing. This is how to build variety and uniformity at the same time!

SILHOUETTE HEADLINES
Now this is fun! Clever headline treatment makes the most of a graphic and reduces clutter, too; it's hard to overuse this technique. Ideal for maneuvering on a confined page like this. Silhouettes can be made from even the coarsest clip art; just make sure your image has a clear profile—it must be obvious at a glance—then trace and fill it in.

Newsflash! Design a bulletin newsletter

A carnival of tiny news bites is *catchy*. Here's how to hold it together:

BEFORE

AFTER

No page says *read me!* louder
of tiny stories and lots of visua
irresistible like the back of a c
something's going on in every

For a designer, such a page
of the toughest challenges. Wi
plate, a half-dozen headlines, a
tures, the company logo, addre
numbers—*holy cow!*—two do
are jostling for attention. How
them from flying in every dire

Build a visible structu

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The more variety a page has, the mor
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as many as an 8½" page can hold). D
but six points outside the margin guid
glue have been sized to accommodat
then draw vertical hairlines between t
columns as shown, so they touch the
a wide outer column for your most im
The front-page box is, of course, shor
sequent pages.

PageMaker 5.0 setup: Page: Letter; Dime
x 66 picas; Orientation: Tall; Options: Do
Facing pages; Margins in picas: Inside 4p
4p3, Top 4p6, bottom 4p6. Column guid
umns, 1 pica between. Vertical ruler pic
47p3. Horizontal ruler guides 16 and 1
page. Type: Deckhead: 12/12 Futura Extr
deck headline: 24/21 ITC Century Ligh
WOW: 38/36 Futura Extra Bold caps. S
Futura Extra Bold caps. Text: 12/12 F
Condensed. Bold text: 9/12 Cosmos Extr

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—text, hea

Make bold type contra

SELECT TWO TYPEFACES
For your stories, work with just two ty
bold sans serif and a light serif; the c
have, the more energetic the look wi
Bold and Century Condensed Book an

Simplify the name

REDUCE NAMEPLATE FROM SEVEN ELEMENTS TO THREE
Ever had a talky neighbor—blahblahblahblahblahblahblah—that kind of neighbor? Problem is, in the verbal flurries you can't tell if anything's really important! That's what's wrong here, too: somewhere in all the chatter is the newsletter's name—but can you tell what it is? QualityGuard '90? Agent Newsletter? Agent Update? It's lost.

A busy reader will thank you for getting right to the point. The name should be clear and prominent; think twice before tacking on any kind of slogan. "Helping agents keep informed, build confidence and self-esteem," for example, is a fine mission statement, but the editor should keep it to herself—to the reader it sounds hollow; if the newsletter is indeed achieving these noble goals, it will be plain to all. What does your slogan say?

The more you have to say, the fewer words you should use!—rely on *look* and *feel* instead. Elevate one key word above the rest (1). "Agent Update" (2) contrasts visually and ranks lower in the reader's mind. Underwriter's name (3) is needed for credibility so has been given the highest position—all caps connote status; tiny type keeps it out of the limelight. Address is housekeeping data and has no business up here. Result is clear, effective.

VITA

VITA

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EDUCATION

Ph. D. English, Purdue University, August 1995
Concentration: Rhetoric and Composition, Professional Writing
    Second Area: Literary Theory
Dissertation: A Visual Rhetoric of Electronic-Aided Publishing
    Director: James E. Porter

M. A. English, Illinois State University, 1988
Concentration: Composition Studies

B. S.   English, Illinois State University, 1967
Certificate: Secondary Teaching (7-12), State of Illinois

PUBLICATIONS

Refereed Articles

"Hypertext in a Professional Writing Course" (with Greg Wickliff), *Technical Communication Quarterly*, in press

Accepted:
"Computer Interfaces and Visual Rhetoric: Looking at the Technology," submitted for special issue of *TCQ* on "Visual Rhetorics," edited by Deborah Bosley and Greg Wickliff

Other Articles

"Using Visual Theory in the Creation of Resumes: A Bibliography." *The Bulletin of the Association for Business Communication* 54.3 (1991): 97-99.

Reviews

Rev. of *Technical Writing: Student Samples and Teacher Responses*. Ed. by Sam Dragga. (with Elizabeth Lopez). *Technical Communication Quarterly* 2 (1993): 346-348.

<u>Proceedings</u>
"A Rhetorical and Document Design-based Approach to Hypertext." (with
Greg Wickliff and James Porter). *Proceedings* of the Association for
Business Communication, Midwest Conference (1991): 37-43. (refereed
proposal)

CONFERENCE PRESENTATIONS

"Hypertext: Building Structure and Designing Screens." Association for
Business Communication, Southeast Regional Conference (SE/ABC).
Nashville, March 30-April 1, 1995

"Exploring Corporate/Client Relationships." Association for Business
Communication Annual Convention. San Diego, November 1994.

"Visual Impact on Printed and On-line Documents" (Workshop). Society for
Technical Communication (STC), Metrolina Chapter Regional Conference.
Charlotte. October 29, 1994.

"Policy Review and Evaluation: Exploring Corporate/Client Relationships."
SE/ABC. Atlanta, April 1994.

"Using Visuals in Oral Presentations" (with Elizabeth Sanders). Association
for Business Communication, Midwest Regional Conference (M/ABC).
Lexington, KY, April 1992.

"Graduate Student Issues" (with Elizabeth Sanders). M/ABC. Lexington, KY,
April 1992.

"Hypertext and the Professional Writer " (with Greg Wickliff). Conference on
College Composition and Communication (CCCC). Cincinnati, OH, March
1992.

"The Role of Design in the Creation of Resumes." M/ABC. Akron, OH, April
1991.

"Desktop Publishing: Writer as Designer" (with Greg Wickliff). M/ABC.
Akron, OH, April 1991.

"A Rhetorical and Document Design-Based Approach to Hypertext" (with
Greg Wickliff). M/ABC. Akron, OH, April 1991.

"Eight is More Than Enough: Collaborative Learning Group Activities in the
Language Arts" (with Sue Crowell). Illinois Association of Teachers of
English Annual Conference (IATE). Springfield, IL, October 1990.

"The Need for Audience Awareness." National Council of Teachers of English
Annual Conference. Baltimore, MD, November 1989.

"Using Dissonance as an Invention Strategy." IATE. Chicago, IL, October
1989.

"Writing From Dissonance." English Articulation Conference. Monticello, IL, April 1989.

"Spice up the Curriculum: Sprinkle With Literature" (with Sue Crowell). IATE. Champaign, IL, October 1988.

"Writing Apprehension and Student's Self Image" (with Sandy Dorley and Vicki Hopper). English Articulation Conference. Monticello, IL, April, 1988.

"Writing Apprehension" (with Vicki Hopper). Heads of Illinois Secondary English Departments Annual Conference (HISED). Normal, IL, April 1988.

"Literature of New England—On Location" (with Steven Kagle). HISED. Normal, IL, April 1988.

"Books for Boys: Selections for Reluctant Readers" (with Sue Crowell). Illinois Reading Council (IRC). Springfield IL, March 1988.

"The Young Adult Novel Thrives" (Panel Discussion). IRC. Springfield, IL, March 1988.

"Young Adult Literature of the Eighties" (Panel Discussion). IRC. Peoria, IL, March 1987.

TEACHING
East Carolina University
Assistant Professor 1995-
Instructor 1993-1995
> Graduate Courses:
> > Advanced Technical Writing
> > Advanced Writing for Business and Industry
> Undergraduate Courses:
> > Technical Writing
> > Scientific Writing
> > Writing for Business and Industry

Purdue University
Graduate Instructor, 1988-1993
> Computer-aided Publishing
> > networked computer classroom: Macintosh IIsi, laser printer, scanner, AppleShare network; Unix, elm, gnuemacs
> Business Writing
> > regular and networked Macintosh computer classrooms
> Technical Writing for Technical Majors
> > regular and networked Macintosh computer classrooms
> Composition I & II

Danville Area Community College, Danville, IL
Instructor (part time), Summer Sessions, 1989, 1990
> Freshman Composition I & II

Illinois State University, Normal, IL
Graduate Instructor, 1986-1988
    Advanced Composition (computer classroom: IBM PC)
    First-year Composition (computer classroom)
        Honors sections

Rossville-Alvin Community High School, Rossville, IL
Teacher, 1968-1971

Washington Junior High School, Aurora, IL
Teacher, 1967-68

SERVICE

East Carolina University
    Task Force on Evaluating and Enhancing Teaching, 1994-

Depart ment of English
    Personnel Committee, 1994-
    Student Services and Scholarships Committee, 1994-
    Search committee: Lecturers and Visiting Professors for Spring
    Semester1995
    Search committee: Fixed term positions in Business and Technical
    Writing for 94-95

Purdue University
Professional Development
    Business English Refresher Courses, Career Development Seminars
    March1993
        Writing Effective Memos and Reports
        Improving Your Business Writing Style
        Proofreading and Editing

Department of English
    Workshops on Resume Design, Purdue University, 1990-1993
        Presented materials on the design elements of resumes and led
        discussions concerning the content of resumes and application
        letters to the Department Job Placement Committee, Writing
        Lab staff, Peer Tutors for Business Writing, Professional
        Writing majors, and Business Writing staff

    Presentation on Business Ethics, Peer Tutors for Business Writing, Writing
    Lab, September 1992

Community
    Issues in Business Writing in the 1990s, presented to Hoopeston (IL) Rotary
    Club, September 1990

RESEARCH

Illinois State University: Department of English

Research Assistant to Professor Taimi Ranta, Coordinator of Children's Literature; Summer 1987
   Researched and developed bibliographies of ethnic literature written for children and young adults for use in undergraduate education course

PROFESSIONAL MEMBERSHIPS

National Council of Teachers of English
Modern Language Association
Conference on College Composition and Communication
Association for Business Communication
Society for Technical Communication
Association for Teachers of Technical Writing
The Council for Programs in Technical and Scientific Communication

GRANTS

Teaching Grant, East Carolina University, Summer 1995
   developed hypertext program as a supplemental instructional aid graduate and undergraduate students in business writing

ACADEMIC AWARDS

Purdue Research Foundation Grant, Summer 1992
Academic Achievement Grant, Spring 1991

ADMINISTRATION

Purdue University
Acting Director of Business Writing, Fall 1992 and Summer 1991
Assistant Director of Business Writing, 1992-93
   Developed and revised course materials
   Observed and evaluated instructors
   Conducted staff meetings
   Assisted in training of new instructors

Assistant to the Professional Writing Program, Spring 1991
   Conducted a survey of Professional Writing majors
   Planned workshops for Professional Writing majors
   Conducted research on the employment process and opportunities
   Prepared documents for recruiters

Reader, Office of Writing Review, 1989-1990
   Reviewed and evaluated writing samples of graduate students