

AN ABSTRACT OF THE THESIS OF

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Title: The Nature of the Text in the Digital Age: Deciphering its Message and

Shaping its Meaning

Abstract Approved: Rachelle M Smith

Abstract

Because today reading and writing often take place on screens rather than in print and because computers have turned into indispensable constituents when reading and composing texts, the rhetoric of electronic communication becomes an important issue in classes focused on teaching writing. This thesis endeavors to show that computers have brought new ways of shaping information and delivering messages, and, therefore, it is essential to understand the flexible nature of the electronic discourse and the special alphabetic-iconic interaction of the type settings in order to know how to approach this new kind of text. In this respect, English studies need to welcome this new component in their repertoire of competencies and teach students to be literate readers and writers when working with the electronic text.

THE NATURE OF THE TEXT IN THE DIGITAL AGE:
DECIPHERING ITS MESSAGE AND SHAPING ITS MEANING

A Thesis

Presented to

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Master of Arts

by Mirona Magearu

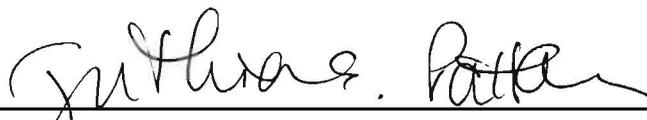
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Approved by the Department Chair



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Foreword

Today, the ubiquitous presence of computers, which offer endless and fast avenues for finding information, has turned them into indispensable components in our daily life. People use computers to read newspapers, journals, and books; to look for current information on various issues; and to write letters and participate in online discussions with their peers. Because Web pages, e-mails, and electronic messages permanently accompany us on an informative, explorative, and communicative cruise, the processes of reading and writing often take place now more on screens than in print. Given the fact that few people today write without the help of computers, they have come to play a vital role in the act of communication. Additionally, because composition and rhetoric has as its major goal to develop students' writing abilities and prepare them to express themselves regardless of the medium of communication, this discipline should not neglect the importance of computers in its theoretical focus. Because the electronic medium is not going to vanish any time soon, composition and rhetoric must pay more scholarly attention to how the rapid transfer of information and virtual communication affect discourse theory and pedagogy.

Not only do computers represent cultural artifacts embodying society's values, but they also enable students to see writing as an interactive process during which students become active shapers of the knowledge they acquire. In order to understand how the electronic medium generates this type of knowledge, it is essential to step back in time and reinterpret Sophistic theories about language. In this light, the first chapter of the thesis, "The Sophistic Nature of the Present Literacy," defines literacy as stemming from the way in which forms of communication technology condition how

people articulate within and around their ideas, their cultures, and themselves. Here, I employ Kathleen E. Welch's proposal for a Sophistic theory of both written and spoken language that will account for the electronic forms of the present discourse, which represent a redeployment of Sophistic classic rhetoric. In Welch's opinion, Isocrates's *philosophia* which should not be interpreted or reduced to language as the gathering of knowledge but described as one's negotiations with the world, has been historically marginalized by critics in favor of the Aristotelian paradigm. It has been regained by the works of the poststructuralists and, currently, it is gaining more and more importance because it shares common features with electronic discourse as brought by computer technology.

Chapter Two, "The Shape of the Text When It Moves from Print to Screen: A Multilayered Structure in Search for an Interactive Audience," outlines the nature of the electronic text in the digital age by elaborating on the flexible, dynamic, and open structure of electronic discourse. Because this text does not display any sense of predictability, its readers must reconceptualize their relationship with knowledge. In its turn, the electronic text requires its readers to participate in its own creation of meaning by challenging them to get involved in the construction and organization of the information. The way electronic discourse produces texts repeats Sophistic ideas of how knowledge is socially constructed. In this light, Sophistic rhetoric provides one possible way to study the nature of electronic discourse, especially in terms of how one navigates this new technology or how one manages a huge quantity of material.

Enjoying the freedom offered by the digital world where text combines words and images, and where drawings and table applications are everywhere, screen-based

typography is developing more and more as an integral part of the writing process, and, as a result, it must be investigated in order to have a better understanding of the relationship between writing and computerized typography. As a result, Chapter Three, “The Electronic Typography and the Renegotiation of the Alphabetic/Iconic Ratio as a Means of Message Delivery,” provides an in-depth analysis of both print and electronic typography and the way in which words and images have constantly competed one against the other in order to negotiate their territories for the production of meaning. It is through the visual of writing that typography can rematerialize literacy and link writing to delivery, the fifth canon of rhetoric.

Chapter Four, “Teaching Writing with Computers and Literate Students in a Digital World,” points out the necessity of including computers in composition classes while continuing the teaching of alphabetic composition. The inclusion of computers in the writing curriculum should be viewed as the integration of a novel set of media through which writing occurs today. On the one hand, English instructors are challenged to determine how to achieve their writing goals using an electronic environment; on the other hand, students become aware of the active and volatile shape of the electronic text while they simultaneously develop their abilities using and constructing texts. Additionally, composition studies should prepare students to be properly engaged in the contemporary practices of communication.

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The Sophistic Nature of the Present Literacy

Verbal literacy is not replaced or buried so much as layered into a more diverse amalgamation of literacies. . . .

The mingling of verbal and visual elements so typical of Web authorship represents a potential realization of novelistic discourse rather than a necessary degradation of the literacy.

(Craig Stroupe, “Visualizing English: Recognizing the Hybrid Literacy of Visual and Verbal Authorship on the Web”)

The swift and easy accessibility to computers, with which people read electronic newspapers and books, write e-mails, and engage in online discussions, has increasingly required reading and writing to take place more on screens than in print. In this electronic environment, it becomes difficult to determine where thinking ends and writing begins. Thus, these processes now require not only language ability but also technological skill. Moreover, the text itself goes through various transformations in order to adjust to the new medium of communication. It is essential to understand the structure of the electronic text in order to know how to approach it. The idiosyncratic features of this electronic text, with its flexible, dynamic structure, with its multiple beginnings and endings, disclose a text which does not have a fixed or stable meaning. It is a fluid text in the sense of being both a text in process and the process itself. In fact, the rhetoric of the electronic text welcomes its performers to reconceptualize their relation to knowledge and organize it: in other words, to construct its meaning. In Kathleen E. Welch's opinion, this new rhetoric, which she labels as *electric rhetoric*, represents essentially a redeployment of the Sophistic classical rhetoric and, especially, of the ideas of the fourth-century B.C.E. rhetorician, Isocrates, in the sense that both electric and Sophistic rhetoric are "intersubjective, performative, and a merger of oralism and literacy" (12).

Instead of the Aristotelian paradigm that thus far has furnished many of the ways reality is understood, Welch suggests an Isocratic Sophistic construction of both written and spoken articulation that will account for the electronic forms of the present discourse. The holism and inclusiveness of the Sophistic paradigm springs from its main belief that knowledge is constructed by social and cultural ideologies, which are

mediated by the communication technologies available at a given time. In her opinion, literacies either ancient or modern reflect changes in an individual's consciousness and depend on social constructions that take place during any given time period: "Versions of oralism/auralism exist in all historical periods (and prehistorical ones), mingle with different technologies, and partly determine who is allowed to speak, who is silenced, and how subjectivity is constructed" (8).

Viewing literacy as stemming from the way in which forms of communication technology condition how people articulate within and around their ideas, their cultures, and themselves, including their subject positions, Welch does not limit literacy to the functional ability to write and read. On the contrary, she defines it as

an activity of minds/bodies/intersubjectivities that are conditioned within specific cultures/ideologies, all of which have oral/aural features of discourse such as the reliance on repetition, spoken ritual. . . . and first-language acquisition that are, in turn, merged with other features, almost all of which are embedded in writing as a way of knowing. A person in, say, Kansas City, who does not speak is nevertheless strongly conditioned intersubjectively by writing because her culture, her interactions, and her everyday behavior are enveloped in and defined by language. (8)

In an electronic environment, this intrasubjective communication becomes obvious in the relationship that is created between computer and on-screen reader, who, before being caught up in the actual shaping of this text, approaches the electronic text first

with the touch of the mouse followed by the movement of the cursor. The experience of ongoing activities such as the use of the software, which occurs while reading or writing on screen, shows that these readers are similar to *doers* or *Web performers* because they are simultaneously reading and manipulating the electronic text. From this perspective, Welch rightfully contends that the change in communication technology makes room for electronic forms of discourse, which have created an intersubjective and intrasubjective communication (30) and have simultaneously encouraged a distinctive way of thinking known as associative thinking. However, associative thinking is not an entirely new phenomenon in the electronic age. It was in some way disclosed by Isocrates's perception on the nature of logos.

By looking back at the Sophistic classical Greek rhetoric, Welch highlights the importance of Isocrates's logos as the core of both learning and social actions. In Isocrates's opinion it is the power of logos that helps us express our own thoughts and persuade the others:

we are inferior to many in swiftness and in strength and in other resources; but, because there has been implanted in us the power to persuade each other and to make clear to each other whatever we desire, not only have we escaped the life of wild beasts, but we have come together and founded cities and made laws and invented arts. . . . for the same argument which we use in persuading others when we speak in public, we employ also when we deliberate in our own thoughts; and, while we call eloquent those who are able to speak before a crowd, we regard

as sage those who most skillfully debate their problems in their own minds. (328-29)

Unlike the logos portrayed by Plato and Aristotle, which is highly rational, Isocrates's logos is not rigidly logical; rather, it is rhetorical and theoretical, is associative rather than linear. This is similar to associative thinking, which represents the electronic text's working principle. In an electronic environment, links and ties that guide the readers from screen to screen are illustrative for the way in which these readers are not involved in a linear process of reading, but in an associative one in which the information is gathered from a potential web of connections instead of being simply found in one single place. The dialogic interaction that is created between links and nodes of information further encourages the development of heteroglossia, which in Bakhtin's words signifies that "there is a constant interaction between meanings, all of which have the potential of conditioning others" (qtd. in Snyder 78). That is why knowing how to navigate and find ways to deal with large collections of online information means being able to manipulate the dynamic and volatile shape of the electronic text and simultaneously becoming an independent, active shaper of the knowledge one acquires.

By conceiving rhetoric as made of language because rhetoric represents both part of one's thought (that is, interior discourse) and one's negotiations with the world (that is, exterior discourse), Isocrates actually emphasizes the necessity to begin with the development of one's inner speech before studying and negotiating one's relationship with the external world. The value of his theory lies in its movement toward inner discourse, or self-deliberation. This means that the development of language enables one's inner development of judgment, which in turn allows the

individual to interact within a culture. In this light, Isocrates's *philosophia* differs from Plato's, in whose perception the understanding of knowledge and reality is based on a dialectic process or on an exchange of logical arguments during which one mainly recollects knowledge. Instead, Isocrates's *philosophia* signifies judgment or development of judgment and not just philosophy or gathering of knowledge. As Welch explains, "For Isocrates, [*philosophia*] involved the development of active judgment to enable one to interact within a culture. For Plato, it was understanding knowledge and being (reality) through the process of dialectic (one version of abstraction) and an understanding of how the soul recollects knowledge" (39).

Additionally, this broadly-based development of judgment enables the individual to act within cultures, as "issues in life that cannot be predicted are met by a mind and sensibility that have been critically trained and can determine how to respond to a variety of situations" (Welch 40). As a result, individuals are not just passive consumers but active participants in the production of discourse as they acknowledge their personal interpretations and responses to different circumstances. Likewise, by taking control over the reading and writing of the electronic text, the on-screen reader no longer absorbs information passively, but is actively involved in its creation. Instead of being a mere spectator looking through a small rectangular web window, this reader plunges into the simulated environment and therefore becomes its inhabitant and participant at the same time (Mitchell 20). While trying to describe the ways in which people make meaning by reading a text or interpreting a picture, J. L. Lemke also contends that "[the] connections we make . . . [are] partly individual, but also characteristic of our society and our place in it: our age, gender, economic class,

affiliation groups, family traditions, cultures, and subcultures” (73). In this way, his opinion supports Isocrates’s idea that literacies are social, in the sense that we learn them by participating in social relationships.

Despite the fact that there are critics who argue that Isocrates’s division of language into inner and outer discourses entails a further split between public and private discourse, Welch rightfully admits that presently, “Our conceptions of the public and the private are, of course, not those of fourth-century-B.C. Athens. The decade of electronic discourse from the 1980s to the 1990s has further rearranged the interrelationship, the changing mixture, of public and private” (36). That is why Isocrates’s rhetorical views shed light on the present reality. Furthermore, Isocrates does not illustrate an instrumentalist attitude towards language in the sense that he does not perceive language as a container that holds meaning, a premise that would convert both discourse and human beings into mechanical objects. On the contrary, a central part of his theory focuses on the deliberation with oneself across a wide variety of subjects (interior discourse) and on the way rhetoric works toward more complex thinking, part of which derives from the act of writing.

In the twentieth century, postmodernists such as Michel Foucault and Jacques Derrida also made use of the Sophistic perspective on language when describing the nature of the text. Recognizing that language does not simply represent a preexisting reality or even one’s thoughts, Foucault argues that knowledge is created by discourse, in the sense that complex relationships of communication and power among social institutions both use and control knowledge. Like Foucault, Derrida also asserts that there is no extralinguistic knowledge at all. And yet, he differs from his predecessor “in

taking as his own philosophical project the critique of philosophy's attempt to accomplish the impossible task of making language transcend itself and be referential" (Bizzell and Herzberg 1197). When arguing that knowledge is not a function of logic and that language is not a medium for knowledge, Derrida is actually restating Isocrates's ideas on logos, and particularly his idea of how language creates knowledge.

Furthermore, the deconstructionists' perspective on text as unlimited, or able to include its own interpretations, resembles the structure of the electronic text itself, which grows with the addition of each new link and/or element. As Foucault argues, "the frontiers of a book are never clearcut" because the text is caught up in a system of references to other books, other texts, other sentences: it is a node within a network . . . [a] network of references" (23). When stating that modern experience cannot be properly recorded in linear forms but only in new ways, that is, in non-linear writing, Derrida ultimately refers to electronic writing. Moreover, the Derridean text itself seems to blur all those boundaries that helped us identify what we used to define and call a text with a supposed beginning and end, title, and margins, and so forth, and, in this way, it approaches the nature of the text in the electronic writing space. In Delany and Landow's opinion, this post-structuralist concept of "open text" is realized by the computer's capacity "to manipulate, to disperse, and to recombine the elements of digital texts" (qtd. in Snyder 51). By asking us to consider language not as a hierarchy but as a network or relationships, Moulthrop also believes that what Derrida and Foucault essentially envision is "a user-centered literature" in which "the model for written discourse is no longer a linear chain of reference but a recursive, allusive web of connections" (qtd. in Snyder 40).

Taking a similar line of thought about the nature of language, Ferdinand de Saussure brings back the sophistic perspective of looking at language when he introduces the principle of arbitrariness of the sign. According to him, “sign” can be defined as the bond joining a concept, a signified, and an acoustic image, a signifier. The meaning of a word is not inherent in the sounds comprising that word; instead, it relies solely on its conventional use by people. Therefore, these arbitrary signs are characterized by immutability, that is, they are not subject to change. An illustration of Saussure’s ideas might be represented further by an analysis of typography’s power to direct readers’ attention toward the visibility of the spoken word. Focusing on the way in which the look of the page communicates meaning, typography conceives text as a visual element in the sense that text results from the combination of images and other nonverbal forms which create a unit of discourse. Because characters possess a graphic signifier, which is represented by the drawing itself, and an iconic signification specific to this drawing, typography depends both on language and graphic arts. By changing and combining the size, weight, and style of different type settings, words become liberated from any precise meaning that they might have and are turned into relevant graphic signifiers, whose meaning is constructed by their viewers. The electronic medium, which supports not only text and graphics but also audio, video, and other interactive elements, enriches the visual effects of the electronic typography and offers endless interpretations of its characters. In Ilanda Snyder’s opinion,

All electronic writing systems provide visual elements not present in a printed work. The most fundamental is the cursor, the blinking arrow, line, or other graphic element which the user moves either from the

keypad by pressing arrow-marked keys or with devices like a mouse or trackball. (6)

Reflecting the social dimension of language, Saussure describes the signifier as fixed rather than free with respect to the linguistic community that makes use of it. Emerging as a product created by an individual, a fixed language liberates itself once it turns into the product of the entire society. The individual who gave birth to it is able to control it and see it as an instrument of power and knowledge until it is shared with others and becomes common property. From that moment on, language is no longer a personal construction, because it reveals itself as a social phenomenon bound into culture:

“Whoever creates a language controls it only so long as it is not in circulation; from the moment when it fulfills its mission and becomes the property of everyone, control is lost” (Saussure 11). For instance, all the movements that took place in art, literature, or sciences, which have been initiated by individuals, once they became widely-known, no longer belonged to their creators. French Impressionism, developed initially in painting during the late nineteenth and twentieth centuries by Claude Monet, was later transmitted in music as well and, afterwards, was viewed as a starting point for Expressionism. Indeed, language cannot exist outside a community of speakers because people legitimize it and reveal its social nature. Therefore, language is a two-fold conundrum derived from its inherited social system of arbitrary signs and the active individual use of that system. Language is a social institution and contingent upon the context.

In *Orality and Literacy: the Technologizing of the Word*, Walter Ong contributes to our understanding of today’s literacy when he talks about three stages of

consciousness in the movement from orality to literacy and back again to a second orality. The first stage, primary orality, is characteristic of those cultures in which writing is almost completely lacking and where the transmission of the cultural values is orally made. As a result, oral discourse and the spoken word were both essential means of communication and dissemination of customs and behaviors. In this first type of culture the spoken word played an important role because of its emphasis on speaking. Beginning with the eighth century B.C.E., when the phonetic alphabet was discovered, new ways of thinking progressively internalized the written word, and humanity moved towards the second stage, which Ong defines as literacy. From his point of view, writing led to the development of abstraction. With the establishment of the print discourse during the fifteenth century, literacy reached its climax. Today,

telephone, radio, television, and various kinds of sound tape, electronic technology has brought us into the age of 'secondary orality'. This new orality has striking resemblances to the old in its participatory mystique, its fostering of a communal sense, its concentration on the present moment, and even its use of formulas. (136)

In Ong's vision, this third stage, which, chronologically speaking, began in the nineteenth century, developed as miscellaneous electronic devices revolutionized the existing means of communication. In Welch's opinion, today "there is a new emphasis on the ear and a change in the emphasis on the eye. The spoken word is now electrified, instantaneous, repetitive, and so familiar that we have normalized it" (58).

As she points out, this secondary orality is still related to the previous stages of primary orality in the sense that there is no loss in the movement from one type of consciousness to another one; in fact, the secondary orality reveals an epistemological dependence on literacy:

The interaction between the orality that all human beings are born into and the technology of writing, which no one is born into, touches the depths of the psyche. Ontogenetically and phylogenetically, it is the oral word that first illuminates consciousness with articulate language, that first divides subject and predicate and then relates them to one another, and that ties human beings to one another in society. (178)

The present literacy contains not only the mere result of the mix between written texts and images produced by technologies, but also the human mind's activity of placing them in a dialogic relationship generative of meanings. In this way, people construct their meanings both individually, that is, based on their own understanding, and collectively, either way as a result of our position in society, namely in terms of age, gender, culture, traditions, and economic class. As they question their connections in search of a comprehensible perception of reality, they become part of their system of interdependence, and, while being in the process of meaning-making, they actually experience literacy. With the present technology, literacies maintain their social nature, and, more specifically, people become tied to them. As J. L. Lemke contends, "Literacies are themselves technologies, and they give us the keys to using broader technologies" (71).

To experience the “intersubjective, performative” nature of the electronic rhetoric requires to be familiar with the structure of the electronic text. Devoid of a fixed shape, constantly in an endless state of changing and becoming, the electronic text challenges its writers and readers to get actively involved in its own creation. While organizing the collections of information and constructing its meaning, people become active shapers of the knowledge they acquire.

The Shape of the Text When It Moves from Print to Screen:
A Multilayered Structure in Search of an Interactive Audience

*The reader of the electronic discourse] is a navigator, protagonist, explorer, or builder, [who] makes use of [a] repertoire of possible steps and rhythms to improvise a particular dance among the many, many possible dances the author has enabled. We could perhaps say that the interactor is the author of a particular performance within an electronic story system, or the architect of a particular part of the virtual world, but we must distinguish this derivative authorship from the original authorship of the system itself. (Janet Murray, *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*)*

With the ubiquity and increasing influence of the World Wide Web, the printed text is struggling to find its place within new contextual requirements. Because the adjustments in the technology of the electronic medium entail by necessity changes in the shape of the text, printed texts are undertaking miscellaneous transformations when the very medium of presentation shifts from paper to screen. Novel modes of coming into existence, different structures and techniques of communicating a message, idiosyncratic text-to-text interactions, and unique reader- to-text relationships show how the computer creates new networks of thinking, acting, and interconnecting. As a result, in the digital age the text no longer possesses a fixed and stable structure, the boundaries between writer and reader are blurred, the act of reading gains complexity, and associative thinking is greatly encouraged.

The flexible, dynamic, open, and multilayered structure of the electronic text welcomes its readers to participate in the creation of its own discourse while being physically and mentally involved in the interactive processes of reading and writing. Thus, once they enter the world of electronic text, all the readers of screen-based text, from browsers and users to co-authors, need to be literate in Web language in order to find out how to navigate on it or retrieve some bits of information. With the electronic text, reading is not and cannot be any longer the readers' primary goal. The text's open nature, its multiple beginnings and endings, invites its viewers toward a non-linear process of reading, one similar to associative thinking. Links, ties, and buttons accompany and guide readers in an explanatory cruise, as they move from one screen to another in search for more and more information.

Lacking a stable status and a certain form (no definite beginning or end), the electronic text discloses its flexible organization even when it is confined to a single machine. It is this structure that generates countless sources of variation within the electronic text's formation. As Katherine N. Hayles explains, "There are data files, programs that call and process the files, hardware functionalities that interpret or compile the programs, and so on. It takes all these together to produce the electronic text" (274). From this perspective, the electronic text is permanently in the course of "becoming," of coming to life; it is an incessant process that requires the presence of a dynamic reader willing to decode its chaotic shape and decipher its web of associations. Fragmented in bits and dissipated, lost in a large medium full of links that create perceptible connections, the electronic text is floating in the middle of nowhere in a permanent search for its own life.

What the web performers come across while navigating in this world is, according to John M. Slatin, a proliferation of possibilities characterized by "multiple points of entry, multiple exit points, and multiple pathways between points of entry and exit points" (871). Thus, in the electronic world the text as a whole is nowhere to be found. The only option that these performers have is to start reading based on "the assumption that reading [as] a sequential and continuous process is the foundation on which everything else rests" (871). The printed text does propose to its readers a well laid out route with clearly marked points for beginning and ending in order to guarantee their understanding of the text in agreement with the writer's intentions. Unfortunately, web readers do not receive a similar welcome because, before immersing themselves in the electronic text, they face the difficult task of figuring out the starting point. The

readers' search for inferences with regard to what is going to happen next based on what they have already read emphasizes their "perception of the predictability of a given text" as an essential factor in their qualitative evaluation of any text (Slatin 871). In contrast with their expectations, the electronic text does not display any sense of predictability, yet, in its place, it welcomes the screen-based text readers to "reconceptualize [their] relation to knowledge and organize it, rather than merely accumulate information" (Traub and Lipkin 363). By integrating the multiple and scattered parts into a possible articulate whole, the web readers are immersed in a process that resembles what the anthropologist Claude Levi-Strauss calls *bricolage*, which is the construction of something out of whatever materials are available (Snyder 72).

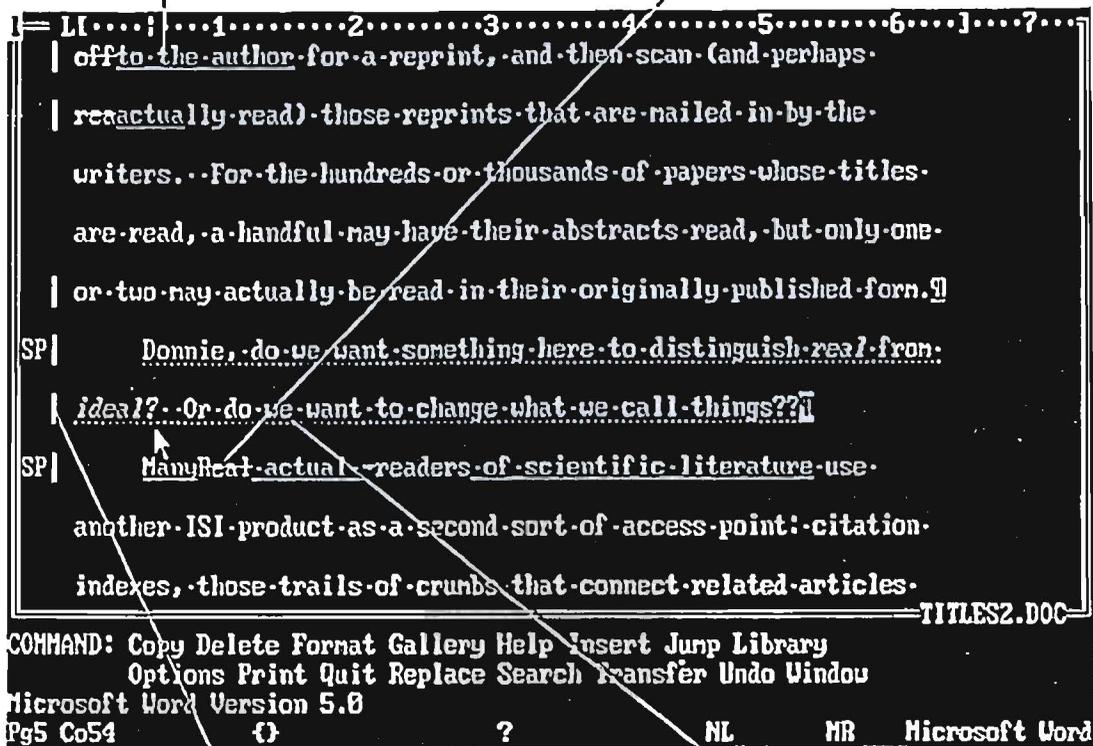
A "beginning," Edward Said argues, with printed texts in mind "is designated in order to indicate, clarify, or define a later time, place, or action," (5) in the same way in which print pages placed in one consecutive order are essentially repositories for the sequential storage of information necessary to lead their readers. What the web world proposes as corresponding versions to these guiding elements are the *help-systems*—"those word files that attempt to rescue computer users who encounter difficulties" (Bernhardt 153). Additionally, the Page Up and Page Down keys "take the readers across the boundaries of individual entries" (160) in an attempt to eliminate the general feeling of disorientation that might characterize this jumpy and irregular system. Because the switching between web windows has replaced the shuffling of papers in a book, writers can manipulate with dexterity the screen text by moving the windows

aside to view parts of the window below or by enlarging or minimizing its size according to their intentions.

“Fluid, customizable, updatable and expandable,” words on the computer possess the appropriate features that give elasticity to the electronic text (Bernhardt 173). For the reader of the printed text interested in the adjustment of the text itself there are only few modest customizing devices such as “turning down the corner of the page or leaving a bookmark or a self-stick note, writing notes on the margin, or highlighting and underlining passages” (Bernhardt 170) (figure 1); in contrast, the readers of the screen-based texts are privileged by the flexible shape of the electronic texts, which generates countless advantages. With easiness and rapidity these readers can customize the texts according to their own codes and make them adaptable to their personal uses. For instance, when they insert supplementary lines between other lines, they could simply underline them, or when they make corrections, they could either use revision bars on the margins of the computer to mark the already changed paragraphs or different highlights on the parts of text that are still under revision.

Underline shows added text

Line through shows deleted text



Revision bars show all changed lines

Underline shows hidden text

Fig. 1 "Screen from Word 5.0" (Stephen Bernhardt, "The Shape of the Text to Come: the Texture of Print on Screens", 1993) 171.

The electronic text's display can take various shapes according to its readers' preferences:

The screen text is fluid in the sense of being both a text in process and the process itself. . . . [It] breaks with the linearity of text production: the writer is not constrained by the unfettered movement, [which] is itself as fluid as thought. It can be expanded or contracted, and its parts split, joined, reserved, discarded or inserted. The fluidity of word processing transforms not only the content but also the appearance of the text. By

allowing writers to consider every aspect of presentation, it enables the text to be reshaped for varying purposes and audiences. (Snyder 11)

In contrast to a printed text, where all the annotations once done belong to the print itself, electronic marks can be accepted or rejected, printed or deleted during the printing process in a similar way in which spaces between words can be reduced or background colors and screen border can be modified. Hence, screen-based readers own an “ever-varying chameleon text” (Lanham 7) that eludes definitive explanations and invites rearrangements. All these numerous versions, these individually adapted electronic texts, make Bernhardt rightfully conclude that, “the fluidity of the screen has begun to overcome the static inertia of print” (173).

In order to properly navigate electronic text and explore the expanded possibilities of its flexible structure, the screen-based readers have to decipher its hierarchical organization and employ lateral links because, “like Chinese boxes, text can be nested within text, and huge texts can reside within tiny fragments” (Bernhardt 164). To a limited extent, printed text’s devices such as parentheses, footnotes, endnotes, glossaries, indexes, forwards, or notes on the edition show that print itself contains some hierarchical components, which function as semantic signals that point out that not all its content is at the same level of relevance and that particular information is marginal, supportive, explanatory, or additional. In this way, by detecting these print cues, readers can move among different sections of the text, skip some chapters, and skim through some others in an attempt at escaping the linearity of the print’s flat medium.

Unlike books, the electronic environment with its various and compelling screens is well suited to nonlinear texts, which welcome readers' illusions of the depth while exploring them. Even if the electronic text does not seem to possess an acknowledged linear order of information, the text's shape does generate a loose and hierarchical structure, which relies mainly on limitless associations, various links, or multidimensional matrices that are essentially waiting to be discovered and employed by its web readers. According to Bernhardt,

Somewhere behind an active file, help can exist, to be called with a simple command or click of the mouse. Glossaries can exist behind words, levels of explanation and example can exist below the surface of the text. Text can be put on clipboards or pushed out to the side of the work area. Information can be present without being visible except through subtle reminders. (164)

Continuously various, devoid of a fixed state, never having a final version, the dynamic and volatile shape of the electronic text is in a permanent process of correction, modification, or revision. It distances the spatial fixity of the printed text; nevertheless, it tends to be more firmly embedded in the context of situation. While epitomizing how reading an electronic text is simply one among other forms of action that Web performers experience besides learning to use software, constructing texts from separate files, or searching a database, Bernhardt acknowledges that "[the screen-based text] is more likely to be bound up as a part of the ongoing activities" (153). From the author's point of view, this type of task-oriented reading turns its readers into *doers* or *seekers*, while their activity becomes similar to the *using* of the text than its actual

reading. “[Electronic text] is inseparable from the machine” in the sense that its texture is shaped by both the system and the instrumental purposes together with the social interactions in which it is placed (Bernhardt 154).

In the same line of reasoning, Slatin considers that “the greatest difference between text and hypertext is not in the relative quantity of material each form handles: it’s the technology that handles the material” (874). The author contends that, in contrast to the traditional text environment in which the organization of the human memory was fundamental for the composition process, the electronic text relies significantly on the organization of memory both in the computer and the mind. In this way, the focus of the electronic discourse on memory regains the fifth canon of the classical rhetoric that has been marginalized by literacy. As a result, what this new environment aims at is “to discover the principles of effective communication and then develop ways of implementing those principles through the available technology” (874).

While commenting upon the changes that the digital revolution has produced, changes affecting an entire range of arts and letters and forcing a radical realignment of the alphabetic and graphic components idiosyncratic of the textual communication, Richard A. Lanham also brings into discussion the new reader-text relationship. By revolutionizing both the process of production and reception of the text, the electronic text simply turns the stable writer/reader boundaries upside down and blurs any prior borderlines between them. In the author’s opinion:

The interactive reader of the electronic word incarnates the responsive reader of whom we make so much. Electronic readers can do all the

things that are claimed for them—or choose not to do them. They can genuflect before the text or spit on its altar, add to a text or subtract from it, rearrange it, revise it, suffuse it with commentary. The boundary between creator and critic simply vanishes. (6)

The explanation lies in how readers' screen-based texts develop a sense of control over what they read and how they read, which leads them to immediate results from the choices they make as readers (Patterson 76).

If in the age of manuscripts, when scribes used to commonly alter the content of the materials that they were copying, the distinction between authors and readers was insignificant, it was with the invention of the printing press that the author's authority became strengthened. As Snyder points out, "through the technology of printing, the author (assisted by the editor and publisher) exercises absolute control over text. Nothing can be done to it after publication" (62). Judging by the way in which the electronic text challenges its readers by enabling them to get involved in the construction of the meaning and organization of information, it goes without saying that the notion of authorship needs to be redefined. The more the users take advantage of their ability of manipulating a text, the more they turn into active participants.

What "places the reader and the writer in a kind of dialogue that cannot happen as easily in the world of paper and ink" is, from Nancy G. Patterson's point of view, "this ability to insert text within a larger domain" (776-77). In other words, it is the electronic text's openness and fuzzy borders that make the author's role "as diffuse as the boundaries of the text itself" (777). Accordingly, its readers fully merge their role with that of the authors, and, feeling empowered with the prerogatives that once

belonged to the author, they develop dynamic reader-text relationships. Being in an endless state of changing and becoming, the “associative, cumulative, [and] multi-linear” shape of the electronic text, according to Snyder, leaves the impression of “a plural text without a discursive centre, without margins, and produced by no single author” (60), or as Roland Barthes puts it, “This ‘I’ which approaches the text is already itself a plurality of other texts, of codes which are infinite” (10).

Starting with the very touch of the mouse followed by the movement of the cursor, the readers of on-screen texts become involved in the shaping of the text. While describing the interactive nature of the electronic text, Bernhardt makes a noteworthy distinction between writers of printed material who can only invite the reader to experience their scenarios without actually being able to force any reader-text interactions and writers of on-screen texts who can force this interaction. The author believes that these readers have “to do something physical in order to get on the next step . . . [they have to] make constant decisions about where to go, what to do, who to follow” (156). Enjoying the freedom to take control over the reading and writing of the text both physically and mentally, they no longer absorb information passively, but are actively caught up in its own creation. As the author points out:

Readers of on-screen text interact physically with the text. Through the mouse, the cursor, the touch screen, or voice activation, the text becomes a dynamic object, capable of being physically manipulated and transformed. The present of the text is heightened through the virtual reality of the screen world: readers become participants, control outcomes, and shape the text itself. (154)

At this point, Louise Rosenblatt's remark, "that readers bring a text to life," constitutes a relevant reminder of readers' significant contributions to the meaning of the text (qtd. in Patterson 79). In order for this to happen, readers have to write the text for themselves, and while doing this the text allows them sift through their previous experiences through the creation of the meaning. "In this sense the reader is always central to the text" (79).

Undoubtedly, "the defining desire [to explore] the Web . . . the restless user's thirst for constant novelty, variety, and potential surprise" springs from the new and fast solutions with which Web world welcomes its active audience (Stroupe 616). Craig Stroupe exemplifies his point of view offering a noteworthy comparison between electronic and printed texts. Books and their authors cannot be challenged in any immediate sense. In order for readers to handle most forms of printed text, they have to postpone the presentation of their challenge, while the electronic text gives them the opportunity to write an answer and link it to the author's text very easily and, more importantly, right away. Along the same lines also is Walter Ong's rationalization that computers have brought with them a "secondary orality" that is similar to the participatory sense of community and focus on the present moment in oral culture:

Like primary orality, secondary orality has generated a strong group sense, for listening to spoken words forms hearers into a group, a true audience, just as reading written or printed texts turns individuals in on themselves. But secondary orality generates a sense for groups immeasurably larger than those of primary oral culture—McLuhan's 'global village'. Moreover, before writing, oral folk were group-minded because no feasible alternative had presented itself. In our age of

secondary orality, we are group-minded self-consciously and programmatically. The individual feels that he or she, as an individual, must be socially sensitive. (136)

Much more, the possibility of adjusting the shape of the electronic text makes the electronic text share another feature with the oral text, which could be endlessly revised at will by the speaker depending of the audience's preferences.

While contrasting hypertext with more traditional text in the article "Reading Hypertext: Order and Coherence in a New Medium," Slatin divides the hypertext readers into three different types: the reader as browser, as user, and as co-author. In the author's opinion, the browsers refer to those persons who read for no particular purpose other than being motivated by the curiosity to experience something interesting and engaging at the same time. Therefore, in their case, it would be difficult to predict their pathway through the material. Alternatively, the users' paths are characterized by a relative degree of predictability as they are "reader[s] with a clear—and often clearly limited—purpose. [They] enter the hyperdocument in search, usually, of specific information and leave it again after locating that information" (875). Given their precise goal, the users resemble, in the author's opinion, "typical student[s] doing the assigned reading for a course" (875). Coauthors, the third type of readers that Slatin talks about, deliberately include their personal writings as a reaction to any piece of electronic text. These ones are concerned with the development of a co-authorship and partnership with the text's innovative author. In Slatin's words, the co-authors' identity and communication with the text are described as

an interact[ion] with the system to such an extent that some readers may become actively involved in the creation of an evolving hyperdocument. Co-authorship may take a number of different forms—from relatively simple, brief annotations of or comments on existing material, to the creation of new links connecting material not previously linked, to the modification of existing material or the creation of new materials, or both.

(875)

Despite the fact that the borderlines between these three classes might be ambiguous and difficult to manage, Slatin intends to draw attention to the fact that this apparent hierarchy of readers collapses once one enters a dynamic process during which one goes through all these different stages, beginning as initial users and moving to browsers and, eventually, becoming fully involved as co-authors.

An attention-grabbing point of view with regard to the author of the electronic text is posed by Janet Murray. She argues that with the electronic text the author is procedural, akin to a choreographer, who, while exploring the “exciting aspects of artistic creation—the thrill of exerting power over enticing and plastic materials, . . . supplies the rhythms, the context, and the set of steps that will be performed” (153). In this respect, the readers of the electronic text are not actually experiencing authorship, but agency (126) because, by entering an electronic environment, they change the environment of the text through their own presence and participation. Thus, every time readers enter a hypertext Web they produce a new text, which is the result of the choices they make while navigating through the Web.

In “The Death of the Author,” which describes how writing comes into existence the very moment its author “ceases to be alive,” the French literary critic Roland Barthes points out that a piece of text is not only “a line of words releasing a single ‘theological’ meaning (the message of the Author- God), but also a multidimensional space in which a variety of writings, none of them original, blend and clash” (146). In agreement with his rationalization, Hayles also acknowledges the multi-authored nature of Web discourse:

the subjects producing [the electronic discourse] are multiple in many senses, both because they are collectivities in and among themselves, and also because they include non-human as well as human actors. With an electronic text, the computer is also a writer, and the software programs it runs to produce the text as process and display also have complex and multiple authorship (not to mention the authoring done by hardware engineers in configuring the logic gates that create the bit stream). (280)

Because readers must interact with a computer (by typing, moving the mouse or speaking into a microphone) they are obliged to know and obey the rules of interaction” (Snyder 74). From browsers and users to co-authors, all the readers of screen-based text need to be knowledgeable in the Web language in order to find out how to read the visual signals and comprehend how the electronic text is structured. “Unlike paper texts, screens offer a dynamic medium for mapping text in highly functional ways” (Bernhardt 159), and, therefore, an effective navigation on this medium presupposes both a good understanding and adequate use of its language. While classifying according to its different functions the on-screen language into “some language cues interaction with the system: how to manage files, execute commands, or control the display, and other

language cues navigation: where one is, how to move around, or how to get help,” Bernhardt actually emphasizes the existence of a tight networking of text and action as “the screen is full of things to do, not just things to read” (157-58). In the author’s opinion:

Not all the areas of the screen are equal, and functional mapping tends to be richest on the borders—in the peripheral areas a biologist would call *ecotonic*. There is always a rich diversity and abundance of life on the edges of systems. On screens, the language is the richest, there is the most going on, there is the greatest range of things to do around the edges, on the perimeters. It is on the edge that we recognize where we are, what we can do, where we can go, or how we can get out. (159)

Accordingly, Bernhardt rightfully admits that the traditional cues of paper text such as margins, indents, paragraphs, pages, and numbers appear impoverished at the sight of such a rich variety and wealth of life present on the screen edges together with the arrow signal movement, and the HELP and QUIT icons that take readers forward and backward in the text.

Electronic discourse does not only have a new form, nor does it welcome an interactive reader-text relationship together with a new sense of authorship; but it also shapes the way we think, stimulating some kinds of thinking such as associative thinking and discouraging others. Giving as example a blackboard where text is created with the assumption that it will be erased, Snyder concludes that the electronic texts alter the ways in which we organize our ideas: “Paper and pen writing encourage writers to attend to grammar and spelling and use a more controlled type of thinking. Computer invites

writers to think nonlinear and cooperatively” (69). In the electronic environment, reading takes the form of a non-linear process as opposed to the sequential process envisioned by printed text. As a result, its associative nature requires more effort and time than common linear thinking. In this respect, Slatin argues

Linear thinking specifies the steps it has taken; associative thinking is discontinuous—a series of jumps like the movement of electrons or the movements of the mind in creating metaphor. This discontinuity is not fortuitous; rather . . . it is a basic aspect of the digital encoding of information. (874)

By eliminating linear sequential ways of reading information, users have access to hidden structures of thought embedded in systems of language. The deconstructionist theoretician Jacques Derrida justly acknowledges in *De l'esprit* that “we can have no access to reality except through the structures of representation (categories, concepts and codes) that make access possible” (qtd. in Jones 156). His theory supports Ted Nelson’s nonhierarchical hypertext structures.

In the 1960s, Nelson coined the term “hypertext,” which represents an appropriate paradigm of non-sequential writing and associative thinking. In this type of text, the logical connections between elements are mainly associative rather than syllogistic as they appear in conventional texts. Because hypertext contains more information than one can actually use, this online system relies on nodes and links as adequate ways of structuring its content. If nodes might range from documents or blocks of texts, images, motion pictures, to any other materials electronically connected, then a hypertext link is the “electronic representation of a perceived relationship between two pieces of material,

which becomes nodes once the relationship has been instantiated electronically” (Slatin 877). In this light, nodes are similar to any object attached to another object, while links reflect the existing relationships between nodes. Because “[e]very document in this system is electronically linked to all documents that it draws upon and to those documents that draw upon it or comment upon it,” from Beverly Jones’s perspective, Nelson’s hypertext provides “an archival standard that addresses the ideals of freedom and pluralism” (155). In this way, when deconstructionists perceive text as unlimited and endlessly expanding to include various interpretations, “they ask us to consider of language not as hierarchy but as a network or relationships: the model for written discourse is no longer a linear chain or reference but a recursive, allusive web of corresponds” (Snyder 41). Consequently, both deconstructive and hypertext documents or texts may be juxtaposed to create new insights.

Furthermore, in his ground-breaking book, *Hypertext: The Convergence of Contemporary Critical Theory*, George Landow, after having momentarily acknowledged the difference between the terms *hypertext* (a structure made of blocks of text, or *lexias*, that are verbal) and *hypermedia* (which contains graphic as well as multimedia material), concludes “Since hypertext, which links a passage of verbal discourse to images, maps, diagrams, and sound as easily as to another verbal passage, expands the notion of text beyond the solely verbal, I do not distinguish between hypertext and hypermedia” (4). His description of hypertext aims at proving the nonsequential functioning of a network of *lexias*, among which “new rules and new experiences apply” (4).

Additionally, while typing on the screen, writers forget the printer and they are simply composing in what D. P. Balestri calls “softcopy,” which is the text on the

computer itself. In “Softcopy and Hard: Word Processing and Writing Process,” the author makes a noteworthy distinction between the dissimilar results derived from two types of writing: on the paper and on the computer. In Balestri’s opinion, the first one offers a product oriented writing, while the softcopy proposes a process-oriented writing, in which writing takes the fluid and malleable shape of its medium of creation. Therefore, “when working in softcopy, writers ‘experience a new kind of hand-work that, while removing some of the intimacy of the hand-wrought notation and symbol, actually improves on the non-linear capabilities of handwriting’” (qtd. in Snyder 13).

Either in print or on the Web, readers need to navigate and find ways to cope with large or disperse collections of information. If flipping around in a text, scanning in a hurry, or evaluating the whole text while looking for particular cues constitute the methods employed by print readers, when it comes to screen readers, all these learned strategies are unfortunately not always applicable to this medium of communication. Given the huge quantity of material that the hypertext contains, there is a considerable danger that its readers might feel totally disoriented or even completely lost. Consequently, it would be difficult for them to determine where the separating lines between thinking and writing are, or where the mind ends and the computer begins. That is why they may easily “come to regard the computer, and in particular its screen, as a metaphor for the mind” (Snyder 5). As Slatin advocates, with the electronic text “the burden of prediction falls more heavily upon the reader than the writer” (877), who has to decide rationally which links to follow, fully aware of the potential consequences of his choices.

One of the difficulties screen readers face is getting a full sense of how much information exists in front of their eyes and how much has actually been viewed mainly because the screen text lacks the total physical presence, and the scrolling of text longer than the screen does not give a precise sense where one is situated or is going to. In Bernhardt's opinion, screen-based texts have borrowed some navigation aids from paper texts. For example, the menus look like tables of contents, the indexes are similar in both media, and the titles at the top of the screen show the reader's place in the/an overall system, while the line numbers on the text locate the reader. Other cues fit only in the electronic texts. The graphical browsers visualize the structure of the information and facilitate the interaction with the text base, while ties, links, or buttons connect one screen or term with other screens in the text base (165-66). The electronic discourse significantly relies on the issue of linkage:

The links in screen-based text announce themselves by their typography or visual character; . . . [they] serve as anchors to a given screen; one is anchored to the screen icon while going off for an exploratory cruise. For navigating large text bases, the single device of links with anchors in a present screen provides a powerful control over text that cannot be approached within paper texts. (166-67)

This system of interacting nodes looks like a space defined by interaction rather than by geometry. That is, this electronic agora threatens, displaces, and radically changes the familiar notions of space, vision, or movements and operates according to different rules. Up and down, inside and outside, here and there constitute various places and destinations in which distances are compressed and leave room for shifts from a two-

dimensional to a multidimensional space. Lacking homogenous, bounded areas, distant places are instantaneously connected and therefore turned into spaces of interaction. “The Net negates geometry,” deems William J. Mitchell. “You can say where it is or describe its memorable shape and proportions or tell a stranger how to get there. But you can find things in it without where they are” (23).

Challenged to understand its flexible, dynamic, and multilayered structure, the readers of screen-based texts need to gain knowledge of its interweaving network of links and consequently become actively involved in the process of reading or writing it. In this way, the boundary between readers and writers is diminished, and writing gains fluidity as it is customized to their own desires. The more time they spend in this medium, the closer they feel to it. Not surprisingly, Dennis Baron confesses his lack of ability to draft anything coherent directly onto a piece of paper due to his dependence on the new technology of writing:

I found that I had become so used to composing virtual prose at the keyboard I could no longer draft anything coherent directly onto a piece of paper. It wasn't so much that I couldn't think of words, but the physical effort of handwriting, crossing out, revising, cutting and pasting, in short, the writing practices I had been engaged in regularly since the age of four, now seemed to overwhelm and constrict me, and I longed for the flexibility of digitized text. (16)

However, as Ilanda Snyder points out, “The introduction of new technology of writing does not automatically render older ones obsolete, mainly because no technology has ever proven adequate for all needs,” exemplifying the way in which even though

printing entirely replaced handwriting in book production, it did not bring the end for handwriting. In her opinion, the boundaries between the two writing technologies simply blurred (2). Likewise, by preserving some of the strategies of paper texts, the electronic text does not create a completely novel rhetoric, and yet there are noticeable variations in the nature of the texts across the two media. Unlike print, computers require readers to become composers by selecting a path through the text, thereby creating multiple texts. This feature of the present electronic discourse recalls the Sophistic rhetorical theory on how language is socially constructed.

Electronic Typography and the Renegotiation of the
Alphabetic/Iconic Ratio as a Means of Message Delivery

*Computer art is holistic in its simultaneous use of image, sound, and text, and it is often kinetic. It moves and changes. It reaches out to surround and absorb the consumer, creating an artificial reality that forces the consumer to confront the increasing irrelevance in modern culture of the distinction between the real, in the sense of that which occurs naturally, and the artificial, in the sense of that which is a human artifact. (O.B. Hardison, *Disappearing through the Skylight: Culture and technology in the Twentieth Century*)*

*Meaning is always in the reader, always in the text, or always in between. (Richard A. Lanham, *The Electronic Word*)*

Starting with the history of illuminated manuscripts, and maybe going even back to Simias, a Greek poet of the fourth century B.C., there has always been an intricate interaction between alphabet and icon, words and images. There have been some periods of time when this mix of traditional alphabetic information with opaque pictures represented by words gained significance because some literary movements revitalized it, and some other times when this revival was stimulated by the appearance of a novel medium of communication such as the digital technology. Either way, words and images have constantly competed against one another in order to negotiate their territories for the production of meaning. If any page of text is viewed as being composed of visual as well as verbal elements, then the written word along with the special features of its characters displays this alphabetic-iconic interaction. As a result, an analysis of both print and electronic typography is necessary in order to discover the ways in which the shape, size, and thickness of typeface direct the process of seeing, thinking, and creating meaning.

In “Unicode, from Text to Type,” an essay in a volume celebrating the artistic achievement of typeface designers, John Hudson clearly states the practical side of typography while simultaneously acknowledging its aesthetic value: “typography is the functional application of beauty to the articulation of text” (25). By treating text as a visual element that can be combined with images and other nonverbal forms to create a unit of discourse, typography centers on the way in which the look of the page communicates meaning. According to John Trimbur, it is through the visual of writing that typography can rematerialize literacy and link writing to delivery—the fifth canon of rhetoric, which has been both neglected and isolated from invention, arrangement, and style (263). Even if, at first sight, typography seems dependent on language, nonetheless

it relies on the graphic arts as well. It is true that while they represent letters of the alphabet and correspond to the phonetic uses of language, typographic characters lack autonomy. Nevertheless, they are not empty signs, devoid of any intrinsic meaning. Characters resemble drawings and are composed of a graphic signifier (the drawing itself, the lines, the tracing) and of an iconic signification specific to this drawing.

In Jean-Gerard Lapacherie's opinion, "[characters] signal a meaning, a rupture, a hierarchy, an analysis . . . [and] have [their] own expression" (69-70).

Needless to say, the convention of typographic harmony cannot exist in agreement with the printed text, simply because of the inexistence of entirely uniform texts. The author goes on to explain that, "the contents (themes, ideas, articulation, characters, etc . . .) vary constantly, especially in works which do not belong to fixed genres with constraining rules, such as tragedy or epic poems" (67). As a result, in order to properly reflect the various contents of genres in which they appear, characters need to be customized to each text's stylistic features and, consequently, to possess special designs, height, and thickness.

If, as Trimbur argues, by employing borders, rules, columns, marginalia, and textual inserts, the early printed books tried to imitate the multimodal capacities of illuminated manuscripts, the modern period has manifested an early eagerness to "recover the visuality of the page from the monotony of standardized letterforms and dense monochromatic blocks of text by incorporating onto the printed page the available means of communication" (267). Undeniably, writers of printed text have a myriad of choices at their disposal to make their texts visually informative ranging from white space, font sizes, and icons to graphs, tables, and illustrations. Thus, the alphabetic / iconic ratio

offered by print media reveals itself as an unlimited land of options for text and graphic display as well. Nevertheless, the real typographical explosion with its profound remix of the alphabet / image ratio opens up with electronic typography, which surpasses print in its visual effects. While analyzing how the history of typography has been revolutionized in the digital age, Richard A. Lanham makes a noteworthy observation with regard to the change of liquidity that has been taking place starting with the addition of color to the alphabet / iconic mix in the print texts and moving towards the digital typesetting programs:

Both newspapers and magazines are developing the habitual use of color in new ways. But we are only beginning to understand how the black-and-white convention of print will be changed by a color display. . . . [With the digital technology] hot type was *set*. [Yet,] digital typesetting programs *pour* or *flow* it. We encounter this change in liquidity everywhere in contemporary printed texts, especially in the relation between words and pictures. (44)

Surprisingly, toward the end of the eighteenth century some writers became aware of the power of typeface for the first time and sought to emphasize their intrinsic expressive features by turning them into meaningful visual elements. For instance, Restif de la Bretonne, the author of the autobiographical novel, *Monsieur Nicholas*, varies the characters in height and style in order to establish “a synaesthetic relationship between phonic sensations which are perceived by the ear and visually perceived graphic sensations” (68). For this, he uses capital letters in the middle of words to emphasize syllables that the typographer would have stressed, if said aloud. Moreover, in 1897, in

the poem “Un Coup de Dés” (“A Throw of the Dice”), Stéphane Mallarmé also pushes the language beyond the ordinary limit and explores its visual constituents by focusing on word and phrase as dominant linguistic elements. As the title suggests, the subject of Mallarmé’s poem is randomness. Words are haphazardly thrown on the paper for the reader to link them into significant sentences (figure 2).

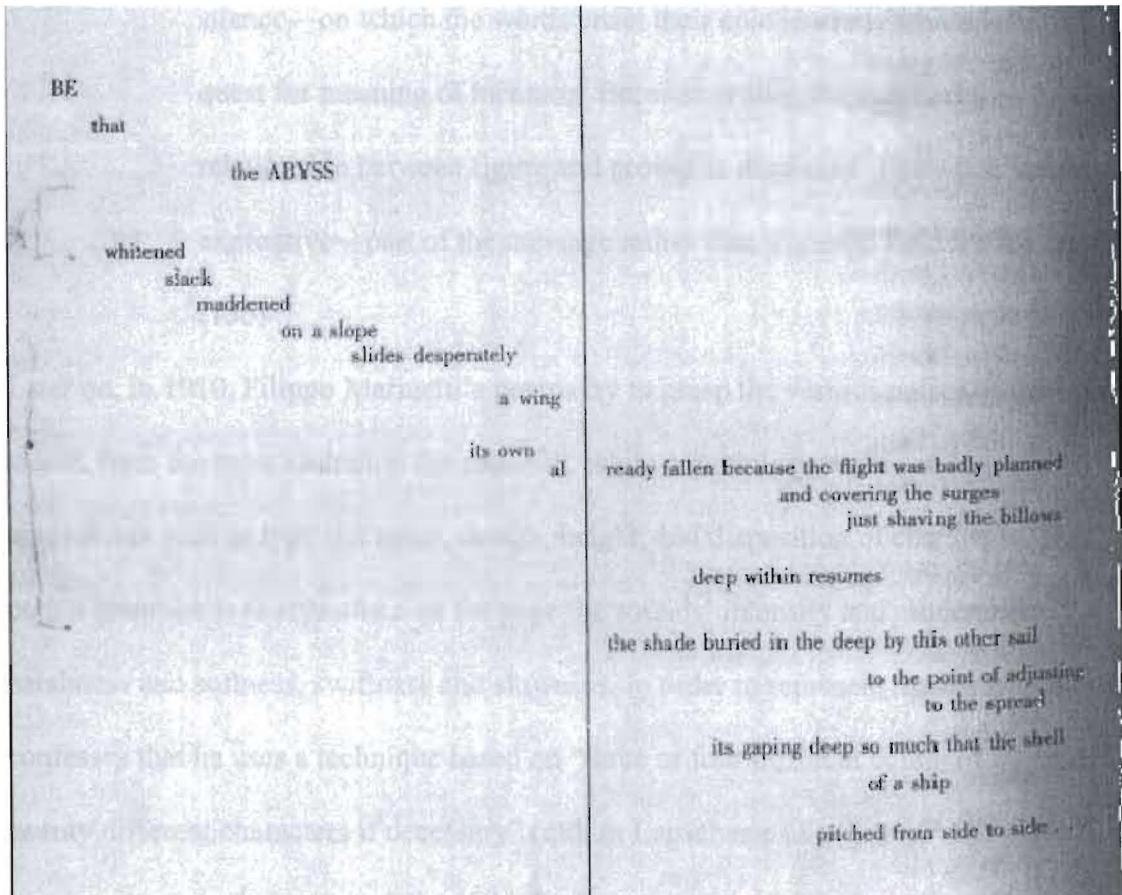


Fig. 2. “Un Coup de Dés” (O.B. Hardison, *Disappearing through the Skylight: Culture and Technology in the Twentieth Century*. London: Penguin, 1989) 154.

In this sense, Hardison’s inspired description of the way in which the poem’s typography violates the common convention in order to generate various moods and fantasies becomes relevant:

Some words are in small type, some in large, some in capitals, some in lower case, some in roman, some in boldface, some in italics. Words and phrases are sometimes far left, sometimes far right, sometimes arranged stairwise in descending order, sometimes separated by one or more standard line spaces. The blank space is the nothingness—the silence—on which the words enact their epic journey, which is both a quest for meaning of meaning. Because of this, the standard relationship between figure and ground is displaced. The white space is expressive—part of the message rather than a neutral field for the type.

(156)

Later on, in 1910, Filippo Marinetti's poems try to grasp the various noises of the outside world, from the most violent to the peaceful, while combining graphic and visual equivalents such as type thickness, design, height, and disposition of characters. The poet's intention is to reproduce on the page the sounds' intensity and moderation, harshness and softness, swiftness and slowness. In order to represent these variations, he confesses that he uses a technique based on "three or four different colors of ink and twenty different characters if necessary" (qtd. in Lapacherie 68).

Along the same lines follows the Dada poets' style. With them, poetry encompasses everything simply because it is not attached to one specific set of meanings. If in the writing of "Un Coup de Dés" Mallarmé "has thrown away the dictionary," the Dada poets are "cutting up the phrases or words in a newspaper editorial, stirring them in a hat, and pasting them on a piece of paper in the order in which they are withdrawn" (Hardison 170). A poem which explores the emotional context of words by appealing to

the human senses is Raoul Hausmann's "Optophonetic Poem" (figure 3). Made of different typefaces that create pronounceable syllables, image absorbs sound in this phonetic poem in an effort to achieve linguistic transparency, as Hardison posits. In the critic's explanation, "the first line is 'kp'erioum Ip'erioum.' This is not prepossessing but becomes so because of the striking visual presentation" (175).

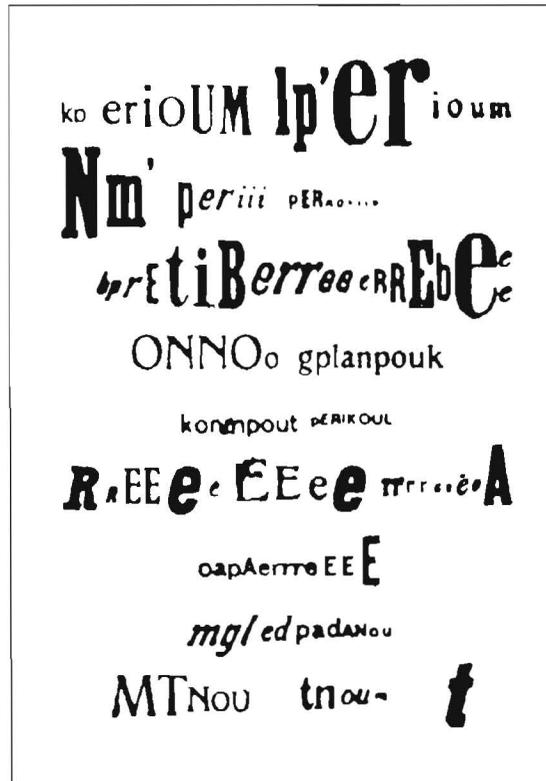


Fig. 3. "Optophonetic Poem" (O.B.Hardison, *Disappearing through the Skylight: Culture and Technology in the Twentieth Century*. London: Penguin, 1989) 174.

"[Other] tiles [such as] 'CANNIBALE' and '391' are in black type; 'Vente de publications dada' [dada publication for sale] in bold-face; 'Page compose par Tristan Tzara' [page composed by Tristan Tzara] in semi-bold" (Lapacherie 71).

Another prophetic pre-electronic example is Kenneth Burke's "Flowerishes" (figure 4), based on a playful series of comic apothegms such as "To him, machinery was

Fig. 4. "Flowerishes." (Richard A. Lanham, *The Electronic Word. Democracy, Technology, and the Arts*. Chicago: U of Chicago P, 1993) 36.

Although these small attempts, through which the typographers of 1830-1900 tried to revolutionize the art of the books and its organization, did not give birth to a completely novel typography, they succeeded in showing that typography has the power of directing the readers' attention towards the visibility of the printed text. As Ong remarks, "Writing establishes what has been called 'context-free' language (Hirsh 1977) or 'autonomous' discourse (Olson 1980), discourse which cannot be directly questioned or contested as oral speech can be because written discourse has been detached from its author" (78).

All these examples confirm a great focus on the importance of the type itself as a form, its design thickness, its height, and its pure graphic signifiers. As Hardison rightfully concludes, "Whether or not the poets of Dada were revealing unappreciated beauties and wonders, their fascination with typography and newspapers suggests that they were contemplating the obvious transformation which language was undergoing in the early twentieth century in the mass media" (177). Seeking to free the word together with the poetic line from the predictable horizontal and vertical structures of the printed page by changing and combining a type's size, weight, and style, these poets also prove that their creativity lacks borders and, therefore, words cannot restrict their freedom by any means. As a matter of fact, "the poet is most poetic when inventing languages" and in this sense he becomes a "language designer" (Hardison 186).

If with the Dada poets poetry escapes the prison of convention and seeks to make typography expressive by highlighting its visual element, with the infinite resources of the electronic display typography renegotiates the alphabetic / iconic ratio. Indeed, the

fixed surface of print tends to become volatile and interactive by a simple game with the types' characteristics, the words' displacement, and the sentences' rearrangement. And yet, the graphical and typographical tricks offered by the electronic surface are those that reveal the existence of an unbelievable and fully explored apparatus of vision. The electronic text's "bag of tricks," as Lanham calls the mixture of words and images, audio and video, "makes us self-conscious about the bag of neural tricks that create our own vision, and puts this self-consciousness into oscillation with the visual conventions of transparent print" (73). In this way, by being exposed to the dynamic and multifaceted electronic display, the perceptual field of the readers highly enriches. While trying to understand its complexity, they become actively involved in the process of making meaning.

Undeniably, with the rise of desktop publishing, pages are given a formerly unimagined depth, in which multilayered images and texts blur the boundary between seeing and reading and ask viewers to become participants in the construction of the making. An analysis of the screen-based text offers a better understanding of the relation between writing and computerized typography. According to Walter Ong, through technology, writing is no longer part of the human being; it has a more flexible position and does not belong to the lifeworld to any further extent. It tends to be a visual element whose advantage lies in its potential to meet an active audience ready to convey its significance. In his opinion, writing today is part of the technology to which it belongs; "writing and print and computer are all ways of technologizing the word" (80). The "artificiality" of writing derived from its creation through technology should be viewed as an essential element for a complete understanding of this actuality. Thus, the

interiorization of technology enriches the human mind and prepares it to accept a new viewpoint on writing, which may be described as a natural extension of the oral discourse in agreement with the present technological needs.

Enjoying the freedom offered by the digital world where text combines words and images, and where drawings and table applications are everywhere, screen-based typography is developing more and more as an integral part of the writing process. From this perspective, Jean-Gerard Lapacherie's standpoint on typography supports John Trimbur's ideas: "A page is meant to be read. It is not meant to be looked at . . . As soon as reading begins, our perception of typography ends. Typographic artifices [should] force the reader to look at the text. They make it visible as a thing endowed with an existence of its own" (64). This new medium supports not only text and graphics but also audio, video, and other interactive elements, and, as a result, multimedia represents its native language.

Defining hypermedia as the latest of McLuhan's extensions of man that unite sound, graphics, print, and video, S. Moulthrop acknowledges that the future of writing is not a linear progression in which technologies usurp old ones; instead, "it is more likely to be a recursion, a widening gyre in which new forms merge and coevolve with their precursors" (qtd. in Snyder 2) in the same way in which the creation of the meaning in the present screen-based typography regains the Sophistic ideas with regard to language that is socially constructed. This explains the colorful graphics and pictures, computing equipment, and sound excerpts that decorate the screens full of information and catch the attention of its consumers. Likewise, animation also becomes prevalent simply because it adds more action to the dynamic computer display. In Lanham's opinion, on the

electronic screen there is a permanent oscillation between use and ornament, between purpose and play, in which “play continually animates the operant purpose, indeed becomes it” (47).

The online marriage of the text and voice has an aesthetic value as it makes the electronic discourse more attractive and entertaining. Animated or accompanied by voice or musical sequences, the variety of the visual effects of the screen-based text is surprising. Initially shocked by the vastness of electronic text, “a writing sheet large enough to wrap up the world,” and later on surprised by the easiness with which the screen traveler diminishes and enlarges it with a mere zoom in and out, Lanham contends that:

The scaling powers of electronic text create an extraordinary allegory, almost a continual visual punning, of the stage sets implied by written discourse. The future of rhetorical figuration, which McLuhan in an inspired phrase called ‘the postures of the mind,’ looks, after a long hiatus, promising once again. (42-43)

It was the use of the wide range of graphic software tools that “heightened [people’s] awareness of the graphic component of meaning [who] seem to adapt easily the metaphoric designs” (Bernhardt 168-69). An abundance of life exists on the margins of screens: “it is on the edge that we recognize where we are, what we can do, where we can go, or how we can get out” (157). Marginal activity, combined with the arrows signal movement that guides the reader’s movements back and forth or up and down in the text, show that screen trotters are given visually metaphoric directions. Giving as example the drawing palette from DrawPerfect as being both iconic and metaphoric

because we make use of palettes to choose colors and use brushes and pencils in order to draw objects, Bernhardt argues that the web world is a metaphoric world:

Electronic information allows us to exploit metaphors, so that the screen is a *window* onto a *desktop* and information is kept in *files*. We use control panels, complete with gauges, switches, bells, and alarm clocks. We relate easily to the icons of control, throwing text into the *garbage can* or moving icons for pages (representing files) from one location to another. (169)

By raising the issue of punctuation marks, which are often overlooked as significant elements in the context of the composing, in the article “The Power of Punctuation,” the graphic designer and typographer, Martin Solomon emphasizes their rhetorical effect: “Punctuation directs tempo, pitch, volume, and the separation of words. Periods signify full stops. Commas slow the reader down. Question marks change pitch. Quotation marks indicate references” (282). They can even stand for illustrations and pictures. Solomon supports his idea by offering two examples: a single line of copy sitting in a light typeface contrasted with a bold, larger period gives birth to a more dramatic stop than a period of conventional size and weight. Therefore, it is through the design of the type rather than grammatical intent that the reader is informed of the importance of the message (283) (figure 5).



Fig. 5. “From a Poster Designed by Martin Solomon” (Martin Solomon, “The Power of Punctuation.” New York: Bedford/St. Martin’s, 2004) 284.

Asterisks may also be interpreted as visual movers, telling the readers to go to another location for a reference or definition (284) (figure 6). For instance, the concentration on the area surrounding exaggerated punctuation marks is supportive of the size and weight of these images. Additionally, the use of too much punctuation just for the sake of design diminishes the rhetorical meaning of the message and turns these marks into devices unrelated to the concept. “Punctuation is to typography what perspective is to painting. It introduces the illusion of the visual and audible dimension, giving words vitality” (289).

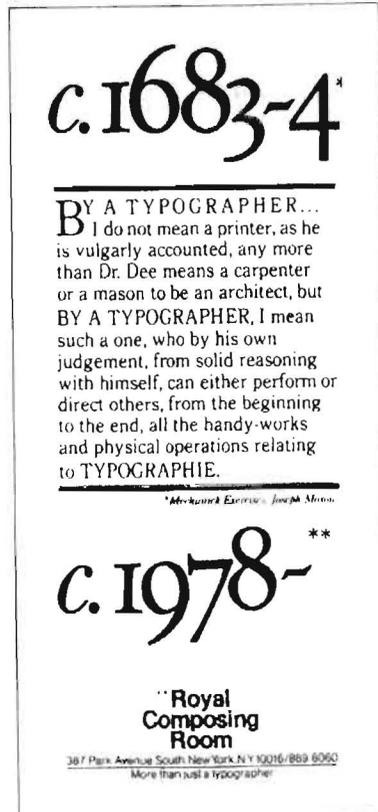


Fig. 6. “From a Poster Designed by Martin Solomon” (Martin Solomon, “The Power of Punctuation.” New York: Bedford/St. Martin’s, 2004) 285.

In a remarkable article on the rhetorical function of quotation marks, Marjorie Garber tries to answer a simple, but delicate question: “who [exactly] is speaking when we speak in quotation [?]” (656). After having traced the history of this punctuation mark starting with its original oral and aural cue—during the Renaissance era, quotations in the text were not accompanied by any signs, but by a word like *quoth* followed by a comma—the author moves towards its presence and representation in the seventeenth century by a comma placed above the line as a quotation mark, which afterward was inverted and, in later years, appeared as an inverted comma (661). Garber considers that even when quotations are detached from their contexts, they seem “not only ‘true’ but

iconic, monumental” (666). When a quotation is taken out of its original context, it becomes a “disembodied” quotation until it is reintroduced in another framework. During this transitional process, the first quotation no longer preserves its primary precise meaning. “It takes on a new set of meanings and often sheds or alters the ‘original’ meaning it may be thought to have possessed” (666). However, it functions as a “reminder,” which directs the reader toward previous information. In the same line of thought, Edward Said deems that “Quotation is a constant reminder that writing is a form of displacement. . . . As a rhetorical device, quotation can serve to accommodate, to incorporate, to falsify (when wrongly or even rightly paraphrased), to accumulate, to defend, or to conquer” (22).

Jacques Derrida relates these punctuation marks to the idea of repetition by saying that “signs, linguistic and nonlinguistic, can be put in quotation marks. In order to be recognized as signs, they have to be able to be repeated—to be inerrable and citational . . . and because every repetition is a repetition with a difference, duplication becomes ‘duplicity’” (qtd. in Garber 668). Traditionally, the reappearance of words and phrases within a particular discourse was interpreted as a waste of space and time. As a result, the general consensus recommended avoiding them with the exception of those situations in which they are deliverable for emphasis. However, repetition is important through the rhetorical effects that it conveys.

In the digital age, visual wordplay is dominant, and computerized typography adds unconsidered dimensions to writing. Therefore, the impact of traditional type conventions such as capitalization and font lessens. “It is no longer enough to design for readability, to ‘suggest’ as sentiment or reinforce a concept through the selection of a particular font. Today,

we can make type talk: in any language, at a volume, with musical underscoring or sci-fi effects” (Bernhardt 278). In this dynamic landscape, the power of the traditional capital letter seems nearly insignificant. For example, in the article “Repetition and the Rhetoric of Visual Display,” James Porter and Patricia Sullivan analyze viewers’ attention when reading a sentence written in a warning box. If, initially, the information is attention-grabbing because it presupposes a nonconventional linear reading, once this format gets repeated several times, its effect is considerably diminished. “The more warnings there are, the less effective they may be. Despite the importance or ‘newness’ of the message, repetition of a familiar message or design can [make us] ignore it” (293). Even if repetition supplies a familiar orientation for readers, they tend to be less careful in front of an recognizable design. The writers’ suggestion is “a more open-ended design allowing . . . the user independence [and this] might be more suitable” (299). That is why designers are usually asked to develop variation between established patterns if they want to create effective writing because a general design rule states that meaning lies in contrast; the unusual, the irregular, or the large attracts our attention.

Taken normally as a natural event in everyday life, the act of seeing acquires a new interpretation when placed in connection with the digital world. Usually, people trust what they see without questioning why they give importance to certain things and why they sometimes are not aware of the visual evidence present in front of their eyes. The logic and preciseness offered by the printed words whose meanings can be easily simplified by the human mind are now replaced by the infinite world of visual continuum, which looks more confusing and challenging. It is a world defined by flexible boundaries, in which words resist being reduced to only one interpretation. Texts have

long had illustrations, yet the relationship between them was fixed, in the sense that they often favored the illustrations. Presently, there is an equally balanced and dynamic textual/visual connection, as Susanne Langer explains:

Visual forms—lines, colors, proportions, etc.—are just as capable of *articulation*, i.e. of complex combination, as words. But the laws that govern this sort of articulation are altogether different from the laws of syntax that govern language. The most radical difference is that *visual forms are not discursive*. They do not present their constituents successively, but simultaneously, so the relations determining a visual structure are grasped in one act of vision. Their complexity, consequently, is not limited, as the complexity of discourse is limited.

(qtd. in Lanham 77)

By substituting words with images, viewers detach from the world of reason and real life and move towards a realm of symbols and representations.

In addition, images represent instruments of power and knowledge similar to the way in which words are. Therefore, we should interpret people's willingness to govern them as an attempt at grasping all their sides. Even if the complexity of the images slows down the reading process, it illustrates the existence of a surplus of meaning that has not been translated into linguistic forms, and in this respect, visual representations preserve a unique opulence.

Because the visual language coalesces in complex combinations that often compete with or add to other designs, using it efficiently to communicate messages demands permanent collaboration among creators and readers. This partnership recalls

the relationship between the screen-based text readers with the texts and especially their attempts to construct their meanings. As Kostelnick and Hassett state:

To understand how visual language works . . . we need to define the social behavior among designers and readers that shapes, stabilizes, and transforms it and that normalizes it as conventional codes. We need to know how communities of designers and readers *collectively* develop, certify, and continually reshape those codes. Although discourse communities can be slippery, ill-defined entities that vary in their size and constitution, as well as in the level of consensus among group members, they are key social formations that enable users to structure visual language. (3)

In this respect, the Sophistic ideas related to language epitomize the way in which the present electronic typography focuses on the renegotiation of the alphabetic / iconic ratio as a means of message delivery.

Teaching Writing with Computers and
Literate Students in a Digital World

The new digital connectedness of our information systems should allow us to easily cross boundaries, to become more interdisciplinary, and to transmute the gulf of specialization and jargonization that separates fields of interest.

(Charles H. Traub and Jonathan Lipkin, *If We are Digital: Crossing the Boundaries*)

*Teaching is . . . a dynamic endeavor involving all the analogies, metaphors, and images that build bridges between the teacher's understanding and the student's learning. (Ernest L. Boyer, *Scholarship Reconsidered: Priorities of the Professoriate*)*

Viewed as essential components of writing instruction ever since personal computers were introduced in the early 1980s, the initial purpose of microcomputers was to offer tutorials and drills that would assist students in recognizing sentence errors and fixing grammar problems. Fortunately, teachers soon acknowledged the potential of word processors to improve writers' ability both to draft and to revise various documents freely. Even if computers provide no easy fix for writing problems, today more and more writers are predisposed to produce and revise texts using word processors, and as a result, they tend to become indispensable constituents when composing texts. Because only a few people write today without the help of a computer and because electronic databases together with networks facilitate much research, the rhetoric of electronic communication has become an important issue in classes focused on teaching writing.

Arguments for and against the use of computers in the classroom have caused writing instructors seldom to question the usefulness and efficiency of computer networks as adequate teaching environments. In an age when books, articles, e-mail, and Web pages represent all main means of communication, print and electronic messages must be analyzed as intertwined rather than separate, and in this light, writing teachers need to help students gain the necessary skills in both print and electronic media. Needless to say, no electronic communication is possible unless the participants possess the necessary skills of reading and writing alphabetic texts. Because the use of computers has brought new ways of shaping information and delivering messages through the renegotiation of the alphabetic/iconic ratio, today writing requires language abilities as well as technological skills. As a result, in order to recognize, understand,

and adjust to the present changes and the demands computers pose, students need to acquire both analytical and synthetic aptitudes. Additionally, teachers in English studies need to welcome this new component in their repertoire of competencies for several reasons. First, computers constitute cultural artifacts embodying society's values, and by using them, students also learn how to assess the social, economic, and pedagogical implications of new communication technologies. Second, computers enable students to see writing as a process that gives them the possibility of working with multiple drafts, of revising, cutting, adding, and pasting without having to retype the whole document, and because computers stimulate exploratory learning and associative thinking, students become active shapers of the knowledge they acquire. Third, given the fact that the electronic medium is not vanishing, the education process needs to redefine its tools in terms of fast transfer of information and virtual communication in order to be more approachable and suitable to the students' practical present interests.

Embodying the values and ideological directions of a society, technology, primarily through computers, represents in Cynthia Selfe's words, "a richly embroidered artifact of a culture" (29); therefore, they cannot be understood simply as tools isolated from the social, political, or economic contexts in which they are developed because they also reveal important things about the people who produce them. In fact, as the author points out:

Our understanding of computers and their effects within our classrooms has become increasingly complicated. If ten years ago we represented computers as panaceas to educational ills, now we see these machines as multivalenced forces within our classrooms, one being used by educators

to affect both great good and great evil, as Joseph Weizenbaum has noted. (29)

While identifying computers as artifacts that perpetuate society's currently dominant values within American culture and the educational system, Gail E. Hawisher and Selfe rightfully raise the problem of social and political dangers that the use of computers in writing classes may pose. From the authors' perspective, computers do not automatically create ideal learning situations; instead, they generate an intellectual space that makes visible and even increases the gap between rich and poor and between races. Like other spaces, they are constructed within contextual and political frameworks of cultural values:

This is not to say that electronic technology cannot encourage social interaction and cooperative undertakings but rather to stress, in Michel Foucault's words, that a technology cannot 'guarantee' any behavior alone 'simply by its nature' ("Space" 245); according to Foucault, the 'architecture' of such electronic spaces can put some students at a disadvantage, thwarting rather than encouraging learning. (386)

In "Space, Knowledge, and Power," Foucault likens the architecture of learning "spaces" (as well as other public spaces like prisons, orphanages, schools) to one of many sites in which a culture plays out its collective notion of power and its exercise. "Architecture, to Foucault, represents a 'technology' of power, a way of 'coding' our cultural thinking about power" (qtd. in Selfe 36). In this light, the authors' viewpoint might hold true given the existing difference between schools primarily serving students of color and poor students who have less access to computers and schools primarily

serving more affluent and white students. Moreover, poor families from urban and rural environments and black and Hispanic Americans are less likely to possess and use computers than individuals with higher family income (Moran and Selfe 48). Because computers are instruments of choice, teachers are likely to come across in a given set of student papers a few pieces that are well-formatted containing relevant images, while others are handwritten on ruled paper, with messy-looking erasures here and there, layers of correction fluid, or just crossed-out errors. The authors also acknowledge that even if, at first sight, there is undeniably a mere change of appearance, one should not disregard the speed and ease of composition, revision, editing, and research that computers offer. That is why, regardless of the students' social and racial background, teachers need to insist on and support the impartial distributions of technology.

With electronic media, the typical writing classroom lacks the attributes of a physical place where students and instructor meet at a specific time, and student papers are written on single sheets of paper, on which text follows a visible linear sequence. Actually, computer-supported learning classrooms transcend time and space boundaries that govern traditional print culture and view word processing, electronic mail and conferences, hypertext and hypermedia as types of spaces in which students and instructors "inhabit and examine the day-to-day activities that have come to be known collectively as schooling" (Hawisher and LeBlanc 3). While visualizing the likely design of the college writing classroom of the year 2050 in the article "Computers and the Writing Classroom: A Look to the Future," Charles Moran argues that our current physical set-up is inconvenient and uncomfortable and comes into existence only when the writers and their teachers appear. In the author's opinion, the instructors turn these

classrooms into writing rooms once they equip them with dictionaries, paper, staplers, copy machines, handbooks, thesauri, or any other necessary materials that writers might want or need. On the contrary, in the computer-equipped classroom, the one that might presently work for us, “all of this material resides in the system’s file-server, which is the size of one instructor’s briefcase, or, more accurately, it resides on the file-server’s hard disk, which is, at the moment of this writing, the size of a pocket-dictionary” (Moran 11). In a computer-equipped classroom there will always be an online thesaurus, an online dictionary, and an online spell-checker. Moreover, what this virtual classroom proposes to its participants is an act of imagining, in which students live and work by constructing the virtual worlds created by novels, plays, and poems, and computer-games as “through the screen each class accesses its own bulletin-board, mail-system, virtual filling-and-storage system for student writing, and store of syllabi, schedules, writing prompts, teachers’ comments, peer-readers’ comments, and attendance” (11).

Along the same line of reasoning, Selfe contends that in traditional classrooms, the teacher’s location at the front of the room has the effect of limiting student’s power by restricting their independent movements and interpersonal conversations while it simultaneously “privilege[s] the teacher’s space as a center of power” (36). The author goes on to explain that, in contrast to classroom instructors, teachers charged with designing computer-supported classrooms or virtual learning environments have “an increased amount of freedom to shape learning spaces and, hence, the opportunity to be architects of learning spaces that may more effectively support the student-centered pedagogies” (37). By extending the boundaries of the class

geographically and temporally, computer technologies may easily “bring the world through the classroom door,” as Erika Lindemann describes in *A Rhetoric for Writing Teachers*, the interaction in online communities that writing teachers may propose to their students. In this way, “teachers realize that learning can take place in rewarding ways both inside and outside the classroom” (285).

The flexibility and unstable form of electronic text, which allows a myriad of endless revisions and potential changes, turns the computer into an adequate medium for students’ understanding of the writing activity as a process. By teaching writing with computers, students become aware of the active and volatile shape of electronic text while they simultaneously develop their abilities to use and to construct texts. In this respect, Lindemann draws teachers’ attention to the necessity of using a computer’s best strategies when drafting or revising written works. The author exemplifies the powerful and advanced qualities of modern word processors by showing how review tools, essentially an “insert comment” feature, enable readers to bring comments on the paper, while by activating the “track changes” feature, the writer is capable of adjusting a draft without losing any original material: “the word processor displays new text by underlining it and shows deleted material as strike-through text” (290). Additionally, spelling and grammar/style checkers might also be helpful for the development of students’ writing habits. By practicing the switching of the style checkers from Casual, Standard, Formal to Technical settings, and by setting the grammar checkers to solve specific concern areas such as subject-verb agreement, passive constructions, and possessives, teachers help students explore a word processor’s outline features and feel comfortable when composing texts.

Despite the fact that critics of English education programs that, in well-meaning efforts to train teachers for public school classrooms, change English teachers into technicians because of their focus on specific hardware configuration and programming language, it is essential to realize that the computer's integration into the writing process "is not a separate skill, but an improved method for teaching skills already targeted in the writing curriculum" (Hoffman and Scheidenhelm10). Therefore, within an electronic environment the instructor is not a technology connoisseur, but a writing expert whose primary goal still remains teaching writing. However, this aim is now achieved, not by the use of technology as an end in itself, but embedded into the course. In other words, the inclusion of computers in the classroom simply represents a different set of media through which writing occurs. In this new context, teachers' work is one of translation, in which, based on what they intend to accomplish in terms of writing goals, their new challenge consists in the necessity to determine how to achieve the same goals using an electronic environment. As Hoffman and Scheidenhelm argue, "the translation must occur at some level, [so] that the class remains centered on the instruction of writing regardless of the medium being used" (18).

Additionally, in order to be able to teach students how to properly use the electronic medium when writing and reading screen-based texts, English teachers must be the first ones to become familiar with its structure. Because today, all students are to some extent exposed to word processors and make use of them, it is essential for English teachers to be open to the computer's integration into the teaching of writing. While explaining the need for writing instructors to become lifelong learners within

technological environments in order to operate successfully within virtual communication settings, Selfe points out that

We must first understand ‘literacy’ as the ability to make meaning through reading and writing texts, interpreting the contents of these texts in light of our own experiences. Given this definition, it makes sense that part of our job in teaching literacy involves the teaching of those conventions that literate communicators share (26) . . . [Moreover] we must not only teach individuals how *to learn now* about computers as these machines exist in our classrooms, but also teach them how to *continue learning* as technology shifts in form and concept at an accelerated pace. (28)

In this way, by keeping pace with the increasingly swift changes in software and hardware in an attempt to stay abreast of these updates, teachers in English and composition never stop being learners themselves as the work within virtual environments necessitates constant labor and continuous learning. Consequently, they may easily make predictions with regard to the nature of a writing lesson in the age of hypertext. In this light, Lanham’s “few oracular speculations” point out that punctuation will change because the electronic text contains a vast “repertoire of performative signs” such as emoticons made up of particular letters and symbols employed to designate the way in which text needs to be read. Because teachers will be able to use a variety of components such as color, image, and sound intertwined in an intricate mixture, writing will resemble a three-dimensional rather than a two-dimensional art (qtd. in Snyder 107).

Both teachers who feel comfortable experimenting with computers in writing classes and teachers who need to retool their teaching methods in order to integrate computers have to be aware of the remarkable benefits that such tools provide. While trying to provide concrete grounds for teaching writing with computers, Lindemann gives a long list of advantages ranging from techniques that make teaching more efficient to strategies that improve students' abilities. In the author's opinion, computers "can facilitate class management and simplify logistics" (283) in the sense that the use of e-mail enables teachers to send timely reminders about class activities or to be in touch with students who need quick answers to various questions. Additionally, computers "can help students engage a variety of rhetorical situations" (284); e-mail, for instance, requires its writers to consider exactly the type of the audience that is being addressed. It may also be an appropriate way for teachers to illustrate the significance of audience by emphasizing the problematic nature of electronic messages, which may be open to public scrutiny even when sent to an individual. Furthermore, by showing students how to use critically sources from the World Wide Web, they have not only access to up-to-the-minute information but may also learn to recognize reliable sites (283).

Even if students leave the impression of knowing everything while cruising through the Internet with speed, it would be a mistake to assume that they are experts in the field of Internet research. One of the founders of Xerox Palo Alto Research, Alan Kay, warns that "technology often forces us to choose between quality and convenience" (152). The risk of this choice, Kay explains, is that when "convenience is valued over quality in education, we are led to 'junk' learning" (153). Despite the fact

that there are many opponents who echo Kay's concern with regard to the use of the computers in the writing classroom, it is essential to realize that English instructors literate in computer language have the possibility of guiding students in search of sources on the Internet so that electronic media may not lead them to irrelevant and unproductive learning.

Explicatory in this sense is the article "Helping Students Weave Their Way through the World Wide Web" in which Catherine B. Elliott expresses her puzzlement in light of one of her student's works cited entries; he/she "had cited the nineteenth century author Thoreau as a critic of Bernard Malamud's twentieth-century works, the source of which was a Web site" (87). Trying to understand the logic that was behind this confusion, she concluded that this young man had come across a student paper about his author on the Internet and had misinterpreted the student's reference to Thoreau to be the critical source of the article (87). In order to help students avoid such sites, which might be misleading, biased, and dangerous, Elliott advises English instructors to teach students the value of keyword skills by preparing several warm-up exercises before going into a research unit. Her solution is to create pathfinders, which constitute "group[s] of Web sites that the teacher has pre-selected and pre-evaluated and feels would be useful and appropriate for student research" (89).

According to Thomas Barker and Fred Kemp, the work within the networked classroom requires a novel conceptual framework. The "network theory" that they propose assumes that each piece of student writing is a "transaction" between the writer and other members of the class and, as a result, it should be interpreted accordingly. In this sense, because writing belongs to the class members, the authors admit that the

rhetorical skills of each writer become more and more important as student writers seek ways to contribute to a larger collective knowledge. While discussing the pedagogical potential of using hypertext in writing classes, Ilanda Snyder describes it both as an effective teaching and a learning tool because,

By transferring to students much of the responsibility for accessing, sequencing and deriving meaning from information, hypertext provides an environment in which exploratory or discovery learning may flourish. Hypertext users participate actively when locating information: students become reader-authors, either by choosing individual paths through linked information, or by adding texts. (103)

Consequently, the author contends that students become more independent as “active shapers of the knowledge they acquire” while the writing classroom becomes more like a “transactional space” (103). Highly praising the significance of the hypertext in such classes, Snyder conceives of it as the appropriate medium which teachers can use to achieve the goal of “teaching [students] to gather information from a wide variety of sources, and to integrate what they have gathered into a coherent whole so that it becomes knowledge” (108).

In an intriguing article on the invented “box-logic” concept used as comparison for the electronic text’s open-ended structure, Geoffrey Sirc criticizes “middlebrow academia,” composition textbook authors with “less-than-risky themes,” and expresses his desire for his students to gain “desperately important compositional skill” in rearrangements and “notational jottings”(123). According to Sirc, the electronic text resembles a box that reminds him of Marcel Duchamp’s work, the Green Box, a felt-

covered container having loose scraps of paper and objects that readers reassembled according to their preferences. He envisions students as collectors, as “passionate re-fashioners of an idiosyncratic, metonymic world . . . working to find their personal symbologies” (117) while deciphering the box composition’s play:

I want students—designers, now, not essayists—free for such associational drifts; entering things naively, without countless rehearsals; trying to capture a mood or vision. . . . [and especially] the ‘childlike element’ involved in collecting—namely, the ability to give new life to objects and, hence, renewing existence. (121)

By proposing various assignments that belong to what he calls, “a box-oriented composition,” he allows students to immerse themselves in their mediated desires in order to discover their own aesthetics. In this way, the internet becomes “a city full of junk stores to cruise and study” and, at the same time, a vast, attractive, entertaining, and interactive map, which provides the means for some interesting rambles (122). It is the development of the associational logic of linkages that helps teachers cultivate a personal aesthetic among students. Because the computer art is holistic in its simultaneous use of image, text, and sound, an electronic environment includes a notion of textual form as short, concrete, simply-structured. Sirc’s logic of the box for writing instruction within an electronic medium emphasizes the “unfinished nature of the ‘final’ product, as representing perhaps the mere shimmer of an intention” (124).

By enabling the teaching of literature to become interdisciplinary, the complex structure of the electronic text allows students to make connections not just between canonical and non-canonical literature, but across the boundaries of various disciplines

as well. As a result, this new digital connectedness of the information system enables students “to easily cross boundaries, to become more interdisciplinary, and to transmute the gulf of specialization and jargonization that separates fields of study” (Traub and Lipkin 363). If teachers want students to construct new meaning and knowledge with technology, to be able to communicate in a variety of media for diverse audiences and purposes, and to understand the ethical, cultural, environmental, and social implications of technology, then, according to Lester Faigley, the best possible learning environment utilizes technology. As he rightfully confesses, “most learning is not ‘self-taught,’ most learning is not a solitary experience, and . . . people learn best learning with other people” (137).

In the face of practical realities, when global communication is exchanged via increasingly elaborate computer networks that extend across traditional geographic and political borders, undoubtedly that communication network is sure to continue, if not even expand. In this sense, composition studies need to continue teaching alphabetic composition while also using computers. Otherwise, as Selfe acknowledges in “Toward New Media Texts: Taking Up the Challenges of Visual Literacy,” “we run the risk of making composition studies increasingly irrelevant to students engaging in contemporary practices of communicating” (72). Undeniably, it would be useless to try to impose a uniform content-centered learning paradigm at a time when globalization diminishes the distances between disciplines and favors communication at all possible levels.

The arrival and rapid dissemination of digital technology in the last decades of the twentieth century turned students into “digital natives” in this learning environment.

As a result, English teachers have to learn its language and include it in their writing classes so that they do not remain “digital immigrants” who suffer all the disadvantages and the unknowingness of immigrants everywhere, according to Marc Prensky. From his viewpoint, “the single biggest problem facing education today is that our Digital Immigrant instructors, who speak an outdated language (that of the pre-digital age), are struggling to teach a population that speaks an entirely new language” (2).

Selfe also urges English composition teachers not to persist in a single-minded focus on alphabetic literacy but, instead, be open to the prospect of updating the present literacy. Otherwise, as Sean Williams points out:

if composition’s role is to help students acquire skills to lead a critically engaged life—that is to identify problems, to solve them, and to communicate with others about them—then we need to expand our view of writing instruction to include the diverse media forms that actually represent and shape the discursive reality of students. (72)

Today’s texts are increasingly hybrids of words, images, and design set in a dialogic relation to one another. The electronic text, with its links and network of interconnected elements, requires interactive reading, writing, and coauthorship. It is, in Roland Barthes’s words, a web of language that links the work to other discourses, some of which are creative, some critical, and some not even literary. It is a discursive centre without margins and always in the course of “becoming,” of coming to life. In the process of deciphering the new text, the burden falls upon the reader rather than on the writer. Consequently, in order to become efficient readers and writers, students need to learn how to be literate when working with this electronic text.

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The Nature of the Text in the Digital Age:
Deciphering its Message and Shaping its Meaning

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