10. POSTMODERN AND POSTSTRUCTURAL THEORY

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10.1 READ ME FIRST (Andrew R. J. Yeaman)

10.1.1 How Chapter 10 Is Written

Form follows function in this chapter's intellectual commitment to the *uncertainty* of postmodern and poststructural theory. The *postmodernism* section makes this rationale explicit. Two invited essays follow and form the central part of the chapter. Their themes are broad but interrelated: *Realism and the Symbolic: Two Ways of Knowing,* and *Poststructural Feminism and Research in Educational Communications and Technology.* Although some readers will have, for example, prior knowledge of Foucault or Derrida, the last main section, *Postmodern and Poststructural Theory. Version 1.0,* refers to original sources and to authoritative collections. A short, concluding essay by the first author offers a summarizing contemporaneous perspective: *Envoi.*

10.1.2 How to Read Chapter 10

The sections of this chapter address deep subjects, but there is no intention of simplifying the complexity of those subjects. In no way is it suggested that readers lack sophistication and need some special sort of help in comprehension. Nevertheless, readers should he cautioned about the presence of metaphorical language in addition to the literal language more common throughout this handbook. The authors each write with their own words, and there should be no assumption that any precis can replace original work. Important ethical topics are marked out, hut limits are not imposed on further research regarding social responsibility. There is no progressive development in exposition, and the sequence of the four middle sections as a narrative trope should be disregarded. Their postmodern, poststructural insights repeatedly demonstrate relevance to the future of theory and research in educational communications and technology.

10.2 POSTMODERNISM (Denis Hlynka)

Postmodernism? The very word, at first glance, seems out of place in a *Handbook of Research on Educational Communications and Technology* But a closer look belies the claim. First attempts to come to grips with a definition of postmodemism are apt to lead to chaos. *Postmodernism* would seem to be a jargonistic term for anything new. To some, *postmodernism* should mean "after modernism." But if *modernism* means "contemporary," "now" or "current," then it would appear to be a contradiction of terms to have an "after-now," or "after-the-current-time," unless of course, one means "future." But postmodernism does *not* mean future.

Imagine two different approaches to the history and the study of educational technology. The first view is the traditional view. It sees educational technology as a study of how to improve teaching and learning through technology. This approach moves uneasily between a physical science paradigm and a behavioral science (see 2.2, 5.2) paradigm (Saettler, 1968).

The physical science paradigm focuses on the significant inventions of our time which seem to have a potential impact on the way teachers teach and learners learn. Moving linearly, this paradigm identifies the chalkboard, the still-picture camera, and the invention of photography, audiotape, the motion picture, television, videotape recording systems, and currently new information technologies of computers, telecommunications and the Internet. These are but a few of the inventions that have tried to change the classroom.

The behavioral science paradigm takes the same history, but from a psychological perspective. This view deemphasizes the hardware-software side and focuses instead on utilization. Typical chapters in this history might begin with Comenius's introduction of pictures into textbooks. Or perhaps the early tenets of behaviorism might set the stage for the principles of learning. Now the focus has moved towards making learning more effective and efficient. We do this by the science of control, Twentieth-century psychologists identified themselves as behaviorists, cyberneticists, cognitivists, and constructivists. Communication theory developed simultaneously from theories of individual communication models, to mass communication theories, to small group models. Educational technology was the pragmatic "educational" component of these theories, concepts, and ideas.

It is time to decenter all of this and to suggest a radically different view of educational technology, a view that perhaps doesn't yet exist. This view will eventually be classified as postmodern, although it might be described as simply following a different trajectory.

Suppose educational technology were an art form. The art objects produced are called *texts,* implying a semiotic perspective. These texts come in the forms of print, visuals, films, videotapes, computer software programs, and hypertext applications. The role of the educational technologist is the same as the role of any film critic, art critic, or television critic: to inform a target audience as to the introduction of a new text, to provide a critical commentary, to disclose to its audience how the text does what it does, and whether in the view of its critics, it is successful in doing what it does.

The history of such a field might begin with traditional modes of criticism. It would take ideas from the *New Critics* such as Wimsatt and Beardsley and provide a "close reading" of the text in question. *Semiotics,* the science of signs and sign systems, would provide a fruitful road to travel, beginning with Saussure's distinction of the signified and signifier, and continuing with Peirce's triadic object-interpretant-ground. Early semiotic instructional technology would be seen as a theoretical attempt to relate a specific object with a specific meaning. Our study would segue into the philosophy of *hermeneutics,* the art and science of interpretation. *Structuralism* would provide a way to hang many of these diverse trends together, as researchers search for meaning in structure. The products of educational technology clearly provide a structural model that becomes known as the *systems approach.*

Our hypothetical history would show the movement beyond structuralism into *poststructuralism.* Now, the search for transcendental signifieds would be suggested as impossible or irrelevant, and philosophers such as Derrida and Foucault would provide us with new ways of seeing, which allow us to deconstruct and reexamine the hegemony of an instructional message. Baudrillard would focus our attention on simulation, or using his own preferred word, the *simulacrum,* and show that in fact it is difficult to know what is real and what is imaginary. Indeed, Baudrillard would argue for the "precession of the simulacrum," in essence a deconstruction in which reality itself is deconstructed as we enter a world of "virtual" reality in cyberspace, a world that can be constructed through the application of computer technologies. Other strands would enter our thinking, too. A recognition of multiple ways of viewing would arise as we see the resurgence of cultures, and the rejection of the concept of empire. Ironic interplay of text would result as we become aware of the slipperiness of signifieds. Some critics would pull in one direction, others in other directions. A faint sense of the chaotic arises, and all seems about to fall in shambles. Yet, phoenixlike, out of the deconstruction comes reconstruction. We seem to start over, yet we are on a higher level, somewhat like Bruner's spiral curriculum. We approach all technologies with a healthy skepticism, recognizing on the one hand the benefits of such progress, but coupling that recognition with a wariness, and a careful search for alternatives. We recognize now that an instructional message is not the same for all learners or even for all teachers. The pragmatist sees use-value. The constructivist sees how meaning is made. The critical theorist sees an ideological hegemony.

We seem to live an educational world of unlimited semiosis, a state of chaos that nevertheless is curiously healthy, an environment that searches not for the one best way but for alternative ways of reaching different goals. Our method is eclectic; indeed our method is so diverse as to seem to have no common language. To some, the result is chaos, and is therefore inherently anarchistic. And yet, there is an ironic feeling that in disunity there is unity, out of many comes one, *e pluribis unum.* "The wisest of them all knows this only: that he knows nothing yet."

It remains to be said that such a history of educational technology, did it exist, would be given the same term used by the architects when they discovered similar axioms. It is the same term employed today by literary critics who explore disjunct styles of writing for a contemporary world. It is the same term that art historians prefer, as do social scientists, as do historians of science. That term is *postmodern.*

Educational technology today is not yet postmodern. But, ironically, educational technology is "always already" postmodern. It must be, as long are there are other voices with other ideas and other models out there waiting to be tried. The postmodern view will die when only one view is acceptable, when just one model can explain it all. And in a field as dynamic as educational technology, that should not even be a possibility.

This chapter will begin by defining the parameters of postmodernism, then examining the interface between educational technology and postmodernism. The literature reviewed will include the generic postmodern literature, as well as postmodern explorations that occur specifically within the domain of educational technology.

10.2.1 Postmodernism: A Definition

The concept of postmodernism is one that is still in flux and is a slippery one to capture. There are several ways into the maze of the postmodern world.

First, it is important to realize that postmodernism is not an ideology but rather a "condition." One does not opt to be a postmodernist; postmodernism has no project; postmodernism seeks no converts. Rather, the world can usefully be perceived within a postmodernist framework.

As such, the postmodern condition permeates all aspects of our contemporary society. Scientists write of postmodern science; literary theorists talk of postmodern literature.

Postmodernism is found in architecture, literature, art, sociology, philosophy, education, and science.

Educational technologists do not have a choice as to whether or not they wish to "buy in" to the postmodern phenomenon. Very simply, postmodernism is.

The question, of course, becomes "is what"? One clear entry into the postmodern world is to return to the modernity! postmodernity opposition noted earlier. Postmodernism must be post to modernity. Now we can ask: "What is (or was) modernity?" Lyotard (1989) defines modernism as an activity that is legitimized by *metanarratives* or ultimate best ways. (Derrida's similar term is *transcendental signifieds.)* There would appear to be several defining characteristics of modernity: (1) an overriding faith and belief in science and technology, (2) a focus on the positive benefits of technology, and (3) a general assumption that progress is an inevitable and desirable outcome of modernist thinking (Hlynka & Yeaman, 1991)

Yet, even modernity is difficult to place precisely. Smart (1992, p. 144) has compiled several of the traditional hallmarks of modernity as including:

1. "St. Augustine's break with the classical conception of reason and reconstitution of the discourse of Western metaphysics"
2. The emergence of the "enlightenment" of the 18th century
3. The period of adventure characterized by voyages of discovery culminating in the discovery of the "new world" of the 15th and 16th centuries
4. The "age of reason" ushered in by the science of Galileo and Copernicus, resulting in the rise of the scientific method
5. The technological invention of printing in 1654 by Gutenburg

All of these are signs of modernity, summed up by Habermas as "the infinite progress of knowledge and . . . the infinite advance toward social and moral betterment" (Habermas, 1981, p. 4).

Postmodernism is suspicious and skeptical of the modernist vision and, at its extreme, totally rejects the perspective of modernity. If modernism is a search for metanarratives, then in Lyotard's words, postmodernism is an "incredulity towards [those] metanarratives." If to Habermas, modernity represents knowledge, then Lyotard argues that "the status of knowledge is altered as societies enter what is known as the postindustrial age and cultures enter what is known as the postmodern age" (1988, p. 3).

The defining characteristics of postmodernity would thus reject the tenets of modernity and replace them with (a) a belief in plurality, (2) a critical questioning of the benefits of technology, and (3) a questioning of "progress" as always inevitable, leading to a serious claim that "technological progress" may not be progress at all when examined by other yardsticks.

A variety of statements—not necessarily definitions—will give the flavor of the postmodern condition:

> Like the nightly news, whose quick camera cuts can juxtapose images of international violence with pitches for fabric softeners and headache remedies, the postmodern experience is best described as a perceptual montage (Solomon, 1988, p. 212).

> Simplifying to the extreme, I define postmodernism as incredulity towards metanarratives (Lyotard, 1988, p. xxiv).

Jencks (1986) thinks of postmodernism as "double coding." Postmodernism has also been linked to "the culture of late capitalism" (Jameson), the general condition of knowledge in times of information technology (Lyotard), the replacing of a modernist epistemological focus with an ontological one (McHale), and the substitution of the simulacrum for the real (Baudrillard) (Hutcheon, 1993).

> [A postmodernist will] develop actions, thought and desires by proliferation, juxtaposition and disjunction [and] . . . prefer what is positive and multiple, difference over uniformity, flows over unities, mobile arrangements over systems. Believe that what is productive and not sedentary, but nomadic (Foucault, 1984, p. xiii).

> A postmodern pedagogy . . . has as its basis a questioning of the assumptions of positivist science. It rejects the notion of a grand narrative and the notion that truth is to be found through the application of rational thought or enlightenment. It also recognizes multiple readings or interpretations of a text and values eclecticism rather than one method (Tinning, 1991, p. 11).

10.2.2 Postmodernism: The Connection with Educational Technology

Postmodernity is clearly a significant movement in the arts. Architecture, literature, and the fine arts in general can offer clear cases of postmodern production. To cross the line over to where educational technology sits is perceived as a difficulty by many. Education and educational technology as social sciences are more comfortable with psychological and sociological constructs such as cognitivism (Chapter 5), constructivism (Chapter 7), and the like. Yet, a careful scrutiny of the definitional literature of postmodernism reveals clear ties with technology. Thus, McDermott (1992) writes that "modernism can be seen as a reaction to the early twentieth-century instructional design machine age, and postmodernism to the age of computers and electronic information design." Her definition provides a useful jumping-in position for educational technologists. If technology is clearly integrated with the concept of postmodernism, then the term is important for educational technologists who are merely giving notice that by use of the adjective "educational," they mean to say that they are interested in those dimensions of technology that exist at the intersection of technology, the

arts, and pedagogy. McDermott continues: "Postmodernism signaled an important shift away from technological optimism to a crisis of confidence in the benefits of technological progress." It is important to note that, in these views, postmodernism is not to be perceived as a negative, Luddite phenomenon, but rather a shift away from an overzealousness.

Duro and Greenhalg (1992) agree with McDermott's technology connection as a defining characteristic of postmodernism:

> Many of the shifts in consciousness that characterize postmodernism [are] the embracing of popular culture, the use of technology and the electronic media, multimedia events and feminism (p. 236).

Atkins (1990) has essentially argued in the same directions:

> The ecological revolt that dawned during the 1960s . . . signaled a loss of modern faith in technological progress that was replaced by postmodern ambivalence about the effects of that "progress" on the environment. Just as modern culture was driven by the needs to come to terms with the industrial age, so postmodernism has been fueled with desire for accommodation with the electric age (Atkins, l990, p. 131).

From the above, it can be seen that the literature of postmodernism reflects a major concern with the influence of technology on society and culture. The corollary to that statement is that the topic of postmodernism cannot be ignored by educational technologists. The above writers set a clear place for the consideration of technology (and by extension, educational technology) within the rubric of the postmodern. If the place has been identified, it remains for the gap to be filled.

10.2.3 Two Models: The World as Given; the World as Constructed

For a discussion of postmodernism, it is useful to identify and clarify two distinctly different and even contradictory ways of viewing educational technology. The first, and more traditional, is to see technology as part of a process for transmission of information. The second sees technology as a part of the construction of knowledge.

In the "transmission of knowledge" view, we theorize the existence of a sender, a channel of communication, a message, and a receiver. Perhaps the most noted versions of this approach are the Berlo (SMCR) model, and the Shannon Weaver Model. SMCR identifies sender-message-channel-receiver as the basic elements of communication, while the Shannon-Weaver model is a variant that uses only slightly different terminology. The Shannon-Weaver elements include information source, message, transmitter, signal, noise, receiver, and destination.

By this view, the role of educational technology is to transmit an instructional message in which the focus is on effectiveness and efficiency. The intent is that a given message is transmitted from a sender to a receiver with as high a degree of fidelity as possible.

Within educational technology, the most noted variant of this sender-receiver model designed to facilitate the development of instruction is known variously as *instructional development, instructional design,* or *instructional systems design.* Specific models proliferate, but the general model follows a define-develop-evaluate structure that sees the educational technologist proceeding through a series of steps that define the instructional transaction, develop the appropriate solution, and finally test whether the solution has indeed been effective. Much of the history of instructional development has been a series of attempts to "fine tune" this model .

There is however a totally different way of looking at the flow of information. This second model sees the communication process as involving not the transmission of some given quantity of information but instead as the making of meaning. Such a model is partly semiotic, partly structuralist, partly poststructuralist, and partly postmodernist.

The focus shifts by replacing the sender-message-channel-receiver model with an alternative: author-text-reader. The change may seem only cosmetic. After all the author is the sender, the message is in the text, and the receiver is the reader. But literary theorists analyze the model differently. A key question revolves around the issue of where ultimate authority or truth lies. Traditionally, one assumes that the author of a work is the ultimate authority. If anyone knows the "truth," surely it is the author. But it quickly becomes clear that there are situations where authorial intent is not enough. For example, in the most extreme case, the author may now be dead, making it impossible to ask the author what was meant by a particular phrase. Or the author may not be reachable, or may have written the text in a different context.

As a result, authority of the author is replaced by authority of the text. "Truth" now lies in the text itself, while the new task becomes one of interpretation. *Hermeneutics* is one of the terms used for the science of interpretation, and perhaps one of the most familiar examples is biblical studies. The "truth" is in the Bible; what is needed are individuals who can translate or interpret what the text really means.

Contemporary literary theory takes another step forward. Perhaps the authority lies not only in the author who wrote it, or in the text that says it, but in the reader who reads it. After all, each reader is unique. Each reader brings to a text his or her own background, interests, needs, and understandings. Such a view would explain why one reader will select a given text as important, while another reader will readily dismiss the same text as either useless, irrelevant, or even

wrong. Ask yourself to name the greatest novel ever written. You may say *War and Peace.* Your colleague may suggest *Moby Dick.* A third will surprise you with *Gone with the Wind.* Reader response theory allows for multiple discourses and multiple options. To search for a "best novel" is a meaningless modernist trap, no different from the elusive search for the best medium of instruction.

Probably authority lies somewhere in between the three: author, text, and reader. Reader-response theory replaces a linear transmission model with an active constructivist model of information. Such a view is "postmodernist."

In educational technology, Eraut (1989) reiterates the basic opposition of what he terms the *positivist paradigm* vs. *interpretive paradigm.* He notes that "positivists believe in expertise; interpretivists believe in wisdom." In particular, he attempts to relate the two:

> Positivist approaches are stronger in instructional design, and interpretive approaches in utilization. Positivist approaches are more readily found where there is political power and in large-scale developments, whereas interpretive approaches are found where there is little power and the enterprise is small scale and local. Positivist approaches are stronger in North America, interpretive approaches are stronger in Europe (p. 4).

These comments provide an entry into another significant issue, namely, that of the perceived neutrality of educational technology. The positivist/constructivist dichotomy presented above shows two approaches to the issue of neutrality. The positivist clearly supports a view where technology is neutral and the purpose of technology is to provide the most effective and efficient way of transmitting a given content. Technology is not supposed to get mixed up in the issues of what to transmit, or what to teach. That is the role of philosophers or teachers or subject-matter experts.

The constructivist or interpretivist view begins with a different assumption. The medium (or text or technology) is of necessity biased just as much as is the reader or the author. While most often educational technologists proceed from the assumption that educational technology is "value neutral," there have been some loud alternative voices. Harold Innis as early as 1951 titled his book *The Bias of Communication.* Marshall McLuhan became famous for his aphorism that recognized that a message is indistinguishable from its medium: "The medium is the message." Bowers (1988) subtitled his analysis of educational computing "Understanding the nonneutrality of technology." Belland (1991) has challenged the normal assumption of technology as tool with his "inverse tool" principle.

The discussion of technology as nonneutral makes sense, and indeed becomes an assumption, from a postmodern/ constructivist viewpoint, while technology as neutral is an equally acceptable assumption from a positivist perspective.

10.2.4 Characteristics of Postmodern Educational Technology

This section will focus on those characteristics generally considered postmodem, and then place them within an educational-technology context. David Lodge (1977), writing about postmodern fiction, identifies five basic postmodern characteristics as contradiction, discontinuity, randomness, excess, and short circuit. Educational technologists may initially react to the considering of such characteristics within instructional design. Indeed, it might be argued that the five represent the antithesis of a well-thought-out instructional design system. For an instructional system to tolerate characteristics of contradiction, discontinuity, randomness, excess, and short circuit is certainly not a traditional view. Yet with closer inspection, one might reach a different conclusion. Open-ended "trigger films" feature contradiction. Hypertext (see 21.1) is based on discontinuity and randomness. Computer-assisted instruction (see 12.1) —by introducing more alternative paths of procedure, feedback loops, and remedial tracks—in essence produces "excess." Contemporary instructional software, by allowing a student to bypass detailed sections based on pretest results, is using "short-circuit." The Internet, by providing access to databanks of information and all the communication possibilities characterized by the expression "the information highway," may well exemplify all of Lodge's characteristics.

Beyer and Liston (1992), writing within the domain of educational theory, argue that the term *postmodern* "is said to capture the fractured world in which we now live" (p. 372). They go on to identify three postmodern characteristics as being: (1) "against metanarratives" (and therefore supporting "the preference for more local analysis"), (2) as being against representationalism ("a disavowal of the view that knowledge of the social world can be representational or systematic"), and (3) emphasizing a "concern for the 'other' " (supporting multiple and minority discourses).

Lather (1991) has identified five characteristics of the postmodern condition especially relevant to education. These deal with issues of: (1) forms of authority and knowledge, (2) concerns for the individual, (3) the material base, (4) view of history, and (5) place of community and tradition. Each of these can readily be expanded into an educational-technology context. The tentative discussion that follows exemplifies such analysis, which places issues of concern to educational technology within a postmodern structure.

10.2.4.1. Form of Authority. This is characterized by "participatory, dialogic, and pluralistic structures of authority" (Lather, p. 161). Educational technologists have long realized that a single author(ity) no longer applies in a mediated production. One needs only to watch the title credits of a major "blockbuster" Hollywood movie to realize that not one but hundreds of authorities can and do contribute to a final product. Such a list includes director, producer,

scriptwriter, composer, casting director, cinematographer, actors, technicians, and many others. The authority of a single author is thus fragmented into hundreds of pieces. Although we traditionally have credited the director as holding ultimate intellectual ownership of a film or video product, contemporary thinking now accepts the multiplicity of contributions. Products deriving from the methodologies of instructional design may not have the vast numbers of a Hollywood production; nevertheless, a sophisticated product goes through significant trials, revisions, and reviews, and is considered a team effort far more than an individual effort. Indeed, contemporary instructional design implicitly and explicitly valorizes the team approach to the development of instructional systems, programs, and products. Such features are purely postmodern.

10.2.4.2. Concept of the Individual. The postmodern view presents the individual as a "de-centered subject culturally inscribed/constructed, contradictory, relational . . ." (Lather, p. 161). An important dilemma arises here. Should instructional designers aim at some "average" target audience member and assume that all users will have the same needs? Or should the program not only allow for individual needs but also in fact emphasize such differences? Traditional instructional development assumes an average student, and provides that student with a predetermined list of objectives. Yet contemporary constructivist theory has become very much aware of the needs of each individual student to create his or her own learning agenda. Technologies such as hypertext seem to encourage independent needs supported by a seemingly chaotic model instead of the more traditional linear model of curriculum presentation implying a single optimum path through a learning environment.

10.2.4.3. Material Base. The material base of a postmodern view is information. Many terms have been floated, all of which are relatively synonymous: the information age, information society, cybernetic society, electronic age, etc. Information has always been a starting point in any curriculum development exercise, and an early first step in instructional design is to determine what information is to be included within a given product. A postmodern view looks at information differently. There tends to be a suspicious distrust of information as final, and instead an understanding that while information characterized by the signified looks solid, it is in fact rapid, multiple, and shifting. When information is seen in this way, the importance of what goes into a product or course becomes less important, and the focus changes from content to process.

10.2.4.4. View of History. A postmodern view of history is "nonlinear, cyclic, indeterminate, discontinuous, contingent" (Lather, p. 161). Educational technology has only begun to explore its multiple histories. There is still only one standard history of educational technology (Saettler, 1968, 1990) that is essentially an American-based history. Indeed, it is significant that Saettler's original text was titled *"A History of Instructional Technology,"* while the revised edition was more modestly retitled *"The Evolution of American Educational Technology.* " We need to explore our other histories. Consider the following "alternative" histories of educational technology.

In Canada, educational technology has followed a unique path. The founding of a public broadcasting system (the Canadian Broadcasting Corporation) in 1939 provided a national communications link for a country widely separated by distance. This model was instituted some 30 years before the beginning of the American PBS network. Simultaneously in 1939 came the founding of a national film production unit, the National Film Board of Canada, an organization that brought the documentary tradition of John Grierson to its height. The aftermath of the Depression and the availability of a radio network allowed the formation of the Canadian Farm Forum, an interactive distance-education-by-radio experiment that brought farmers together across the country. Contemporary technological experiments in Canada include Telidon, a unique and powerful videotex system. Concordia University developed one of the largest graduate programs in educational technology, while scholars and practitioners were united by the Association for Media and Technology in Education in Canada and the *Canadian Journal of Educational Communication.* All of this activity was punctuated and underscored by an intellectual climate led by thinkers such as Marshall McLuhan, Harold Innis, and Northrop Frye.

Educational technology in Australia has tended to develop in the British tradition, with a distance-learning focus. A pioneering school of the air was provided to the isolated outback initially by John Flynn, the celebrated "flying doctor." Contemporary theoretic focus from Australia tends to be heavily based on critical theoretic, poststructural, and semiotic models.

British developments in educational technology are highlighted by several activities, including pioneering efforts in the development of film and television technology led by William Frieze-Greene, inventor of the first motion picture camera. This was followed by the development of a public system of broadcasting, the British Broadcasting Corporation. In computer communications, the British moved towards the production and introduction of a specific BBC computer for schools. In yet another direction, the entire concept of distant and open education was transformed with the development of the British Open University, a pioneer and leader in distance and correspondence education (see 13.2.2) based on the application of rigorous systematic instructional development.

Educational technology in India is highlighted by the SITE satellite project, promising education by satellite to every distant village. Educational technology developments in France placed that country at the forefront in telematics, while French intellectual theory brought about an entirely new focus with technological philosophers Jacques Ellul,

Jean Baudrillard, and Jean Francois Lyotard. Educational technology in Eastern Europe, Asia, Africa, and South America is typically treated as beyond the concerns of our usual perspective.

These paragraphs serve only to highlight the diverse histories that together provide a vast and as yet essentially unexplored area of the growth of educational technology around the world. The postmodern view recognizes that there is not a single history, but that there are histories. These histories are not independent units, but interdependent and interrelated in sophisticated and complicated ways, resembling less a history, and more a genealogy in a Foucauldian sense.

10.2.4.5. Place of Community. A postmodern community begins with McLuhan's "global village" concept and extends to a "multinational hyperspace, difference without opposition, [and an international] ecopolitics" (Lather, p. 161). Educational technology is not a simple set of questions with right answers. Educational technology is a network of concerns , needs, and technological responses. Each community develops its own needs and focus. Yet within the local, autonomous community, technology recreates a new multinational community. As one example, today the Internet significantly supports e-mail, data transfer, and remote log-in on a regular and international basis. All of this will significantly change how we perceive both community and technology.

10.2.5 Postmodernism as Alternative Paradigms: Educational Connoisseurship

One major intellectual stream that a postmodern paradigm shift may lay claim to has been to suggest alternative modes of research and scholarship. Traditionally, educational technology has been treated as belonging to a scientific discourse. This means that the accepted modes of discursive practice have been grounded in a positivist philosophic mode.

Educational theory has long recognized both advantages and disadvantages of the positivist model grounded in a technical rationality. At the same time, a major alternative shift was to move from quantitative to qualitative modes. Hlynka and Belland (1991) have argued for yet a third, critical, discursive practice, stemming from the idea that educational technology may also be perceived as an art as well as a science.

The concept of criticism as a valid and useful approach to scholarship is, of course, not new. It flourishes most obviously in the study of the arts. Literary criticism, art criticism, and cinema studies have long and established critical histories.

Education and educational technology, both firmly grounded in quantitative, positivist, and systematic paradigms have been slow in accepting artistic paradigms as appropriate scholarship. Yet, the balance is in the process of being redressed. Pinar (1978) has labeled as "reconceptualist" those writers/researchers interested in that mode of thinking that conceptualizes education anew and privileges altemative modes of inquiry.

Huebner (1966) lays the groundwork for such analysis with his discussion of five basic foci for curriculum language. He argued that the five were *technical,* which provides a means-ends rationality to curriculum discourse; *political,* which focused on power and control; *scientific,* which attempts to maximize effectiveness and efficiency; *aesthetic,* which focuses on teaching and learning as an art; and the *ethical,* which examines the value of the educational act.

Following Huebner, John Mann (1968) presented what is generally considered one of the seminal papers leading the way for what Mann named *curriculum criticism.* Noting significant relationships between curriculum and fiction, he suggested that the curriculum critic should appropriately function as the equivalent of the literary critic. "As with the literary critique," he pointed out, "the function of the curricular critique is to disclose its meanings, to illuminate its answers" (p. 77).

The metaphor was expanded upon by Willis (1975) and Kelly (1975). Eisner (1979) turned to art criticism for an extension of the model in a different direction and provided the literature with two terms that have since entered the everyday vocabulary of all curriculum evaluators, namely, educational connoisseurship and educational criticism. Connoisseurship, wrote Eisner "is the art of appreciation," while criticism" is the art of disclosure."

Vallance (1977) became interested in expanding Eisner s work to a description of curriculum materials, a task that becomes of special interest to educational technologists. Vallance's critical description of an instructional television series titled *The Great Plains Experience* provides a case study of what the model of educational criticism can offer. Essentially, Vallance argued that, while at a superficial level, everyone is a critic of curriculum materials. These conventional curriculum reviews

> deal either with surface features of the materials themselves or with the after effects of their use. But neither descriptions of the materials nor measures of their effectiveness really get at the heart of the matter. For neither addresses the question of what experience the curriculum materials make available to the student. The question is not a trivial one.

Criticism, to Vallance, is "the perception, analysis, interpretation, and portrayal of a work of art."

McCutcheon, in turn (1979, p. 5), notes that:

> the aim of educational criticism is to characterize, interpret, and appraise the nature of educational materials and settings and the nature of the curriculum and instruction

taking place. Critics ask: "What is it like," "what does it mean," and "what is its merit?"

Eisner, within two editions of *The Educational Imagination,* provides a variety of examples of curriculum criticism.

Educational technology does not lag behind in the connoisseurship domain. Belland has long advocated a thoughtful, careful analysis of the programs and products of educational technology. One of the first steps, argues Belland (1991, p. 33), is that "instructional technologists need to experience the "classic works" in the field, especially instructional film." Some of those films, which should be familiar to every educational technologist, include Braverman's *American Time Capsule;* the U.S. Navy's *Film Tactics;* Lorenz's *The Plow That Broke the Plains;* McLaren's abstract experiments from Canada, including *Fiddle Dee Dee* and *Neighbors;* Flaherty's *Nanook of the North,* and countless others. To be unaware of the first halting attempts in informational, instructional, and what John Grierson termed *documentary* style, is to be uninformed as to the powerful early contributions of our field. In a rush towards a vague future, we sometimes forget that we do have a history, and that many of our contemporary experiments have been done before, in some different form or medium true, but, nevertheless, we are indeed grounded in a rich and illustrious past.

A connoisseur should be aware of our history, so that we do not always "reinvent the wheel." For example, a perusal of the various volumes of the *Encyclopedia of Educational Research* through the decades, dating from 1940 to the present, will reveal much of the contributions of educational technology. Belland et al. (1991) argue that a connoisseur who can communicate his or her depth of history, of art, of culture to others becomes a critic in the true sense of the word. He lists some six contributions of such educational criticism:

1. Criticism could help explain a technological object or process in terms of the quality of the relationship between its content and its form.

2. Criticism could help explain a technological object or process in terms of the relationship among the constituent parts and the whole.

3. Criticism may provide insight into the unifying themes and designs that help to hold the technological object or process together in all its richness and complexity.

4. Criticism may reveal the nature of the intimate experience that a well-informed, sensitive, and reflective critic has with the process or product of educational technology.

5. Criticism may reveal the grounds on which interpretations and judgments of the processes and objects of educational technology may rest, as well as the consequences the object and/or process may entail in human experience.

6. Criticism may serve to synthesize the knowledge derived from disparate research processes into more comprehensive theory.

Other examples of curriculum criticism dot the literature of educational technology. Belland and Taylor (1991) have experimented with a futuristic educational scenario for which Alger (1991) has prepared a "close reading" that is at once critical, aesthetic, and deconstructionist.

In similar vein, Moore and Garrison (1988) produced a two-page "joke" in ECTJ titled "The contribution of metaphysics to instructional technology," a paper that in many ways provides the ultimate example of an aesthetic response to the field of educational technology posed within a deliberate aesthetic frame of minimalism. Hlynka (1989) has provided a careful reading and deconstructive analysis of Moore and Garrison, showing their document to be full of meaning far beyond the apparent simplicity of the original "empty" paper.

10.2.6 Postmodern Methodologies: Derrida and Foucault

Novices in postmodern analysis tend to look for algorithms to focus their methodological direction. On the other hand, postmodernists resist the notion of algorithmization. By stating a precise procedure, one is defeating a basic postmodern perspective that there is no one best way to proceed. To state a procedure precisely is in fact to provide a ""transcendental signified," an ultimate meaning, and a preferred way. This is what postmodernism argues against. For this reason, the following algorithmic notes are presented with some hesitation.

Perhaps one of the major concepts of postmodern theory is that of *deconstruction,* a term associated with Jacques Derrida. Deconstruction is meant to provide a close reading of a text, but a close reading with a difference. The first step in deconstruction is to identify the "traditional" binary oppositions where the first term is the term normally valorized, while the second term is in opposition. Thus we have good/bad, nature/technology, male/female, and so on. The next step is to attempt to reverse the oppositions. That is, by analysis and argument, one shows that in fact the second term, usually devalued, should in fact be valued. An example: Some binary oppositions representing modernity might include these:

form/antiform	centering/decentering
design/chance	boundary/intertext
hierarchy/anarchy	root/rhizome
finished work/happening, 'found" art	cause/trace
paradigm/syntagm	linear/nonlinear

Now, it should be recognized that in each case, it is the first term that is the ""valorized" term. Within the idea of

modernity, the key concepts are form, design, hierarchy, etc. Deconstruction takes some (not necessarily all) of the oppositions and shows how the ""other" is equally valid. Take, for example, the second opposition from the above list: design/chance. From a modernist perspective, design is the favored mode. Yet on the other hand, does not the concept of design tend to limit and constrain? Teachers teach by designed lesson plan. But it is often argued that the truly effective teacher can capture the moment, bring contemporary happenings into the classroom, and relate all of these to the subject under discussion. This requires an aleatoric model, an ability to use randomness, and an effort to change direction on the spot. In fact, ""designed" lessons more often than not lead to uninspired teaching and dull classrooms.

Thus the valorization of *design* deconstructs under close scrutiny, and we see that for *design* to work, one needs to incorporate some opportunity for chaos or *antidesign.* In fact *antidesign* is "'always already" present in a good design. The moment one accepts the importance of design, one must recognize that antidesign must be present to prevent design from becoming static. Ultimately, the stated opposition no longer makes sense, and this identified dimension of modernity (design/chance) has been deconstructed.

Eagleton (1983, p. 133) has algorithmized Derrida's approach in a concise and useful statement:

> Derrida's own typical habit of reading is to seize on some apparently peripheral fragment in the work—a footnote, a recurrent minor theme or image, a casual allusion—and work it tenaciously through to the point where it threatens to dismantle the oppositions which govern the text as a whole. The tactic of deconstructive criticism [is] to show how texts come to embarrass their own ruling systems of logic.

Although deconstruction is associated with Derrida, the idea has been around for a long time in other guises. Marshall McLuhan (1988) has presented a strikingly similar model within his presentation of what he called the *laws of media.* McLuhan argued that if one is to determine fully the effect of a given medium, one needs to ask four basic questions modeled after Karl Popper's falsifiability principle. McLuhan's four questions posed about media are as follows:

> What does it enhance or intensify?
> What does it render obsolete or displace?
> What does it retrieve that was previously obsolesced?
> What does it produce or become when pressed to an extreme?
> (McLuhan & McLuhan, p. 7)

The result is a useful set of guidelines that has nevertheless not been systematically examined by researchers, The contemporary postmodern reincarnation and extension of McLuhan is found in the work of Baudrillard.

Deconstructionist methodologies have appeared in the literature of educational technology in recent years. Yeaman (1992) has summarized the impact of deconstruction on educational media. Hlynka (1989, 1991, 1992) has provided several deconstructionist readings. Curtis (1988) has deconstructed visual statements, while Magnusson and Osborne (1990) have provided an interesting deconstructionist reading of the concept of modular instruction. Suchting (1992) has provided a careful deconstruction of constructivist thinking.

Just as Derridian analyses provide a deconstructionist approach to analysis, so a Foucauldian analysis provides a focus on power connections. Michel Foucault is the "other" major personality in postmodern methodologies. Grounded in power issues and poststructural historiography, Foucault provides an alternative model towards asking postmodern questions. Cherryholmes (1988, p. 107) has algorithmized Foucault in the form of eleven questions as follows:

1. Who is authorized to speak?
2. Who listens?
3. What can be said?
4. What remains unspoken?
5. How does one become authorized to speak?
6. What utterances are rewarded?
7. What utterances are penalized?
8. Which categories, metaphors, modes of descriptions, explanation, and argument are valued and praised; which are excluded and silenced?
9. What social and political arrangements reward and deprive statements?
10. Which metaphors, modes of argumentation, explanation, and description are valued?
11. Which ideas are advanced as foundational to the discourse?

Foucauldian analyses are also in evidence in contemporary educational technology research. Damarin (1994) has coupled feminist theories to the theories of Foucault, while McBride (1989) has provided a useful Foucauldian analysis of mathematical discourse in the classroom. Taylor and Swartz (1991) discuss the ramifications in educational technology to the statement "knowledge is not value neutral." In particular, issues of equity become significant.

10.2.7 Postmodernism as a Theoretic Underpinning for Hypertext

New information technologies have resulted in a variety of new forms of communication. Among the most popular of these is *hypertext* (see 21.1). Landow (1992) defines *hyptertext* as "'blocks of text and the electronic links that join them." *Hypermedia,* by extension, would be blocks of media and the electronic links that join them, where the "blocks of media" might be presented as still visuals or as motion visuals with Quicktime or Linkway. The term *hypermedia* is often (but not always) synonymous with the current use of the term *multimedia.* One of the more popular

versions of hypertext is *HyperCard,* which is the popular Macintosh utility allowing students (and others) to create and use hypertext documents within a Macintosh environment.

Computer programmers and others have been intrigued for perhaps a decade as to the potential of hypertext as a teaching/learning tool. Only recently have theoreticians (Landow, 1992; Ulmer, 1991; Burnett, 1993) drawn attention to the fact that the intellectual theory that undergirds the technology of hypertext is in fact postmodernism.

Ulmer (1991) suggests that Derrida's concept of grammatology provides a useful framework for hypermedia studies. Derrida has coined the term *grammatology* to suggest a study or science of writing. Derrida's grammatology is grounded in the idea that writing is devalued and seen as inferior to speech. Further, written reference is unstable. This creates a '"difference" such that a text must always defer to something else. To Ulmer (1991), grammatology proves a theoretic frame of reference

> free of the absolute commitment to the book apparatus that constrains research conducted within the frame of critique. The challenge of grammatology against all technological determinism, is to accept responsibility for inventing practices for institutionalizing electronic technologies.

In particular, Ulmer focuses on the card index metaphor that HyperCard so readily simulates as a perfect simulacrum for postmodern theories. It is an idea for which art critic and philosopher Walter Benjamin (1979) has previously set the stage:

Today, the book is already, as the present mode of scholarly production demonstrates, an outdated mediation between two different filing systems. For everything that matters is to be found in the card box of the researcher who wrote it, and the scholar studying it assimilates it into his own card index (p. 78).

Burnett (1993, p. 1) follows with the same general argument:

> What distinguishes hypermedia is that it posits an information structure so dissimilar to any other in human experience that it is difficult to describe as a structure at all. It is nonlinear and therefore may seem as alien wrapping of language when compared to the historical path written communication has traversed; it is explicitly nonsequential, neither hierarchical nor rooted in its organizational structure and therefore may appear chaotic and entropic (p. 1).

The most extended analysis to date of hypermedia as postmodern theory stems from Landow (1992). Using postmodern concepts of intertextuality, multivocality, decentering, and nonlinearity, Landow argues that '"what is perhaps most interesting about hypertext, though, is not that it may fulfill certain claims of structuralist and poststructuralist criticism but that it provides a rich means of testing them" (p. 11). Indeed, he argues that '"hypertext has much in common with some major points of contemporary literary and semiological theory, particularly with Derrida's emphasis on decentering and Barthes' conception of the readerly versus the writerly text." In fact, hypertext creates an almost embarrassingly literal embodiment of both concepts" (pp. 33—34).

To reiterate: It is argued that hypertext, one of the key products/concepts of contemporary educational technology, is grounded in postmodern theory. To work with hypertext, one of necessity must have a working acquaintance with postmodernism. It is a challenge that deserves to be taken seriously by more educational technology researchers.

10.2.8 Postmodern Texts

What makes an effective text? Traditional instructional design advocates such design guidelines as clarity, statement of objectives, verification of content, and so on. Yet, as one can guess from the above discussion of hypertext, there is already a postmodern view that sees texts differently. Spring (1991) provides guidelines from his personal experience:

> The postmodern textbook should avoid the presentation of information in a neutral language. Knowledge is not neutral. By presenting the reader with a compendium of information, the modern textbook, in contrast to the postmodern textbook, conveys the impression that scholars agree on a particular body of knowledge. . . . The postmodern textbook should . . . present the reader with a multiplicity of views of a given field of knowledge (p. 197).

Traditional instructional design guidelines assume that the reader will interact with the author in a linear mode. However, contemporary research is beginning to offer alternatives to linearity, even within traditional texts.

A particularly interesting example of attempts to move traditional text into nonlinear modes is the domain of children's literature. Two areas will be mentioned here: (1) interactive fiction and (2) postmodern writing for children.

Educational technologists have become interested in interactive fiction in a traditional textual mode. Probably the most commercially known product is the '"choose your own adventure" books. In addition, educational technology research has made some significant forays into the field. For example, Norton (1992) has examined the literary concept of discourse as created by computers. Desilets (1989) suggested that interactive fiction is oriented to problem-solving strategies and therefore engages the interest of students. McLellan (1992) has qualitatively studied children's reactions to interactive stories presented within a HyperCard mode. The conclusions support the hypothesis that children can adapt to the interactive HyperCard mode of presentation. Even children's picture books, normally produced within a fairly standard presentation model, have begun to take a deliberate postmodern turn. Whether young children can

understand all—or even some——of the subtleties is open for research. Two examples are David Macaulay's *Black and White* (1990) and Catherine Brighton's *Five Secrets in a Box* (1989).

10.2.8.1. Black and White. *Black and White* illustrates postmodern characteristics of multiple discourses and uses the strategy of resisting closure. The large-format picture book for primary school age children physically divides the book into four stories. But rather than presenting the stories sequentially, they are presented simultaneously. The first story, ""Seeing Things," is presented in the upper-left quadrant of each two-page spread and tells of a young boy taking a train trip. The second story, "'Problem Parents," is placed in the lower-left quadrant. ""A Waiting Game," located in the upper-right quadrant, tells of passengers at a station waiting for a train. The lower-right quadrant story is called ""Udder Chaos" and deals with a herd of Holstein cows blocking a train track.

Three of the stories are in full color, while one, '"Problem Parents," is illustrated in sepia. The book is full of intertextual references to the other stories. In addition, the visuals must be examined carefully for further intertextual (intervisual?) content. Children may choose to read the four stories all at once, or they may choose to read each story separately. The entire book is prefaced with what the author calls a "warning."

> This book appears to contain a number of stories that do not necessarily occur at the same time. Then again, it may contain only one story. In any event, careful inspection of both words and pictures is recommended.

The result is a delightful children's picture book that challenges nearly all our assumptions of what children's books should be like. It also poses some interesting questions on the limits of understanding of young children which deserves future research.

10.2.8.2. Five Secrets in a Box. *Five Secrets in a Box* (Brighton, 1987), on the other hand, at first appears to be a simple story about the real daughter of Galileo. It is perhaps a discussion of girls and science. But once the original text is read, the young reader is presented with at least three alternative texts, each of which subtly or radically changes the meaning of the original simple story. One of these alternative texts is placed in the inside front cover, as a kind of preface, but not labeled as such. This text seems to explain the main picture story but adds substantial detail missing from the main text. A second alternative text is found on the inside back cover as a kind of postscript or epilogue that provides radically new content and changes the potential meaning of the story once again. Even the back flyleaf provides new information that adds to the story. Some information, such as the fact that Galileo was never married, is deliberately hidden from the reader. Finally, the visuals that support the text are themselves instructive. For example, the written text never sets the scene in Pisa, Italy, nor refers directly to the famous leaning tower story where Galileo drops light and heavy objects to test his theory of gravitation. Yet the visuals clearly picture the famous leaning tower on several pages. This requires an intertextuality that forces a very young reader to reach beyond the book itself for more complete information.

Thus once again, we have a postmodern text aimed clearly at very young children which violates all traditional rules of storytelling and in so doing features multiple contradictory texts and messages.

10.2.9 Postmodern Explorations in Educational Technology

The literature of postmodern educational technology that began as a trickle in the 80s has suddenly become a flood in the 90s. While single papers abound, special issues of journals seems to provide an effective avenue dissemination. Leading the way was the Research and Theory Division of AECT with a special issue of its in-house newsletter in 1989 edited by Koetting, consisting of a half-dozen postmodern and critical papers . The following year saw a special issue of the *Journal of Thought* edited by Robinson. The 1991 text *Paradigms Regained* presented some 26 scholars attempting to define a common place for postmodem, semiotic, illuminative, and critical theory studies within the broad rubric of educational technology. A 1993 book edited by Muffoletto and Knupfer extended the exploration specifically into the computer realm. The February 1994 issue of *Educational Technology* edited by Yeaman provided yet another dozen papers of postmodern commentary related to the ethics of educational technology. Deconstructive studies are found in the work of Yeaman (1 994a, 1994b) and Hlynka (1991). Feminist approaches are represented by Anderson (1994) and Damarin (1994, 1991, 1989). The concept of an educational cyborg is found in Jamison (1994) and Yeaman (1994c).

10.2.10 Conclusions: Future Directions

As it becomes clear that postmodernism does not espouse a particular cause but is merely a ""condition," researchers should more willingly add postmodern tools to their research toolbox. Postmodernism is able to provide a theoretic support and foundation for the following:

1. Nonlinear thinking (as in hypertext studies)
2. Multivocality and alternative paradigm research, providing a move away from the concept of a transcendental signified (as in increased acceptance of qualitative research)
3. Aesthetic/critical approaches to scholarship
4. Close readings and deconstructive readings to provide careful and thoughtful analyses of the role of information technology
5. Intertextual relationships

6. Decentering strategies which will assist the researcher in defocusing on traditional questions and refocusing in new and revealing ways
7. A closer relationship between the sciences and the arts, and between fictional and nonfictional modes of analysis and presentation

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10.3 REALISM AND THE SYMBOLIC: TWO WAYS OF KNOWING (Robert Muffoletto)

10.3.1 What is Educational Technology?

1. Educational technology is nothing until we say it is. From that position it is a social condition living within a dynamic history.

2. Educational technology is a way of thinking about education, instruction, curriculum, students, etc., rooted in positivism and science.

3. Educational technology is about control.

4. Educational technology has its own discourse and world view that has grown out of the enlightenment.

5. Again, educational technology is nothing until we say it is.

Our field is now beginning to address issues concerning multimedia, virtual reality, and global networking. The instrumentality of accomplishing our goals is complex enough, but we must also address the social, political, and epistemological questions usually ignored in our field. You cannot be simply a designer and producer of instructional messages without being concerned and involved with issues concerning meanings, voices of authority, and ideological reproduction. Inquiries concerning truth, meaning, consciousness, and notions of "self" are basic to our field. Without such questions, we may not realize that we are part of the system, and that the system is part of us. In this essay, I begin to address the notion of "truth" through two guiding paradigms I term as *realism* and the *symbolic.* The notion of truth is critical to those us who work in the fields of educational technology and instructional system design, because by the very acts we attempt to accomplish, we position ourselves and construct the users/learners.

What we understand as "real," "unreal," and "virtually real" is dependent on where we stand in relationship to what we believe is out there. Let me put it an other way: It may not be a question of conscious belief; either it, something called *reality,* is there or it is not. If you believe it is there, there is no point in thinking about it. On the other hand, what we know and what there is may not be the same. In any case, all we really have to work with are representations of the external and internal worlds we create. How we treat those representations, as a correspondence to reality or as flirtations with realism, defines ourselves as subjects and not as objects. Who we think or believe we are centers on how and what we believe we know. It comes down to a question of beliefs and unquestioned assumptions about knowing; an epistemology.

A paradigm, as a way of knowing, as a platform for defining and limiting understanding and fixing a world view that determines and legitimates actions, providing structures for understanding what is natural and correct, guides, directs, and limits what we think. If a paradigm defines what is natural and correct, it also defines what is unnatural and not correct (Kuhn, 1962). Paradigms define social relations as a constellation providing "shared ways of seeing the world, of working" (Popkewitz, 1984, p. 3) in the world. In this manner, paradigms are social constructs that suggest "a frame of reference which reflects a whole series of assumptions about the nature of the social world and the way it might be investigated" (Burrell & Morgan, 1979). Paradigms, as frameworks for thought and practice, as a system of values and beliefs about what is, are not neutral. They are born, maintained, and reflect human social and historical interest (Habermas, 1968). As Popkewitz (1987) suggests, a paradigm provides us with a "world view or framework of knowledge and beliefs through which we see and investigate the world" (p. 193). Frameworks and structures begin to define relationships and meanings within the limitations of itself. Adherence to ways of thinking about the world do more than define the world. Ways of thinking *are* the world.

My interest here is in the ways in which a paradigm defines objects as subjects, and how social realities and subjectivities are reproduced and maintained as a function of representation as a discourse within a paradigm. To accomplish this, I will refer to what I will term the *realist/functional* (classic realism) paradigm and the *symbolic/interpretive* (symbolic) paradigm.

10.3.2 Realism

Educational technology, instructional technology, and instructional systems exist within a realist/functional paradigm defined by positivism, capitalism, progressivism, structuralism, and classic realism. How our field has come to define effectiveness and efficiency, as well as forms of accountability, exist within that paradigm. The definitions and representations of reality, as legitimated by the paradigm, begin to define the discourse that in the end defines you and me. Discourse practices, language in use from a realist perspective, emerges from an ideology of realism. The correspondence between representation and what it refers to involves shared assumptions about reality, ourselves, and others who exist within it (Belsey, 1980; Cherryholmes, 1988; Rorty, 1991). Realism as an ideology operates as a discourse that interpolates human beings as subjects (Therborn, 1980).

"Culture and society, in the structural universe, are anonymous, objectified thought systems; they are systems of behavior and thought that no individual human has authored or intended" (Crick, 1991, p. 161). From this, perspective reality can be known and expressed through systems or relationships of representations or signs. In both realism and structuralism, there is an assumed system or structured correspondence between representation and reality. Furthermore, realism and structuralism decenters human interest where "significance, intelligibility, meaning are properties of systems,

not a matter of human will, subjectivity, or intention" (Crick, 1991, p. 161). Realism suggests that "the social world external to the individual cognition is a real world made up of hard, tangible, and relatively immutable structures. . . . For the realist, the world exists independently of an individual's appreciation of it" Burrell & Morgan, 1979, p. 4).

As an alternative, poststructuralism offers a way of understanding, of knowing the world. Poststructuralism recognizes the authorship, voice, and the intentionality of various ways of knowing (Goodman, 1978; Rorty, 1991). It begs the question of meaning and significance. It positions language as discourse that benefits human interest (Cherryholmes, 1988).

The two opposing ways of understanding the world, structuralist and poststructuralist, are found within the dialects of realism and the symbolic. Realism, as discussed above, emerges from positivism, and holds that we can know reality through representations. From a realist perspective, the correspondence between representation and reality is not something that individuals create; it exists outside human intent, whereas the symbolic rests on the interpretive and constitutive acts of social performers.

Understanding the external world as an artifact, as a social construction "willed into existence through intentional acts . . . man [sic] is shown to live in a world created through consciousness" (Burrell & Morgan, 1979, p. 233). But how those relationships come to hold meaning does not exist outside the social world or any discourse as positivism and realism suggests. The meanings and their constructed relationships are the result, from a poststructuralist perspective, of historical social conditions. Semiotics and postsemiotics, as models for understanding the communication process, may be helpful in understanding the dialects of realism and the symbolic (Barthes, 1964; Cassirer, 1955; Hawkes, 1977; Norris, 1982; Weedon, 1987; Wollen, 1969).

As realism positions the individual in relationship to "'a" reality, the symbolic positions the individual as a reflective participant in the social and historical discourse, A semiotic model, one that positions the sign as a referent to a known '"truth," standing in place of what it refers to, runs counter to postsemiotics, where there exist many interpretations, many truths. From a realist perspective, the sign is what it depicts. The photograph of Uncle Joe does more than stand in place of Uncle Joe: It is Uncle Joe.

Semiotics, as a science of signs, positions all forms of language as a signifying system. Visual representations like photographs, illustrations, and drawings are part of that signifying system. Communication is the signifying system in practice. When we view an educational film or look at a textbook illustration, we are engaged in a process of signification, a process of meaning construction that from a realist perspective is fixed within a structure of relationships and other meanings. These structures and relationships over time become codified into reified systems of significance.

We come to know and understand the world and our position in it through the representations, the stories, we have at hand. The stories we read, hear, and see define who we are by the nature of the discourse employed. If those representations appear to be natural, like the language we use, they also appear to be objective and neutral, free of human intervention (Belsey, 1980). Realism and semiotics provide the view that the world is something we are born into; it is known and knowable. Language and significance is something we leam, not create. Meaning is reified, and the social and historical construction of relationships and intentions becomes transparent. What we see, what we hear and speak, what we know, all appear to be natural and real. From a realist semiotic structuralist perspective, there is no difference between the reality of the world and how we talk about it or picture it. Reality is reality.

Reification and realism go hand in hand in masking the authorship of the messages experienced by both producers and readers of constructed representations. It is through the use of the existing codes of realism that makes illusion plausible. The power of the realist text is to make itself appear to be real and natural. Through various modes of experience, the realist text seems more like day-to-day life and not the appearance it really is.

The correspondence between the understood world (one being real, accessible, and knowable) and the realistic representations of it have interesting implications for educational technology. If the world is as it is depicted, then what I have experienced is the ""truth" (Rorty, 1991). How people, places, and objects are talked about, and are presented in relationship to each other and others, either confirm or contradict what I know about the world. If I believe in the objectivity and neutrality of what I see, I never question what I know or what the experts tell me (Muffoletto, 1993). What I know is what I know.

For me, the existence of the representation is not the question. The question that I feel should concern those working in the field of educational technology is the nature of signification. What does the text mean, to whom, and why? Positivism, structuralism, realism, and semiotics all present a way of seeing and understanding the world through representations. There is no questioning of the storyteller, or even the recognition of a storyteller. The world is as you are told.

10.3.3 Symbolism

Symbolism, as I use it here, fits more comfortably into an interpretive paradigm, one that is poststructural and postsemiotic. Postsemiotics departs from the notion of "a" truth or "'a" reality; nothing is natural, Language, discourse, institutions, pictorial representations, and auditory reconstructions are social products, embedded with social purposes

and human interest, The symbolic/interpretative paradigm of poststructuralism and postsemiotics attempts to deconstruct the nature and implications of naturalism. In doing so, poststructuralism rejects the notion of "a" reality, "'a" truth, and a natural correspondence between representation and truth, In rejecting the acceptance of ""a" truth, poststructuralism replaces the realist positivist point of view by recontextualizing signification, offering alternative and oppositional readings, thus creating other realities (Goodman, 1978).

Poststructuralism and symbolic interpretation recognizes the individual as a socially and historically constructed subject. It rejects realism and embraces constructivism (see 7.2, 7.3). Poststructuralism constructs a world that is the result of a consciousness, the consciousness of the individual. It is a consciousness that is itself the result of social and historical interactions, These interactions, reflective and critical, look to issues of power, control, and benefit in the analysis of messages, educational or otherwise.

Before I move on to a discussion of representation and subjectivity, it should become apparent that the differences between the two paradigms make them incompatible. One positions reality as something out there to be discovered, a preexisting world with established truths, The other argues for many possible realities, constructed by the consciousness of the individual. Here the world and truth(s) are not waiting to be discovered, but to be created. To understand one or the other, one must believe what the paradigm presents (Rorty, 1991).

10.3.4 Representations

Standing in place of something else, referents, representations, signs (indexes), emblems, etc., and particularly realistic images (icons), not only refer to a point in time and place but also refer to a relationship between the producer of the representation and the "'object" referred to. Representations also refer to the perceived viewer as a reader or receiver (this at times may be the producer themselves) (Berger, 1972; Fish, 1980; Monaco, 1977). The difference between readers and receivers is a critical one, Readers actively produce meaning, their own meanings out of perceived experiences or texts (Attridge, Bennington & Young, 1997; Holub, 1984; Freund, 1987; Weedon, 1987). The term *receiver* has historically placed the individual in a more passive role in the communication process. Sometimes the receiver was to provide feedback, but at all times the receiver was to reproduce the intended message sent by the sender, Receivers were never empowered to create their own meanings of value and worth. It was the job of the sender to design a message that would produce the desired outcomes. Using the term *receivers,* the sender was empowered. The use of the term *reader* empowered individuals and valued their understanding.

Representations as a constructed experience, a text to be read—and this includes all types of messages—cannot be anything but intentional. Texts are produced as part of a history of interrelated texts and constructed experiences.

Meanings are produced and reproduced as a result of social and power relationships. The individual, and our notions about what it means to be an individual, is a result of those institutional affiliations (Berger & Luckmann, 1966; Bronowski, 1965; Eagleton, 1976; Popkewitz, 1991). Again, the producer of any representation is its first constructed reader, Readers are constructed so that messages may be designed to speak to them. Whether it is Whittle's ""Channel One" (DeVaney, 1994) or who "I" think you are, the organization and presentation of any message is a result of the speaker's notion of whom they think they are talking to. To understand this connection between producer and reader, it must be positioned within existing institutional and knowledge power relationships. How a representation comes to be meaningful to both producer and reader is in the end a result of historical social, political, economic relationships and contests (Freund, 1987; Holub, 1984).

10.3.5 Receiver or Reader

It is necessary at this point to turn briefly to the notion of the individual as subject. It may suffice for now to suggest that who or what we think "'we" are is socially constructed. How we think about ourselves and others is the result of our experiences with various ideological texts, representations, and discourses (Belsey, 1980; Berger, 1963; Berger & Luckmann, 1966; Berger, Berger & Kelner, 1973; Muffoletto, 1991, 1993). Social institutions—like families, religions, and education—inform the individual as to whom he or she is through the repetition of stories. Mass media and educational media as experienced phenomena present numerous narratives that inform us and position us in relationships to others and social institutions, In light of experiences and discourses that are controlled by others, we come to think of ourselves as autonomous individuals, when actually the "I" is a result of social, political, economic, and historical factors, Ideology, sense making of the world, works to form and inform us (Ellsworth & Whatley, 1990; Popkewitz, 1991). This is no simple matter. The social construction of individuals as subjects is mediated through various forms of representations that consume the individual. This hegemonic process, as Feenberg (1991) suggests, is not imposed through struggle between self-actualized individuals but one that ""is reproduced unreflectively by the standard beliefs and practices of the society" (p. 78) where individuals find themselves.

> The self-as-subject is a social construct whose place will vary according to the construction process. It is not a fixed-for-eternity entity but a moment in a relationship. How we are termed as individuals can therefore be framed as an ideological question, a matter of the position we occupy or believe we occupy within a social and cultural order (Nichols, 1981, p. 30).

How that self is formed, maintained, or changed is a result of repeated social experiences. I include within these social experiences the experiences of students and teachers with educational media and technology. These social experiences are representations and re-presentations of various encounters in the social world, For example, continuous experiences of women in submissive and powerless positions, acting out trivial roles, may, with other observed phenomena, affect the consciousness, a sense of self, of women and men and their perceived relationship to each other and the social order. If the vehicle for this example is codified in realism, the delivery of these continuous messages may become transparent, and the message eventually reified.

The struggle for control over minds and hearts of individuals is an ideological battle, Postsemiotics, as a form of discourse analysis, attempts to unpack the ideological framework of naturalism and realism to reveal its subjective and political nature, From the symbolic/interpretative paradigm, the representation or text is an experience created through the interaction of the intended text and the consciousness of the reader or viewer. The experienced text is the only text ever experienced. This experience is never fixed or natural, but is the result of social dynamics, agreements, and conflicts. Who we come to think we are is the result of experiencing various cultural and cross-cultural texts.

A word about the notion of interpretative communities in the formation of consciousness (Fish, 1980). How readers make sense out of their experiences, and their understanding of future experiences, may be understood in terms of history, power, and discourse, It is through historical experiences with representations as part of various discourses that we become subjects. If questions over authority and expertise are never raised, the meanings of experiences are told to us through various storytellers. The power and control over the meanings of experiences are given to us. This is not to suggest that there is no resistance to those imposed meanings. There are, and those whose resist are usually marginalized.

As individuals come to share like meanings, they form what Stanley Fish (1980) has referred to as "interpretive communities." These communities share some common understandings, visions, and projections. Because of this similarity of knowing, they form various levels of commonality. Individuals may hold, at different times, membership in various communities, Whether you are a student, a teacher, instructional designer, or parent, your understanding of experiences is determined by the horizons of that community. One's sense of self is maintained and reproduced by the continuous retelling of stories, always situating the listener in some relationship to the story.

We become what we know, and what we know we become, The sense of self, "who I am," is the result of interactions with voices of authority, constructed texts with intended meanings, and the ideological parameters of social likeness. In this manner, the individual is a social construction, a product of discourse and ideology.

Unlike the realist perspective, the symbolic recognizes the social existence of meaning, and the shifting horizons of self. As the symbolic suggests, meaning and truth must be unpacked. The problem is that in the deconstruction of meaning, meaning is never found, for once it is, it must again be unpacked. In this manner the individual is frozen—frozen because there is no ending to the process of deconstruction, of new meanings, and of new understandings.

There is no truth except for the moment.

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10.4 POSTSTRUCTURAL FEMINISM AND RESEARCH IN EDUCATIONAL COMMUNICATIONS AND TECHNOLOGY (Jane H. Anderson and Suzanne K. Damarin)

We will know that the influence of poststructural feminism on educational communications and technology has arrived when handbooks like this no longer exist, when authorities no longer catalog the official view, and when the primary concerns of the field are no longer how best to produce efficient and effective learning materials but rather to speak with real live people of all genders, races, and classes, and to construct knowledge together. The idea of a handbook such as this, which tells people how to do research, we find troublesome. (Ironically, we are also glad to be included.) It is a form of institutionalization and attempts to lead people towards some issues and away from others. Would it not be better, we wonder, to provide a hypertext that shows many local examples of how many types of people find technology empowering and disempowering in a variety of situations? What are the purposes of standardization, hierarchy, fragmentation, and subjugation?

Most people know that feminist research is based in the lives of women (see also 1.12) and seeks, in one way or another, to improve the conditions of those lives, However, people, both women and men, may not know that there are several branches of feminism. The best-known branch, and the branch most frequently invoked in discussions of education, is liberal feminism: "'Liberal feminism aims to achieve full equality of opportunity in all spheres of life without radically transforming the present social and political system" (Weedon, 1987, p. 5). Typical liberal feminist research deals with equity issues, such as whether male and female students have equal access to technology and/or how more women can be interested in computing as a career; reviews of research on gender equity and educational technology are abundant (e.g., Hawkins, 1987; Kay, 1992). Liberal feminism accepts unproblematically the political and theoretical assumptions of the dominant society and seeks to carve out for women a better place in a society that is otherwise unchanged. Other branches of feminism (e.g., socialist, Marxist, radical) disagree with these assumptions and believe that woman's position can be improved only with broader political and economic changes in the total society. Poststructural feminism, the branch of feminism that concerns us here, advocates societal change and shares with other poststructuralisms a turn away from projects that promote '"progress" and the search for "truth."

Poststructural feminists are concerned with '"how gender power relations are constituted, reproduced, and contested" (Weedon, 1987, p. vii). Poststructural feminists use poststructural concepts of language, subjectivity, social organization, and power in an effort to understand why women tolerate social relations that subordinate their interests to those of a masculinist culture (Weedon, 1987, p. 40). They/we also

seek insights into the social mechanisms that convince people to adopt and act from particular attitudes,

Poststructural feminism challenges dominant masculinist views of knowledge by using strategies of opposition, resistance, and deconstruction, According to poststructuralism, theory is in the midst of a paradigm shift: The view of knowledge as objective and disinterested of social context is being replaced with a conception of knowledge as "'constructed, contested, incessantly perspective and polyphonic" (Lather, 1991, p. xx). Poststructural feminists seek to reveal patriarchal genealogies and delegitimize their centrality to society. Another aim of poststructural feminists is to empower people who have been marginalized and to offer these people new ways of understanding the world, This work can entail both conversation (consciousness raising) and personal and political action to understand and to uproot the causes of powerlessness, systems of oppression, and women's complicity in them.

10.4.1 Language

> Language, feminists claim, is never gender-free (Diamond & Quinby, 1988, p. xv).

For poststructuralists, experience has no inherent essential meaning, but the meaning of experience is produced and reproduced through the use of language. "'Language enables people to think, speak, and give meaning to the world around them" (Weedon, 1987, p. 32). Like feminist linguists and radical feminists of the 1970s (Lakoff, 1975; Daly, 1978; Spender, 1980), poststructural feminists argue that language limits women by framing and inscribing their lives, Not only what is said, but what is unsaid and unheard, is subject to analysis. Poststructural feminists think the unthinkable and speak the unspeakable as strategies of resistance, opposition, and deconstruction,

In agreement with Michel Foucault and other poststructuralists, feminists note that discourses speak people. How people write, talk, and otherwise communicate about what they know, do, and believe reflects the ways they are shaped by particular discourse communities, The more people incorporate the language of a particular discourse community, the more power that discourse community has. For example, the languages of the AECT (1979) definition of educational technology, of "the learner" and of ""components," of educational computing, and of hypertext, all inscribe the activities and potentialities of teachers and students, and thus "speak them" into a certain way of being. The ways in which the discourse of educational technology '"speaks people" are discussed in the writings of Taylor and Johnsen (1986), Damarin (1991b), Anderson (1992), Bryson and deCastell (1994), and others. While these authors address the construction of language within educational technology, **P.** K. Jamison (1992) discusses the appropriation by the field of language developed outside it; by adopting/adapting the language of values, liberation, and empowerment from emancipatory pedagogy, educational technology denies its meaning and robs emancipatory educational reformers of their voices.

Poststructural feminists bring together Foucauldian and earlier feminist concerns with the political language of the body. They consider the ways in which women's bodies are positioned by discourses of gaze, spectacle, and pornography, and by the normalizing absorption of these discourses into the culture at large (Haraway, 1991). Some feminist poststructuralists within educational technology focus on the body politics within our field, For example, Ann DeVaney's work reveals the intrusion of pornographic imagery into educational television (DeVaney & Elenes, 1990) and of the discourse of woman as spectacle into computer software (DeVaney, 1993).

Recent work within postmodern feminism (e.g., Butler, 1990, 1991; Haraway, 1985, 1991) amplifies the language of "'difference" while challenging the binary division associated with sex/gender. This development is important to the rethinking of research on gender and educational media and technology because most research in this area is based on the essentialist classification of students as male or female. Important work on this issue by Bryson and deCastell (1994) leads to rethinking of prior feminist research on educational computing (e.g., Turkle & Papert, 1990; Brunner, 1992). Many concepts that underlie instructional design (e.g., individualizing instruction, learning style) are associated with the sex/gender division. Consideration of these issues is closely related to concerns with subjectivity.

10.4.1.2. Subjectivity. One project of poststructural feminism is to deconstruct the liberal-humanist subject (the human entity) as a rational, unified, free, and self-determining individual. In contrast, poststructuralists view subjects as socially constructed; to the extent that media and technology contributes to social language, norms, and requirements, they also shape the postmodern subject. For poststructural feminists, "subjectivity" refers to "'conscious and unconscious thoughts and emotions of the individual, her sense of herself and her ways of understanding her relation to the world" (Weedon, 1987, p. 32). Rather than considering individuals as having an essential being, poststructuralists see an individual's subjectivity as a site for disunity, conflict, struggle, and change. "'Subjectivity is precarious, contradictory, and in process, constantly being reconstituted in discourse each time we think or speak" (Weedon, 1987, p. 33). Insofar as thoughts and emotions are constructed, mediated, and reinforced through language and discourse, subjectivity is derived from them; therefore, work such as DeVaney's (1994) is particularly important to understanding how educational media and technology influences, produces, and reproduces women's subjectivity.

In much of her work, Elizabeth Ellsworth (1987, 1988, 1990) addresses the interrelatedness of various aspects of education, media, diversity, and postmodern subjectivity, exploring at the interstices of these phenomena the disease

of the postmodern subject. Ellsworth uncovers ways in which the subjectivities of students and teachers affect, and are affected by, the use of educational media. Focusing on the language and normative practices of computing, Damarin (1991a, 1993b) suggests ways in which these affect subjectivity and identifies sites of disunity, resistance, and potential change. Damarin suggests that in postmodern times, simulation might replace the unified self as a metaphor for thinking about subjectivity.

In her radical critique of socialist feminism, Donna Haraway introduces the postmodern notion of the cyborg—part person, part machine—and describes the cyborgian displacement of modern by postmodern concepts and ways of being (1988, 1990, 1991). In the cyborg vision, representation gives way to simulation, work to text, mind to artificial intelligence, perfection to optimization, cooperation to communications enhancement, and individual to replicon. Cyborgs construct subjectivity through strategies of resistance within an "informatics of domination" in which being "'feminized means to be made extremely vulnerable; able to be disassembled, reassembled, exploited as a reserve labor force , , . leading an existence that always borders on the obscene, out of place, and reducible to sex" (Haraway, 1988 , p. 166).

As Haraway points out, cyborgian resistance requires the identification of strategic sites and often requires affiliation with unlikely co-conspirators. The strategic identification of such sites and partners within educational technology is an implicit goal of the work cited above. The cyborg is also influential in P. K. Jamison's critiques of educational technology (1991, 1992), and in Allecquerre Stone's (1993) discussion of subjectivity and virtual reality. As mainstream/malestream educational technology develops increasingly many and powerful uses of postmodern technologies, poststructural feminists within the field will continue to strive through research and practice to identify and open spaces in which women and other marginalized cyborgs/persons can construct subjectivities of power. As Haraway points out, because the networks of communications, multimedia, and virtual reality must be open in order for the powerful to exercise power, they are open to resistors and resistance as well,

10.4.1.3. Social Process. Consciousness-raising groups and activities, which were central to the women's liberation movement of the 60s and 70s, provided spaces for women to discuss their personal and public lives. These collective discussions led to the recognition of commonality in experiences and feelings. Through these discussions, women first questioned whether, and then concluded that, patriarchal and masculinist institutions were producing social and cultural practices that work against women's interests. Feminists' political drive to participate more actively in discussions and situations of gender, race, and class resulted. They engaged in political activity, often on the local level and around issues of community and family, under the banner "'the personal is political."

Poststructural feminists reverse this binary link and argue that politics is personal: "'This politics speaks to the ways that power operates at the most intimate levels of daily life" (Diamond & Quinby, 1988, p. xvi). Rejecting a politics of hierarchy and domination, they seek and create a politics that grows out of a concept of friendship and that suggests nonhierarchical and reciprocal relationships between people. Rejecting an ethics of justice and laws, they work toward defining an ethic of relation and care. They value dialogue over argument, and they recognize the worth and validity of individual views (Diamond & Quinby, 1988, pp. ix, x). Poststructural feminist educators, as theorists and practitioners, consider how to provide situations and spaces in which teachers and students can participate in reciprocal exchange, where teachers are no longer the disseminators of knowledge, authorities on subjects, or regulatory agents for an educational bureaucracy; instead, teachers facilitate learning experiences that allow students to participate in a variety of ways, with a multiplicity of voices, and in places where meaning and knowledge can be negotiated.

To date, feminist research on social process in educational technology and communication has dealt primarily with how technologies can provide more opportunities for social, collective, and reciprocal communication and exchange. Elizabeth Ellsworth (1987) writes about a course in racism and media that she offered at the University of Wisconsin because of racial tension on the Madison campus. As a final project, the students designed a group political statement to perform, show, or distribute on the topic of racism, Jane Anderson (1992) has considered how hypertext can be used in a course to decenter the authority of the teacher. Anderson suggests that hypertext design can provide for an electronic space where a collective, possibly anonymous, discussion can occur among the students on a subject without the directive energy of the teacher. Suzanne Damarin discusses similar issues in relation to the teaching of science (1991c) and also explores the potentialities of situated learning and cognition in relation to feminist practices and ideas (1993a, 1995).

10.4.1.4. Power/Institution. For poststructural feminists, scientism, professionalism, technical rationality, and patriarchy have turned schooling into a machinery of social and cultural regulation (Gore, 1993). Education as an institution has helped to construct gender, race, and class differences. The language of efficiency, effectiveness, control, and predictable outcomes which dominates modern educational discourse has privileged an authority-based teacher/student relationship, process and goal-oriented teaching techniques, and activities that aim to turn people into self-regulatory individuals who don't question authority. By its definition (AECT, 1979), educational technology is complicit in these activities.

As part of the institutional machine, educational technology and communication has a history of promising tools and materials that can be used in any context, teach concepts quickly using scientific principles, and widen student vision

beyond the limitations of the local classroom, These promises have appeal to educational groups that value concepts of scientific progress, professional power, civil control, and orderliness, In contrast, poststructural feminists tend to prefer educational practices that focus more on the local than on the institutional,

The influence of the military on education and educational technology is a particular concern for radical and poststructural feminists. As Sally Hacker (1989) and Cynthia Enloe (1988) argue, the military has developed as a masculinist and patriarchal institution (the integration of women into it, notwithstanding). The influences of West Point on Harvard, of military needs on engineering education, and of military codes of discipline and teaching on all educational institutions are documented by Hacker (1989). The fiscal and conceptual contributions of the armed services to the educational design and development are well documented. Douglas Noble (1984, 1991) demonstrates how the move to mandate computer literacy instruction emanated from the Department of the Defense, and Paul Edwards' (1990) work analyzes the influences of the military on the development of computer technologies and their place in education. Carol Cohn's (1987) study of the language of the military reveals the boundedness of certain concepts to it.

Complementing the research that specifically addresses the influence of the military, Cornelia B runner (1992) and colleagues examine differences in the ways in which women and men view technology and the types of technologies they would choose to construct. Findings to date indicate that men construct technologies with greater attention to enhancing power, while women seek technologies that promote human interaction. Linda Condron is interviewing women engineers concerning the ways they adapt and construct values within their workplaces (1993a, 1993b). As these and related researches are coming together, poststructural feminists use their findings to deconstruct practices in the institutions of education and educational technology.

Within educational technology and communications, feminist research on institutional power in the future might entail deconstructing the field or instructional design models to unravel what power groups are best served by particular instructional approaches (e.g., Damarin, 1991b). Poststructural feminists might also deconstruct their own teaching practices through collaborative study with their students and show how their interests are present in the teaching practices they use (Luke & Gore, 1992). Poststructural feminists claim that no instruction is innocent of the special interest of the teacher, but by foregrounding these special interests and how they shape practice, they feel they can open new space for understanding and change.

Like Foucault, feminist poststructuralist educators (e.g., Walkerdine, 1990; Gore, 1993) situate the academic study of pedagogy and public schooling within discourses of social regulation. They examine the effects on education of the political/patriarchal need for specifically skilled, obedient, and docile workers for the industrial age. As feminists they are particularly concerned with the ways in which schools and their discourses reproduce gender inequality; work such as Jane Gaskell's (1987) reveals how school requirements related to the mastery of technology devalues young women. Apple and Jungck (1990) address the related phenomenon of the deskilling of teachers through the introduction of (required) computer literacy units.

10.4.2 Research and Pedagogy: Focusing on Practice

Feminist scholarship has addressed and influenced all forms of academic research, Feminist historians studied and legitimized the use of diaries of "common folk" and oral histories as scholarly resources (Lerner, 1973); feminist literary and media critics have legitimized the reading of texts from positions of marginality (Spender, 1982). Because the dominant mode of scholarly research in education over the past several decades has been (quasi) scientific inquiry, feminist critique and philosophy of science are of particular interest to us here. Of the many feminist scientists and philosophers of science who have contributed insights relevant to educational research, the work of Sandra Harding (1986, 1987, 1991), Helen Longino (1987), and Donna Haraway (1988) is most pertinent. The following concepts, introduced and expanded by these theorists, are central to feminist research.

For these theorists, no research is objective in the sense traditionally claimed by scientists; a researcher cannot be in the position of "a god's-eye seeing everything from nowhere" (Haraway, 1991, p. 189). All research takes place from a position, and research should be conducted by one who stands in "the same critical plane" as the researched (Harding, 1987). Feminist research must attend to the concerns and lives of women (Harding, 1986; Longino, 1987, 1990). It should be carried out from the "'feminist standpoint" (Harding, 1986, 1991, 1993); that is, it should begin with the lives and experiences of women. Like the proletarian standpoint of Marxism (Hartsock, 1983), and other standpoints of the less powerful, feminist standpoint epistemology yields objective ""truths." Such research is argued to have ""strong objectivity" (Harding 1991) as a result of its being conducted with less interest in preserving the status quo than mainstream/malestream research, Thus, standpoint epistemology assumes that there are real objects in the world that we can study and understand, Haraway (1988) argues for a "radical objectivity" in which objects are conceived, not only as real but also as ever-changing and as actors that act upon us, even as we act upon them,

Feminist poststructuralist researchers borrow freely from the methods of standpoint epistemology without endorsing any form of objectivity. While they conduct research (primarily qualitative) beginning with the lives of women (or

other marginalized groups), they recognize a need to report multiple interpretations of the data they have gathered and to interrogate and reveal their own positions in relation to multiple aspects of the study. Therefore, self-reflexivity is characteristic of feminist poststructuralist inquiry.

10.4.2.1. Self-Reflexivity. A leader in poststructuralist feminist research methodology, Patti Lather writes: ""By *reflexive,* I mean those stories which bring the teller of the tale back into the narrative, embodied, desiring, invested in a variety of often contradictory privileges and struggles" (1991, pp. 128—29). Researchers are invested in what they study, what they select to report, and what meaning they find in the research situation, Self-reflexivity involves professional self-critique, in which the researchers own up to their values and how they are present in their work as interested people. Self-reflexive material gives readers a chance to learn how the personal interests of researchers might shape research questions, approaches, and findings.

Susan Krieger (1991), in *Social Science and the Self: Personal Essays on an Art Form,* writes about how the written products of research studies are more often about the researcher than anything else. For Krieger, doing research, interpreting it, and presenting it are projects of self-expression. When people are doing research, they are in a sense researching projections of themselves. For her, research can be a form of artistic expression. Krieger blurs the boundary between doing social science research and doing art.

Feminists (e.g., Bordo, 1987; Code, 1991; Keller, 1985) observe that historically only men were viewed as (or allowed to ""be") rational, As a residue of this history, many people associate the language of rationality with the masculine, and the language marginalized or suppressed by rationalism —poetic language and the languages of mysticism, madness, and magic—with the feminine, In their research methodologies, several poststructuralist researchers honor and adopt the poetic (Richardson, 1993). Some feminists have long read the mystical and magical as credible (Lerner 1981, 1993), and worked towards the deconstruction of madness (Chesler, 1973; Mander & Rush, 1974; Millet, 1990). In this self-reflexive turn, these feminist women claim the power of the discourses assigned to them.

10.4.2.2. Pedagogy. For poststructural feminists in education, pedagogy is a central concern—it's where theory and practice meet. Poststructural feminists believe that pedagogy has a great affect on how gendered knowledge and experience are produced (Gore, 1993, p. 26). They advocate pedagogical styles that enable women and men to listen to themselves and each other, so that they might arrive at a better understanding of how different, variously capable, and socially responsible people are. They reject institutionalized pedagogical knowledge as being too technical and focused on method of teaching. Poststructural feminists also criticize critical pedagogists (such as Giroux, Freire, Apple, and McClaren) for being patriarchal and masculinist in their reverie of "emancipatory knowledges" (Luke & Gore, 1992).

Poststructural feminist pedagogy is more interested in locating the differences among gendered beings than the commonalities (Gore, 1993, p. 33; see also Britzman, 1991, 1993). Poststructuralist feminists argue against teaching practices that claim to be context-free and independent, and for teaching practice that maintains the specificity of a multifaceted situational learning event. For them/us, pedagogy should be rooted in the actual public and private lives of the women and men involved in the learning situation. The pedagogy should have elements of self-reflexivity, interactivity, and collaboration.

To date, most poststructural feminist research on pedagogy has been self-reflexive and has dealt with teaching undergraduates. This research uses journal entries, action research principles, and reflexive strategies to unpack how specific interests work for and against educational practices. In educational communications and technology, most media and software studies have shown how particular learning approaches tend to gender learning domains,

10.4.3 Our Theory/Our Practice: Self-Reflexive Notes

In writing this, we feel as though we have had to fragment and reduce the work of many people to bounded concepts; ""in truth," the work we talk about aims to blur boundaries, to rupture the idea of a finely defined discipline. See the self-reflexive first paragraph of this feminist section. The issues we have spoken about are interrelated in complex ways, and we find it dangerous to single out and reduce them to specific subsections of a (part of a) paper. Language, subjectivity, power, institutions, social concerns, research, and pedagogy are everywhere, and they are deeply entailed in each other,

The work discussed here is the work of many people, only some of whom are acknowledged in this writing. We know there are many graduate students, teachers, and others whose course papers, diaries, and publications in remote places, and whose videos, software, songs, poems, and performances we wish we could have included. Much is still left to explore, and we believe it can be explored in many different ways. How can educational communications and technology transform social power and social relations so those who have been marginalized may have greater voice? How can educational communications and technology assist us so we might hear more clearly those who have been marginalized speaking with their own fine, strong voices?

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10.5 POSTMODERN AND POSTSTRUCTIONAL THEORY: VERSION 1.0 (ANDREW R. J. YEAMAN)

> Every philosophical colloquium necessarily has a political significance (Derrida, 1968/1982, p. 111).

This is not a work of fiction. Names, characters, places, and incidents are neither fictitious nor the products of the author's imagination. Any resemblance to actual persons, living or dead, events, or locales is entirely purposeful and intentional,

The purpose of this chapter is to present and explore theoretical work that is postmodern and poststructural. These contemporary ideas are advocated for their viability in obtaining understanding about educational communications and technology. Not only do they provide ecological sufficiency but also they raise ethical concerns. Although not all postmodern questions may be immediately answerable, the political act of poststructural analysis may in itself be humanizing.

The focus of postmodern, poststructural theory is for modern, structural research to reconceptualize itself towards acknowledgement of its assumptions, towards reflecting them inward, and towards consistency with those assumptions. Being postmodern indicates a historical, sociological point of view. Being poststructural indicates a strategy of analysis and knowing.

Given these provisions, readers may assume that the chapter is factual but wonder at the superfluous first paragraph. Looking again reveals something else is at play. The disclaimer inverts the conventional valuing of fact over fiction. That inversion draws attention to the politics of textuality, and all media, including educational communications and technology, in making a rhetorical distinction between truth and fabrication.

Neel explains the separation in *Plato, Derrida, and Writing:* "Establishing a split between creative and expository writing may be the essential maneuver in establishing the possibility of serious, referential, verifiable discourse, Such a division guarantees the existing hierarchy" (1988, p. 174). The unfortunate effect of this temporal stability is a form of intellectual impairment whereby certain texts may be classified as above analysis. Further, traditional understandings about reading make little contact with the practice of writing. Genres are not to be blurred together, and readers are not supposed to write. For example, Landow's instructional hypertexts based on critical theory (1992) are formally applied in ways supporting authority by transmitting approved data and opinions (Sosnoski, 1991).

What constitutes fact is a philosophical issue more dependent on who writes or speaks in a particular cultural setting than on style. Literary, imaginative, and fictive elements are inescapable aspects of factual narratives (White, 1978, 1987). The resemblance to novels like *Among Schoolchildren* (Kidder, 1989) or *The Double Helix* (Watson, 1968) indicates that border crossings are commonplace. Foucault's statement, "I am well aware that I have never written anything but fictions" (1980, p. 193), explains distance from received beliefs about what is perceived as true; "One 'fictions' history on the basis of a political reality that makes it true; one 'fictions' a politics not yet in existence on the basis of a historical truth." The postmodern, poststructural interrogation of the socially constructed textual etiquette of true facts and false fictions raises political questions:

- Who defines and writes the facts?
- Who is forbidden to write the facts?

For an immediate illustration, apply those questions of who may and who may not to one of the simplest and most frequently encountered sentences in education: PUPILS to whom this textbook is issued must not write on any page or mark any part of it in any way, consumable textbooks excepted.

10.5.1 Authorization in Progress—One Moment

Separating the author from the authority of a text requires acknowledging the political issues of knowledge and power. These directly affect the people who are both readers and authors: designers of instructional messages, developers of instructional systems, managers of learning resources such as librarians and media specialists, scholars and professors engaged in researching applications, and teachers and trainers in preservice and in-service programs. The social aspects of criticism provide the necessary perspective, but the critical position is a recent innovation in educational communications and technology (Belland, Duncan & Deckman, 1991).

There is much room for critical study, because unquestioning submission to authority or thoughtlessly following procedures prefers preconventional and conventional morality to the highest level of moral consciousness: the postconventional consideration of principles (Kohlberg, 1981, 1984). Neither utopian, nor accepting morality as scientifically proved, but towards recognizing technical, practical, and critical distinctions, Hlynka (1991, p. 44) quotes Knirk and Gustafson (1986, p. 33), with emphasis added on the key word: "Although an instructional technologist may have a voice in creating policy, he or she is primarily responsible for *implementing* policy decisions If an instructional technologist questions the goals, an interpretation should be provided by a representative of the policy-making body." To make a similar point about the basic assumptions of instructional design, Yeaman (1994f, p. 71) quotes Gagne, Briggs, and Wager (1988, p.4): "We are not concerned here with 'mass' changes in opinion or capabilities, nor with education in the sense of 'diffusion' of information or attitudes within and among societies." The theoretical, philosophical foundation explained here reads all texts as political, espe-

cially those that deny any politics. This chapter asserts that the ethical responsibilities of practice and scholarship in educational communications and technology extend beyond functionalism.

10.5.2 Toward an Anthropology of Ourselves and the Politics of Knowledge

> "Postmodernity" is the continuation of history beyond its end (Martin, 1992, p. 47).

Whereas Immanuel Kant offers the modern assumption that each person's life has an individual meaning over political circumstances, Martin Heidegger and Jean-Paul Sartre argue that if such humanistic beliefs require metaphysical faith, the anthropological question of the true human character remains unanswered and the purpose of life uncertain (Derrida, 1968/1982, p. 136). Derrida wrote under the political circumstances of intellectual authority overtly linked to bureaucratic authority when, in the late 1960s, French educational institutions revealed themselves as socializing agencies in the service of the state. University administrators called in police and militia to restore order with force (p. 114). Intelligentsia figures such as the structuralists Jean Piaget and Claude Levi-Strauss, who said they were neutral scientists (Gardner, 1973, pp. 213—15), were seen as seeking national stability at the price of continued intolerance in the academy. The official answers to '"Who are we and what is humanity?" evaded controversy and were restricted to authorized views from the Enlightenment *philosophes.* The resulting discourse of modernity had functioned to preserve the oppressive power of bureaucratic authorities, *Les Événements,* the Paris events of May 1968, drew disillusionment with Marxism and existentialism, both of which came to be viewed as unreasonably idealistic and the apolitical structuralist enterprise.

In contrast, Derrida's political position (1968/1982) was acceptable as representative of the Nouvelle Critique movement, along with Roland Barthes, Julia Kristeva, and Phillipe Sollers (Lamont, 1987). (See Barthes, 1966/1987, on the Nouvelle Critique dating back to the Liberation and distinct from Anglo-American New Criticism.) Derrida's appeal was in using learning from the classical tradition to reread authorized views and see through political circumstances. It is at this ongoing junction, where knowledge and power come together, where the logic of reason itself is interrogated, where philosophy becomes political, that postmodern and poststructuralist thought can be detected in rejecting modernity and structuralism and going beyond.

At the same time, a rewriting of Kant's end in autonomy is made possible by rereading in the shadow of political history (Martin, 1992, pp. *45—47).* Political circumstances do make a difference. When they are ignored, the humanism is impure. For example, here is Sosnoski quoted out of context so as to seem to be following Descartes: "All theorizing is derived from the question "Who am I?' To want to understand what you are doing is to want to understand who you are.... This question precipitates humanistic study. It is as important to students as it is to us, Like us, they are theorists" (1991, p. 284). In comparison, it is interest in Kant's importantly different question ""What are we?" which exposes the state's power structures for being both individualizing and totalizing (Foucault, 1982a). In other words, what is political is reread and rewritten "'in the general text of the modern crisis of representational thought and its mechanisms" (Jay, 1990, p. 78). As in the epigraph stating that all discussions are political (Derrida, 1968/1982, p. 111), the matter of autonomy remains the open question of the human identity (p. 136).

This chapter has been constructed with postmodern and poststructural theory's commitment to keeping questions open and to the resultant uncertainty. There should be consistency between the message and the way the message is presented, and this chapter is unlike a traditional research handbook chapter that has the linear, monolithic position of a metanarrative, Like an encyclopedia, several voices are required to show diversity as well as convergence, and any contradiction or overlap is intentional, This comes from Derrida's announcement that politics are inescapable (1968/1982, p. 111), and the conclusion: '"One has nothing, from the inside where "we are,' but the choice between two strategies" (p. 135):

> To attempt an exit and a deconstruction without changing terrain, by repeating what is implicit in the founding concepts and the original problematic, by using what is implicit in the founding concepts and the original problematic, by using against the edifice the instruments or stones available in the house, that is, equally in language. . . . To decide to change terrain, in a discontinuous and irruptive fashion, by brutally placing oneself outside, and by affirming an absolute break and difference.

Derrida continues by explaining how these deconstructions are made possible: "'A new writing must weave and interlace these two motifs of deconstruction, . . . One must speak several languages and produce several texts at once" (1968/1982, p. 135). There can be no single voice, no absolute knowledge, no perfect translation, and no expectation that anyone else thinks like ourselves. Freedom requires respect of the other, of truths other than the logic of white men, and meanings from others outside the West and those within but excluded: see Bannet (1989, pp. 222—23). Multivocality is a partial solution to these difficulties of identity, translation, and power. Concomitantly, there are fresh possibilities for social theory through widespread scholarship (see Derrida, 1994), and Martin proposes that "'Derrida provides the basis for a new language of politics" (1992, p. 198).

In applying Derrida's declaration, scholars expert in postmodern and poststructural theory were invited to write essays for this chapter. The authors each describe positions that make and should continue to make significant contribu-

tions. The contributions give examples of practical situations and ways to proceed, and identify what is currently lacking in research and theory. The common intent is to make clear the value of postmodern and poststructural theory to research in educational communications and technology.

Like the postmodern and poststructural abandonment of the failed modern promises and failed revolutionary hopes of *Les Événements,* the work reported here resembles the politics that White (1987, pp. 104—05) reads in Foucault. Conservatism is not allowed to justify itself on the basis of tradition, Privatization of public resources by government for the public good is suspect. Liberal pleas for justice in the name of law and order seem ineffective and muddled: "'The master's tools will never dismantle the master's house" (Lorde, 1979/1993). Leftists are recognized as tending towards utopian social science and nave cultural idealism. Nevertheless, racism and xenophobia, heterosexism and homophobia, sexism, environmental destruction, and poverty are important to fight, among other instances of oppression, by giving specific support to radical, liberatory, critical pedagogy.

The position becomes apparent when the points of view in this chapter are seen as a whole rather than as a collection of parts. They coexist in their relationship to instructional systems development. They move educational communications and technology from being mostly psychological and management based to being more cultural and situated in society. The concerns are practical, but the writers also seek the meaning of a transformation towards nonreductionist theory.

10.5.3 Postmodern and Poststructural Theory as Criticism

> Criticism is not science. Science deals with meanings; criticism produces them (Barthes, 1987, p. 79).

Critical theory indicates: "'Un-American activities that employ a vocabulary and sometimes methods belonging to the history of ideas rather than strictly to the domain of literary criticism, such as those of phenomenology, structuralism, deconstruction, semiotics" (Spivak, 1985, p. 29). This fits well with Adams's belief that the Western tradition of critical theory, spanning more than 2,000 years of Western culture, will continue and not be dismissed by global acceptance of multicultural literature and thought (1992, p. v).

Critical theorizing in the tradition of the humanities is distinct and is the most intellectually important development in educational communications and technology (Yeaman, Nichols & Koetting, 1994). Through the way of knowing generally labeled criticism, humanistic study of communication aspects maintains the social relevance of the field. The design of instructional messages is seen as an artistic endeavor with sociopolitical consequences. The critical approach to instruction has a literary foundation that, as Geertz points out (1973, 1983), is appropriate for understanding culture by reading it.

In the context of the present chapter, *theory* means critical theory as it is widely applied in literary and philosophical studies: "The term *critical theory* is used here not in the narrow sense employed by the Frankfurt social critics but to include speculative writing about the nature of literature and the problems of critical discourse about it" (Adams, 1992, p. v). It is necessary for readers to compare critical theory in this chapter with how it is engaged in reference to the Frankfurt Institute for Social Research's *Kritische Theorie* by Koetting and Januszewski (1991), Streibel (1993), and Nichols's Chapter 9.

Contemporary literary works tend to be philosophical, while philosophical works tend to be literary. Each finds a complement in the other, Questions of philosophy as writing, and writing as philosophizing, occupy mutual ground. A typical title is *The Rhetoric of Interpretation and the Interpretation of Rhetoric* (Hernadi, 1989). This interdisciplinary work is given credibility by postmodern and poststructural endeavors acknowledging the interdependence of literary studies and philosophy.

Classes in statistical research design and educational psychology are unnecessary for carrying out humanistic research on this theoretical foundation. Neither a university position nor a Ph.D. is required for inquiry supported by critical literacy (Knoblauch & Brannon, 1993). What helps is a background in the humanities and considerable practice at the undergraduate level in reading, thinking, and writing. However, teachers being critical runs against the belief of many educational researchers that professor knows best (see Gibson, 1986, pp. 162—65 and 9.7.5). It contrasts the Leninist bias towards making academics dominant over others, which is not only upheld by Marxist social scientists but also by positivists, empiricists, and liberals (Poster, 1994, pp. 76-78).

Some advice on how to become a critic explains, in part, what is criticism: Read anything and everything inside and outside the canon: novels, essays, poems, and criticism, and talk to other people about what you read. Learn about the social sciences: anthropology, history, sociology, and social psychology. Become acquainted with linguistics and philosophy. Experience the performing arts and various media such as cinema, and become literate about appreciation and production. Develop a sense of the past as contemporary stories about people in other cultures and different times. Become familiar with the methods and theories of historiography. None of this is to exclude learning about other domains such as mathematics, physics, or chemistry, and professional fields such as engineering, communications, business, or education.

There is much need for humanistic criticism to balance technoscience. Nearly all the scientists who have ever lived

are alive today, and functionalist points of view have been strengthened by the exponential growth in the scientific establishment. Jay tells students (1990, pp. 336—37):

> The worth of humanities courses lies precisely in the degree of their refusal of a technological, quantitative, absolutist, or correspondence model of truth. Here, on the contrary, is a laboratory for discovering the rules by which truths have been produced, the value systems these truths have supported, and the historical consequences of such discourses and institutions.

Criticism is necessary to comprehend the political mechanisms for deciding what is and is not real. With experience, it becomes apparent that the purification of language, much like Socrates rejecting the teaching of Lysias, is achieved by elevating expository writing above fiction, Neel explains it this way: ""The really important disciplines-philosophy and math first, then history and literature—deal with ideas, The really practical disciplines—physics, biology, and chemistry first, then engineering, computer science, and business—describe the world and keep it running" (1988, p. 174). There is widespread complicity in neutralizing the power of writing towards maintaining a merely functional reality. Writing can be totalitarian and serve as an authoritarian stabilizer.

It should be understood that critical theory does not exist in isolation, representing the humanities alone, but is related to work in the social sciences in conceptual theorizing and qualitative investigation. There is considerable interdisciplinary crossover between critical theory and social theory. A comparison of recent anthologies from each area supports this relationship. Collected in *Social Theory: The Multicultural & Classic Readings* by Lemert (1993) are 88 writers. *Critical Theory Since Plato* by Adams (1971) has 102 selections from intellectuals, including saints, nobles, and professors, dating from antiquity to the middle of the 1960s, The authors also chosen by Lemert for *Social Theory* are Roland Barthes, Friedrich Engels, Sigmund Freud, and Karl Marx. *Critical Theory Since 1965* by Adams and Searle (1986) has 56 selections from contemporaries. The authors also chosen by Lemert for *Social Theory* are Louis Althusser, Walter Benjamin, Jacques Derrida, Michel Foucault, Max Horkheimer, Jacques Lacan, Georg Lukács, Ferdinand de Saussure, and Claude Levi-Strauss, whose essay on ""The Structural Study of Myth" is the only duplicate text selection. This is a cautious demonstration: Adams and Searle's 1986 collection went to press several years before Lemert's 1993 collection. Adams's second edition of *Critical Theory Since Plato* appeared in 1992 and contains more writings from outside the Western canon, To include unknowns along with greats is a current trend, Lemert points out (1993, p. 663) that there are less than obvious problems with representing theories and intellectual patterns with figures who are well known. Such exclusive modeling may contribute to political marginalization and to the narrowness of dogmatic tradition, but there is tremendous value in making a start. Although critical theory is not centered on political activists, economists, or present-day mainstream sociologists, Adams and Searle (1986) also overlap with Lemert's selections (1993) by making references to Roland Barthes, Simone de Beauvoir, Ruth Benedict, Emile Durkheim, Friedrich Engels, Frantz Fanon, Sigmund Freud, Erich Fromm, Harold Garfinkel, Charlotte Perkins Gilman, Erving Goffman, Jurgen Habermas, William James, V. I. Lenin, Jean-Francois Lyotard, Karl Mannheim, Karl Marx, Talcott Parsons, Richard Rorty, Georg Simmel, Gayatri Chakravorty Spivak, Max Weber, and Virginia Woolf.

The final score shows that 32 of Lemert's 88 social thinkers (1993) are also considered as major contributors to critical theory by Adams (1971) and Adams and Searle (1986).

Many of these authors are stimulating to read because they write with originality and brilliance seldom encountered in the education literature. This can be attributed to their more imaginative, creative, literary modes of thinking and expression through criticism, Ong, a long-established critic best known for an outstanding history of the relationship between mind and media (1982), provides a description of the analytical technique (1971, p. 1161):

> Although it is not to be equated with science, criticism is in some degree explanation, and has something of this same scientific bent, Unless it is to be itself a poem, criticism of a poem must involve some elucidation. Its ultimate object may be to introduce the reader more fully into the mystery which is the poem, but its technique will be to some extent "clear up" certain things.

An observation by a second-generation American poststructuralist gives an example of the use of criticism for the development of new knowledge (Johnson, 1980, p. xii):

> The '"unknown" is not what lies beyond the limits of knowledge, some unreachable, sacred, ineffable point toward which we vainly yearn. It lies, rather, in the oversights and slip-ups that structure our lives in the same way that an X makes it possible to articulate an algebraic equation. . . .

It is not, in the final analysis, what you don't know that can or cannot hurt you. It is what you don't *know* you don't know that spins out and entangles "that perpetual error we call life."

Criticism results in ""the critical work that thought brings to bear on itself' and is tested by writing essays (Foucault, 1985, pp. 8, 9). The intellectual tools, processes, and products of criticism are invoked by the full quotation:

> There are times in life when the question of knowing if one can think differently than one thinks, and perceive differently than one sees, is absolutely necessary if one is to go on looking and reflecting at all. People will say, perhaps, that these games with oneself would be better left backstage; or, at best, that they might properly form part of those preliminary exercises that are forgotten once they have served their purpose. But, then, what is philosophy today—philosophical activity, I mean—if it is not the critical work that thought brings to bear on itself? In what does it consist,

> if not in the endeavor to know how and to what extent it might be possible to think differently, instead of legitimating what is already known? (Foucault, 1985, pp. 8, 9).

The next section identifies important sources of postmodern and poststructural thinking. Starting with the writings cited here will reduce the confusion of encountering the unfamiliar. Readers seeking to understand postmodern and poststructural work in educational communications and technology will benefit by beginning their reading with the originals. Both terms are philosophical and political, but writers of varying quality and credentials use and misuse *postmodern* and *poststructural* as synonyms. Despite convergent interests in practical matters, postmodern theory tends to be more social, and poststructural theory is more literary in its points of view,

10.5.4 Reading the Postmodern

> We are at the end of what is called *The Modern Age.* Just as Antiquity was followed by several centuries of Oriental ascendancy, which Westerners provincially call *The Dark Ages,* so now *The Modern Age* is being succeeded by a postmodern period (Mills, 1959, pp. 165—66).

To explain what is meant by *modern* is to attempt describing the spirit of the industrial age sweeping across centuries, continents, and cultures. Nevertheless, the episteme of modernity as a historically constructed discursive practice may be expressed through such an archeological approach (Foucault, 1970/1972, pp. 190—92). As modern times have not yet fully passed, it may also be a mirror of contemporary ideals, too. The tone and jargon of a pair of electronic-mail postcards illuminates the discussion of modernity:

> Received your last two notes, Thanks! lam just now sitting down with a host of ideas for my part of the handbook. Will send you something soon, for your perusal. I had been looking for a captivating opening sentence or paragraph, and finally found the one I wanted, Of course, I may change in midstream, but that is OK. I have been spending some time at the Winnipeg Art Gallery and reading about postmodernism in the fine arts. And now I have loads of (relevant) ideas!
>
> My opening sentence? Here it is: "Postmodernism?" What do you think? Anyway, I am now working on the second sentence. (D. Hlynka, personal communication, March 15, 1993, 9:32 a.m.)

I suggest narrational framing:

> "Postmodernism?" The other author replied by e-mail, "Not so much AFTER nor so much dogmatic ISM as a recognition of the MODERN that requires beginning with 'Postmodernism? ' " (A. R. J. Yeaman, personal communication, Mar. 15, 1993, 11:12 a.m.)

The modern age was a way of conceptualizing Western history as the present in relation to the past. It was the time when Western society was industrializing and technoscience praised so highly that empirical thinking was applied to predicting what people would do. Certainty and control were gained at the price of losing understanding, and in the last 50 years vast numbers of people have been endangered by technology (Glendinning, 1990, pp. 18—20).

The general idea of Western civilization undergoing a course of evolutionary progress through scientific, technological developments preceded the influence of Auguste Comte, Rene Descartes, Benjamin Franklin, Immanuel Kant, and Claude Henri Saint-Simon, but is best expressed by their projects of enlightenment. Modernism is this belief in science, technology, and rationalization of productive activities for the good of all. Modem explanations of society in terms of solving human problems with factual knowledge, and this process leading to autonomy, have received varying degrees of acceptance, refinement, and rejection.

Writing in this decade, Ritzer presents McDonald's hamburger restaurants as the exemplar case of modernity (1993). Ritzer compares the systematicity of running fast-food business with the iron cage theory (Weber, 1905/1993) that rationalization results in inflexibility and false promises of improvement. Ritzer explains MeDonaldization as the central bureaucratic process of modernity:

> Formal rationality means that the search by people for the optimum means to a given end is shaped by rules, regulations, and larger social structures. . . . In effect, people no longer had to discover for themselves the optimum means to an end; rather, optimum means had already been discovered and were institutionalized in rules, regulations, and structures. People simply had to follow the rules, regulations, and dictates of the structure (p. 19).

Earlier Mills had parted with mainstream sociologists in the post—Second World War era by engaging in modern, self-reflective thinking (1959). Mills declares that the past two centuries of enlightenment have not achieved their objective and "The ideas of freedom and of reason have become moot; that increased rationality may not be assumed to make for increased freedom" (p. 167). A theoretical explanation is given:

> Those in authority attempt to justify their rule over institutions by linking it, as if it were a necessary consequence, with widely believed-in moral symbols, sacred emblems, legal formulae, **. . .** Social scientists, following Weber, call such conceptions "legitimations," or sometimes "symbols of justification" (p. 36).

This early postmodern assessment meshes with the theory of metanarratives, determining what is knowledge in *The Postmodern Condition* (Lyotard, 1984). Although a common sociological and philosophical ground is shared with Habermas, who remains modern (1984, 1987), the interpretations are irreconcilable, (A balanced synopsis of the divergent positions is given by Toulmin (1990, pp. 172—74) in *Cosmopolis.* Deleuze's Foucauldian position on education is also postmodern and italicized in the original: "Just as the

corporation replaces the factory, *perpetual training* tends to replace the *school,* and continuous control the examination" (1992, p. 5). This continues Deleuze's earlier work in collaboration with Guatarri (1983, 1987), where a sort of social masochism is identified and italicized: *"Training axiom—destroy the instinctive forces in order to replace them with transmitted forces"* (Deleuze & Guatarri, 1987, p. 155). The matter of cultural discontinuity is discussed further as a contemporary philosophical and political issue in *The Postmodern Explained* (Lyotard, 1992).

The idea of these times being postmodern, in that modern self-reflections show that rational societies have defeated their own ideals, is changing all areas of professional study and academic discipline. For example, an authoritative review chapter by Agger provides a recent account of influences on sociology (1991). Smart (1992) gives a detailed analysis including rereadings of McLuhan (1964) and Toffler (1980). A more global account is provided in a sequel (Smart, 1993). Postmodern thinking is applied in depth to education theory and practice by Lather in *Getting Smart* (1991). A brief overview for art educators is provided by MacGregor (1992). Qualitative scholarship on postmodern theory and its application deserves meticulous attention, and Mills's chapter ""On Intellectual Craftsmanship" is highly recommended (1959, pp. 195—226).

Gore's AERA paper (1994) reports the work of a research group studying Foucault's (1977) analyses of power relations. Quasi-quantitative coding categories were developed for these activities as the mechanisms of schooling: surveillance, normalization, exclusion, distribution, classification, individualization, totalization, regulation, space, time, knowledge, and techniques or practices directed at the self by a researcher, a teacher, or a student (pp. 9, 10). The potential risk of ""taming" Foucault (p. 24) is judged to be outweighed by the possibilities for fruitful theorizing and reconsidering practice.

Postmodern study of the same text is also demonstrated by a strikingly aware journal entry from a graduate seminar (B. Dallman, personal communication, Oct. 15, 1992). The seminar had been reading "The Means of Correct Training" (Foucault, 1984, pp. 188—205):

> The day before I read this, I discussed the possibility of obtaining a waiver for the GRE with Marty [Tessmer] . After determining this was not likely, I felt disturbed but couldn't really articulate my feelings until reading this article.... It is as though the notion of disciplinary power was manifesting itself in higher education, **. . .** The notion of ritual and examination is a form of power that can repress individuals as well as empower them.

10.5.5 Reading the Poststructural

> Structuralism, as it were, closed in Baltimore on opening night (Searle, 1986, p. 957).

The Ford Foundation provided funds for a massive 2-year program of seminars and colloquia to augment North American humanistic criticism and social science with French structuralist theory in cultural anthropology, semiology, sociology, and psychoanalysis, among other pertinent disciplines. Among the intellectuals flown across the Atlantic were stars, including Roland Barthes, Lucien Goldman, Jean Hyppolite, Jacques Lacan, and Tzvetan Todorov, See the proceedings edited by Macksey and Donato (1970/1972).

The commonly held structural belief was in language as the model of thought, that language is the model for everything including beliefs and behavior. Dreyfus and Rabinow (1982) quote the premier structuralist Claude Levi-Strauss's *Totemism* (1963, p. 16). The ellipsis and the italicized emphases were added by Dreyfus and Rabinow (1982, p. xvi):

> The method we adopt **. . .** consists in the following operations:
>
> 1. Define the phenomenon under study as a relation between two or more terms, real or supposed.
> 2. Construct a *table of possible permutations* between these two terms.
> 3. Take this table as the general object of analysis, which, at this level only, can yield necessary connections, the empirical phenomenon considered at the beginning being only one possible combination among others, the *complete system* of which must be reconstructed beforehand.

However, structuralism was being reconsidered from within for ignoring historical cultural practices. This was due to French interest in German phenomenology (see 38.2). Also see Greene (1994, pp. 429—30) and Hyppolite (1966/1972). One of the critics was Jacques Derrida, who had written on Husserl's phenomenological critique of science (1962/1989) after spending a year at Harvard in the late 1950s. Invited back to the United States for the first Ford Foundation meeting at Johns Hopkins University, Derrida (1966/1972, p. 258) quoted from Levi-Strauss's *The Raw and the Cooked* (1964, p. 25): ""Myths have no authors," and commented (italics in the original):

> Thus it is at this point that ethnographic *bricolage* deliberately assumes its mythopoetic function. But by the same token, this function makes the philosophical or epistemological requirement of a center appear as mythological, that is to say a historical illusion.

In the discussion afterwards Derrida offered further clarification (1966/1972, p. 268):

> How to define structure? Structure should be centered, But this center can be either thought, as it was classically, like a creator, or being, or a fixed and natural place; or also as a deficiency, let's say; or something which makes possible "free play," in the sense in which one speaks of the *jeu dans la machine,* of the *jeu des pieces,* and which receives—and this is what we call history—a series of determinations, of signifiers, which have no signifieds *[signifies]* finally, which

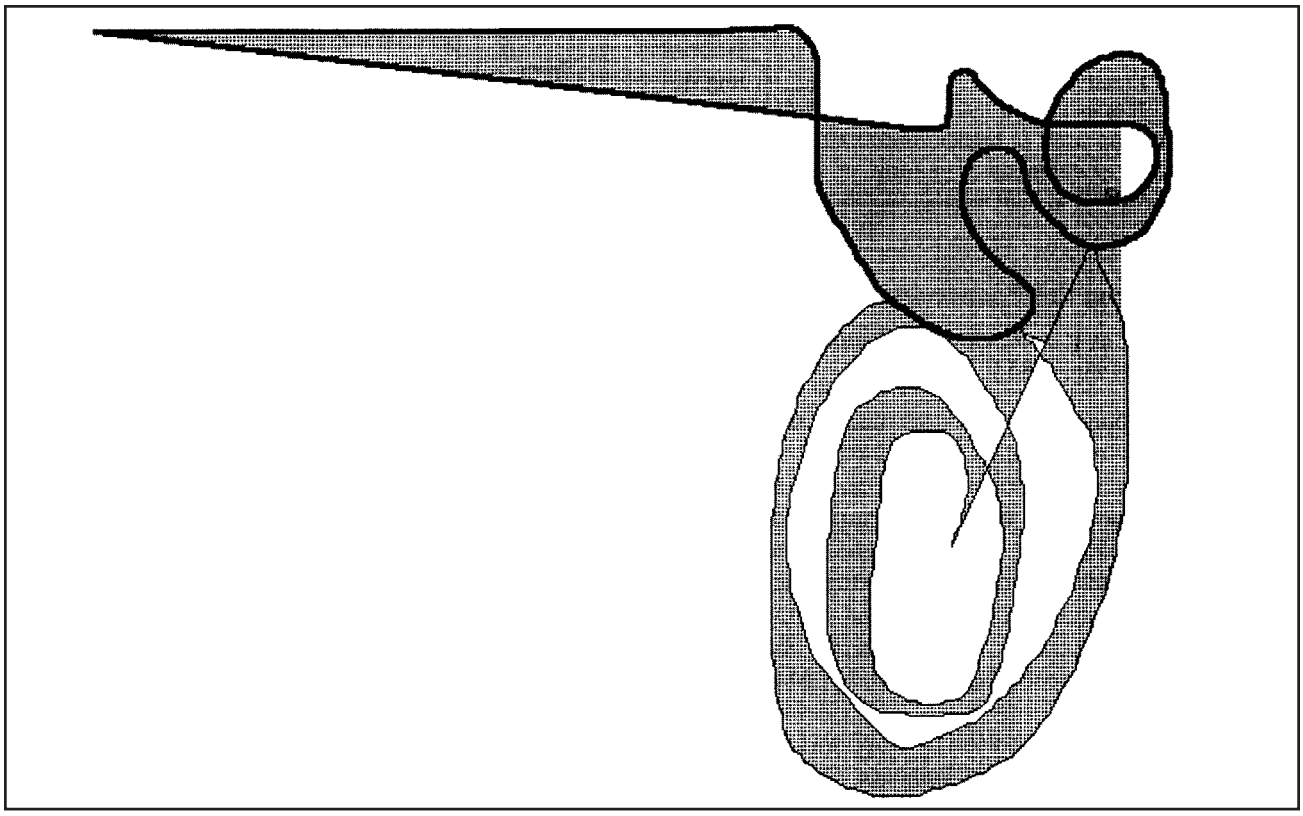

Figure 10-1. This is an example of a signifier with nothing signified (except to signify that there can be a signifier with nothing signified except to signify that there can be a signifier with nothing signified except to signify that there can be a signifier **. . .).** (Original caption; Illustration by Andrew Yeaman.) From "Deconstruction and visuals: Is this a ~~telephone~~? by Andrew R. J. Yeaman, p. 325, in D. M. Moore & F. M. Dwyer, eds. *Visual literacy. a spectrum of visual learning.* Copyright © 1994 by Educational Technology Publications. Reprinted with permission.

cannot become signifiers except as they begin from this deficiency.

Derrida was not alone among the European visitors in charting a revitalized trajectory for the humanities and the social sciences, and among other influential papers was Barthes' '"To Write: An Intransitive Verb?" (1966/1972). Nonetheless, an important outcome was enthusiasm for Derrida among professors at prestigious universities in the United States where Derrida's ideas were soon disseminated (see Lamont, 1987). This was helped by Derrida's publishing three more books in the next year: *Speech and Phenomena* (1967/1973), *Of Grammatology* (1967/1976), and *Writing and Difference* (1967/1978). Derrida received visiting professor appointments, further scholarly sponsorship, and translation into English by advocates. Today Derrida is probably the world's most well-known and respected living philosopher. While it is still accepted that all cultural activities can possibly be read as if they were language, the roles of readers and authors—including anthropologists and humanities scholars—have changed now that Derrida has shown method to be uncertain.

Poststructuralism was the label generated by the Americans to account for what had happened. Roudinesco reveals the deep feelings, undercurrents, and personalities involved at the critical event in 1966 (1990, pp. 407—13). More than routine academic conflict had surfaced, Subsequently, Piaget's *Structuralism* invokes only Barthes' earlier work, does not mention Derrida, and gives Foucault, probably Derrida's most cogent professor, a makeover (1968/1970). Piaget first disparages Foucault for lack of method and then assimilates Foucault as a constructivist (pp. 128—35). Ironically *Le Structuralisme* was published the same year as *Les Evenements* when the students' slogan was "Structuralism is dead" (Gardner, 1973, p. 214).

Two excellent anthologies of Derrida's writings are available by Attridge (1992) and Kamuf (1992). They include intelligent commentaries. Along with a distrust of formal method as in structuralism smuggling in the meaning it discovers, Derrida reinterpreted Saussurian difference between signs with a neologism: *differance,* whereby one thing is partly defined by the other but is nevertheless present while being omitted. The politics of *differance* recognize the patriarchal marginalization of women and racial minorities. The

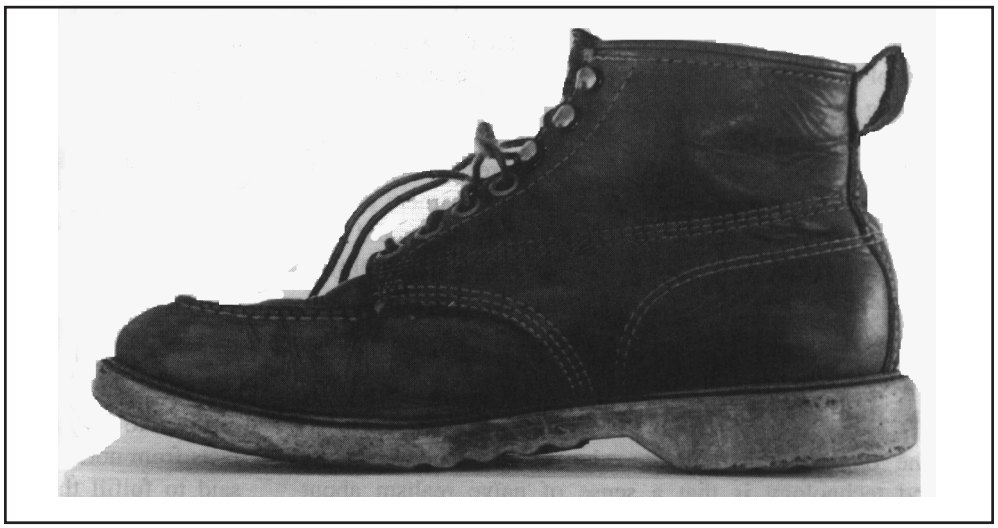

Figure 10-2. A shoe? (Original caption; photograph by Robert Muffoletto.) This signifier is a photograph of an object like a shoe, possibly a hiking boot or a work boot. It is displayed on a box as if in an art class. It might be in a store but is not marked for sale and it looks worn. Who wears this shoe or boot? Conjectures like these follow Van Gogh's paintings that were labeled as shoes but appeared to depict boots; see Derrida (1987). Also see Foucault (1982b) on Magritte's drawing *Ceci n'est pas une pipe.* Perhaps what is signified here is the uncertainty of any signification; see Muffoletto (1994a). From the series titled "Mentioned." Copyright © 1989 by Robert Muffoletto, Reprinted with permission. Also published in "Representations: You, Me, and Them" by Robert Muffoletto, p. 304, in D. M. Moore & F M. Dwyer, eds. *Visual literacy: a spectrum of visual learning.* Copyright © 1994 by Educational Technology Publications.

word most associated with Derrida is *deconstruction,* which is a term from Heidegger for the examination of foundational issues [see Hlynka & Yeaman, (1992) and Yeaman (1994c, 1994d, 1994e)]. Curiously, a ""desire to domesticate deconstruction" into a professorial method tends to thwart its playful implications for theories of meaning (Lather, 1992, p. 132).

There has been widespread diffusion of Derrida's poststructural work; see, for example, *Deconstructive Criticism* by Leitch (1983); *What Is Deconstruction?* by Norris and Benjamin (1988); and *Deconstruction: Omnibus Volume* by Papadakis, Cooke, and Benjamin (1990). Self-scrutiny has been inspired in areas of knowledge unwittingly shaped by structuralism, As a result, there are occurrences of postmodern resistance, For a scholarly example, see Figures 10-1 and 10-2, which apply poststructural thinking to visual literacy and visual communication, Using a can of spray paint to write Robert Mapplethorpe AIDS Research Center on a university building named for U.S. Senator Robert Dole is only renaming, but it may be a theoretical beginning (Martin, 1992, p. 181). For social examples of political impact, see Penley (1991) and Treichler (1991), whose work on technology addresses women and HIV/AIDS, respectively. Similarly, Poovey's argument for deconstruction as a feminist analytic tool refuses to allow deconstruction to become academically bland and apolitical (1988). Cherryholmes's *Power and Criticism* provides a poststructural review of education theory and practice (1988). Structuralist foundations exposed include Mager's behavioral objectives (1962/1984) and Bloom's taxonomy (Bloom, Engelhart, Furst, Hill & Krathwohl, 1956).

Foucault was not present at the eventful conference in Baltimore but was mentioned several times, ""The Discourse on Language," Foucault's first public lecture at the College de France, will be helpful to anyone interested in learning about the demands of intellectual critique after structuralism (1970/1972, pp. 215—37).

When looking at art, art theory, and criticism as this century ends, a poststructural conclusion is inevitable: "What is clear is that Barthes and Derrida are the *writers,* not the critics, that students now read" (Krauss, 1986, p. 295). When looking at reading and writing, the massive long-term profits of the Ford Foundation's investment in criticism, and the subsequent transition from structural to poststructural theory, may be judged by this report in

De Vaney's AECT conference paper (1989, pp. 21-22):

> In American schools, deconstruction is a political force to be reckoned with. Not only has its theory and practice infiltrated many English, foreign-language, and other humanities departments in institutions of higher learning, but officers in the powerful Modern Language Association and the National Council of Teachers of English are prominent American deconstructionists. . . . As educational technologists, interested in classroom practice, it then becomes of interest and concern to us.

Consequently the receivers of messages are changing as a result of poststructural theory spreading out through titles such as *Textual Power: Literary Theory and the Teaching of English* (Scholes, 1985); *The Art of Wondering: A Revisionist Return to the History of Rhetoric* (Covino, 1988); the MLA's *Contending with Words: Composition and Rhetoric in a Postmodern Age* (Harkin & Schilb, 1991); and the NCTE's books introducing teachers to deconstruction (Crowley, 1989) and to reader-response theories (Beach, 1993). Further, prominent traditionalists are amicable and intellectually receptive; see the interviews with Northrop Frye and Harold Bloom in *Criticism in Society* (Saluszinsky, 1987), as well as *Doing Things with Texts: Essays in Criticism and Critical Theory* (Abrams, 1989) and *The Electronic Word: Democracy Technology and the Arts* (Lanham, 1993).

In particular, these developments in rhetoric affect English teaching everywhere at all levels. The most visible group under pressure is the estimated 33,000 composition instructors and professors employed in the United States for the purpose of passing on the lore of how to write properly to 3-million adult students per term (Crowley, 1990, p. 139). In practice, not only is the writing and reading of memos and reports influenced but also the conduct of business, law, and politics.

Far from believing facts are facts and that facts are all that matters, or that nothing matters anymore because anything means any other thing, it is possible to reach past commonsense traditions about communication. The ambiguity of noise has a necessary function as part of making sense. Idealized and impersonal qualities such as unity, coherence, and linearity may conceal the power of the author as authority. Conventions of writing may seek to define the readers in professional class terms. However, readers may rewrite a text by deconstructing its social values. On realizing these possibilities, a gain in literacy is predictable. Whether or not there is an increase in media analysis skills, designers of instruction will need to consider the ethics of their own intentions and reconsider the altered profile of their audiences, Despite that "From the 17th century onward, the Western world has associated *truth* with *absolute, simple, scientific, truths,* " and that "Schools see themselves as preparing students to be trouble-free parts of the American industrial machine." Covino argues in a dramatization: ""The best workers will be those who can create and analyze different patterns of information, those who are not locked into a limited format for thinking and writing" (1990, pp. 246—47). The future effect of poststructural thinking is checked by Gerbner's constraint: "'No school or culture educates children for some other society. Giving teachers a messianic mission and having schools soak up all the dreams and aspirations citizens have for their children doom the enterprise to failure" (1974, p. 496). Nevertheless, it may be that poststructural learners will be less intellectually docile as classroom students and less malleable, after graduation, when exposed to new employee training (Yeaman, 1994c).

10.5.6 Postmodern and Poststructural Criticism in Educational Communications and Technology

The ongoing dilemma for educational communications and technology is that a sense of naive realism about technoscience may lead to utopian justifications. It is a predicament that technological systematization can, over time, result in excessively rigid procedures. These may negate the original assumptions but have become dogmatic tradition. [Despite being incommensurable with postmodern and poststructural theory, Bowers (1988, 1993) is cited here for support because of shared concern.] Towards understanding itself better, the field requires more nonreductionist, interpretive, qualitative investigations into education and training situations, Persistent rethinking based on postmodern and poststructural theory is needed to ask "Who benefits from this application of technoscience?" and ""What are the rational foundations of that which is regarded as reason?"

This position is documented and reinforced by chapters and articles in a special issue of *Research & Theory: AECT-RTD Newsletter* on reflective and critical points of view (Koetting, 1989); *The Ideology of Images in Educational Media: Hidden Curriculums in the Classroom* (Ellsworth & Whatley, 1990); a double issue of the *Journal of Thought* focusing on the social and cultural aspects of educational media (Robinson, 1990); *Paradigms Regained: The Uses of Illuminative, Semiotic and Post-modern Criticism as Modes of Inquiry in Educational Technology* (Hlynka & Belland, 1991); an ERIC Digest on *Postmodern Educational Technology* (Hlynka & Yeaman, 1992); *Computers in Education: Social, Political, and Historical Perspectives* (Muffoletto & Knupfer, 1993); *Visual literacy: A Spectrum of Visual Learning* (Moore & Dwyer, 1994); and *Watching Channel One: The Convergence of Students, Technology and Private Business* (De Vaney, 1994c).

10.5.6.1. A Representative State-of-the-Art Study. Consider *Watching Channel One* as an exemplary investigation (De Vaney, 1994c). The contributors range across the theory spectrum, but all report reputable findings about the broadcast of news television into schools, along with mandatory commercials. Authentic details have been gathered. The commercial force behind putting Channel One in schools was the same corporation that placed advertising posters in dentists' and physicians' waiting rooms. The California and North Carolina state legal debates over the ethics of selling of students' instructional time make a dynamic comparison. Wiring was installed in some schools in ways that violated electrical code, The standards for high-quality broadcasting that had initially been shown to school boards and administrators, but apparently were not maintained once the contracts were signed, are reprinted in *Watching Channel One,*

There are postmodern and poststructural chapters. While the field descriptions and survey data take the readers into

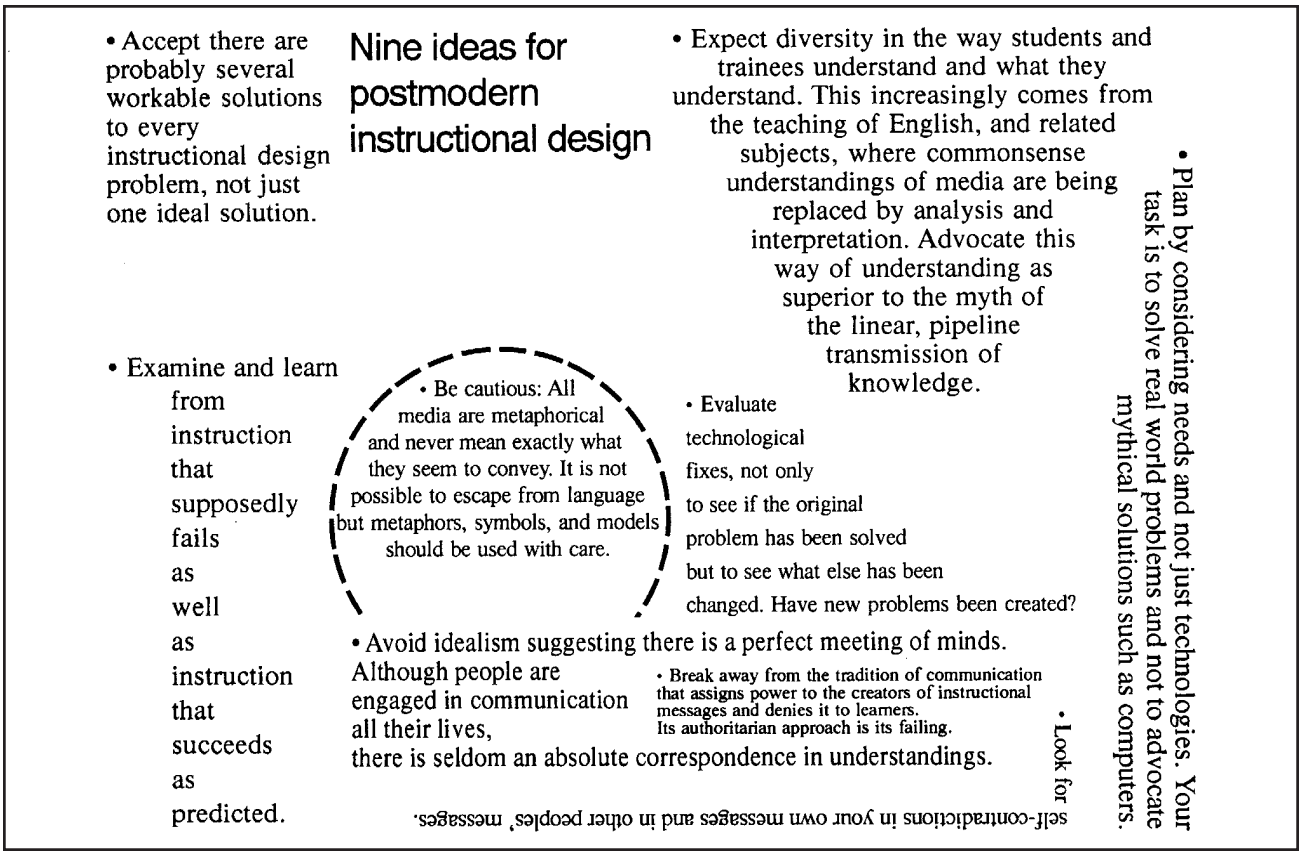

Figure 10.3. Nine ideas for postmodern instructional design. (Illustration by Andrew Yeaman.) From "Deconstructing Modern Educational Technology" by Andrew R. J. Yeaman, *Educational Technology* (Vol. 34, No. 2), Feb. 1994, p. 21. Copyright © 1994 by Educational Technology Publications. Reprinted with permission.

the schools, the poststructural media analyses help readers understand the television programming. An immediate contrast with teacher-centered lecture is apparent in the fast pacing of the show, A mind experiment gives immediate results: No one can rapidly read superficial, unrelated news facts from note cards, one topic per card, to a class and be said to fulfill the role of a teacher. Televising the same presentation of headlines, read from a teleprompter in a sensational voice by an actress or an actor, is offered as education.

De Vaney's chapter on ""Reading the Ads" connects with some far-reaching implications (1994b). Both the Channel One program and the commercials communicate in the MTV style and are produced especially for the student audience, They are postmodern and "display the "relieved state' which a product is supposed to produce, without presenting the prior state which a product is supposed to relieve" (p. 144). These ads work by conveying "a fractured narrative with fragmented images of a trouble-free, often celebratory life." Rather than the limited descriptive capabilities of content analysis for analyzing these postmodern ads, a poststructural reading is preferred. A Pringles ad is carefully read as a text about encouraging the consumption of corn chips. The effectiveness of the reading comes from verbalizing the fractured narrative and the fragmented images. The result is that the Pringles commercial's fascinatingly effective erotic metaphor is revealed. While teenagers cannot stop themselves from absorbing information via this medium, efforts should be made to teach them how to be visually literate so they can read the screen as they would read a text, The need to promote conscious understanding of media is a worthwhile message and is a valuable product of research. It should converge with the interest in poststructural analysis in English classrooms. For related work, also see De Vaney's inquiry into the racism and sexism of an award-winning, best-selling educational computer program (1993) and discussion of the ethical problems surrounding the portrayal of African-Americans in feature films (1994a).

10.5.6.2. Where Poetics and Politics Meet. The work of Ulmer is seldom cited in educational communications and technology, but it provides a meaningful postmodern and poststructural bridge from the humanities (1985). There are few connections between these two areas, but there is potential for rapport. How media is understood has long been a research topic of educational communications and technology. How people can learn to understand and use media not only presents a fruitful area for investigation but also has a different politics.

As an English professor, Ulmer is located at the point where poetics and politics meet. Ulmer explores the use of media literacy skills for personal expression to combat the reductionist ideologies of realism and individualism (1994). Ulmer suggests novel ways that students in English classes can use media, particularly video, that are self-expressive and freeing: "'Write a mystory bringing into relation your experience with three levels of discourse. . . . Arrange the entries to highlight the chance associations that appear among the three levels" (1989, p. 209). Work on grammatology and hypermedia (Ulmer, 1992) influenced Hlynka's creation of a hypertext on poststructuralist literary theory, information technology, and ethnic studies (1993).

10.5.6.3. Ethics and Social Responsibility. A special issue of *Educational Technology* in February 1994 addressed the ethical position of educational communications and technology in society. The articles examine the ethics of the field as social responsibility and seek to encourage more interest in cultural analysis. The introductory essay by Yeaman, Nichols, and Koetting (1994) explains that the papers come from two research and theory symposia where presenters applied criti-cal theory to provide insight into foundational aspects of the field. The sessions took place at the AECT Conferences in Washington, D.C., in 1992, and in New Orleans in 1993. The declared socially responsible ethic of educational communications and technology is to facilitate humane learning, but that goal is rarely discussed, perhaps due to the emphasis on performance and function. Questions about facilitating humane learning neither dominate the literature nor the conferences: What is humane learning? Why is humane learning believed to be important? How can humane learning be achieved? What is the role of educational communications and technology in humane learning?

The authors appearing in the special issue share roots in an intellectual genealogy from which they develop ethical conscience through a humanities approach. They are part of an invisible college centered around the educational communications and technology programs at the Ohio State University and the University of Wisconsin-Madison. Their articles are based in the humanistic, nonpositivistie theories of criticism and include the critical theory of the Frankfurt school, feminist theory, and postmodern and poststructural theory.

Yeaman deconstructs two modern beliefs of educational technology: the telephone metaphor for communication and the systems approach to instruction (1994c). Yeaman ends with a draft agenda for a postmodern educational technology. See Figure 10-3 for the suggestions about instructional design.

According to Muffoletto (1 994c), accepting the social agenda of technology results in conducting education through business management procedures. Muffoletto asks: Who will be in charge of restructuring technology in education? Distinctions are made between rethinking education and rethinking schools, between technology in education and educational technology. Educational reform unjustly blames teachers for society's problems and may cause teachers to be replaced with machines.

In "'The Rite of Right or the Right of Rite: Moving Towards an Ethics of Technological Empowerment," Anderson puts forward the position that educational technology does not need professional ethics so much as it needs a sense of ethics that goes beyond control and consensus (1994).

Damarin states that women's issues are different issues (1994). The core issue of equity is not so much giving women equal access to the privileges of traditional power structures but giving women equal power through their own privileges. Damarin asks if instructional systems can encompass the feminist ethic of caring.

Nichols declares that there is no clear dividing line between educational technology and educational biotechnology, which intrudes into people's bodies and into the world ecology (1994). This link is first explored through Habermas's theoretical framework. Nichols goes on to describe Rorty's liberal irony that accepts immutable differences between people, despite the possibility of moral progress through a common understanding of cruelty. Then Nichols turns to Barrett in looking beyond rationality and the shared abhorrence of pain. In striving for moral will, faith in the spiritual is necessary through rituals such as prayer. However, a contradiction appears: Should one seek to be willful or will-less? Nichols concludes that there is an implied hope for conversation to continue.

In "Marginalizing Significant Others: The Canadian Contribution to Educational Technology," Hlynka points out that a sort of perceptual deficiency has concealed the importance of Canadian intellectuals (1994).

Muffoletto questions the ethics of social reality founded on the cultural values of industry and science (1994b). Information, how it is represented, and how learning takes place, are all shaped by that social reality. Critical theory is essential to school reform that recognizes those modern assumptions and strives to put democracy into practice.

Koetting views schooling as a political arena for social ethics and gives guidance towards the practice of critical pedagogy (1994).

In "Where in the World Is Jacques Derrida?" the branching text introduces Derrida's ideas according to readers' preferences and needs: facts, poetics, pragmatics, and further reading (Yeaman, 1994c).

10.5.6.4. Postmodern Cyborgs. The assertion that there is no clear division between people and their artifacts cannot be trivialized and dismissed. Scientists and technologists must look to anthropologists, historians, and sociologists to comprehend their own work. Field studies and library studies of

research show that far from technoscientific knowledge being the unveiled truth about nature, it is influenced by cultural factors such as normative pressures, economic motivations, linguistic competencies, and technologies for instrumentation and implementation (Locke, 1992). This is a typical instance of the processes of systematization, industrialization, mechanization, computerization, and the legitimation of knowledge affecting the question of identity discussed earlier in this chapter. Warnings about robotism and slavery (Fromm, 1955) were not effective, and automatization is probably not reversible. Although the cyborgs concept is expressed in popular culture as science fiction, there is an underlying social reality (Haraway, 1991, pp. 149—81) that returns to the issue of fact versus fiction mentioned previously.

Investigative work on postmodern cyborgs is a current object of research in educational communications and technology. The critical approaches of poststructural theory are being applied in the writing of humanistic essays. An informal network has been formed internationally as the Cyborg Collective, Formal presentations about the new species are made at conferences, and the work is receiving publication.

Bromley delivered "Do Cyborg Dreams Emancipate Sheep?" at Bergamo in 1992. Bromley describes school restructuring in terms of cybernetics, the production of student cyborgs, and uses the benefits employers receive from computers being placed in schools as a channel for exploring how education is rapidly becoming part of the global economy.

Damarin's 1994 AERA paper "Would You Rather Be a Cyborg or a Goddess? On Being a Teacher in a Postmodern Century" relates directly to Haraway's "Cyborg Manifesto" (1991). Damarin's feminist work on the cyborg theme is a continuation of "'Technologies of the Individual: Women and Subjectivity in the Age of Information," which appeared in *Research in Philosophy and Technology* (1993) and recent writings such as "'Women and Information Technology" (1992) and "Feminist Unthinking and Educational Technology" (1991).

In the Modern Machines and Postmodern Cyborgs session at the 1994 AECT conference in Nashville, there were cyborg papers given by Anderson (1994), Jamison (1994a), and Yeaman (1994b). The papers by Jamison (1994a) and by Yeaman (1994b) were submitted to *The Electronic Journal on Virtual Culture* for masked review and were accepted for refereed publication.

The paper ""Cyborgian Orgasm: A Mythology of Educational Organizational Bliss" deals with the technology-serving people fantasy, the human-versus-technology dilemma, and the transcendence to a human-technology merger through cyborgs (Anderson, 1994). Anderson draws on the social construction and representation of computers in education to present a postmodern reading of pictures, essays, and focus group discussions by 100 undergraduate teacher education majors. The "Cyborgian Orgasm" paper concludes by asking educators to explore critically educational possibilities afforded by new technologies and broaden the discussion that associates the use of technology with progress.

In Jamison's "'Contradictory Spaces: Pleasure, Comedy and the Seduction of the Cyborg Discourse," the cyborg image acts to deconstruct the finality of meaning in instructional development (1994a). Jamison argues that the examination of the cyborg as a discourse of pleasure, comedy, and seduction provides educators the opportunity to pursue questions of meaning, relationship, and contradiction:

1. What tension lies in a discourse that envisions ma chines as facilitators of social relationships?
2. If social reality and experience are the basis for education, how is the meaning of memory, time, body, movement, and expression represented in the cyborg discourse?
3. How do cyborgs name social reality?
4. How do cyborgs symbolize the paradox of human visions of social and machine reality?
5. How does the cyborg suggest contradictory mean ings about education and technology?
6. What motifs in the cyborg discourse represent the contradictory themes of power and empowerment in social reality?
7. How does the cyborg discourse form a representation that is either like a human being or unlike one? What does this representation come to mean in education?
8. How does the cyborg teach? How does the cyborg design? How does the cyborg name education?
9. How do pleasure and comedy assist the reconceptualization of instructional development?
10. How does the cyborg discourse assist the reconceptualization of instructional development?

The "Cyborgs Are Us" article shows that the aesthetics of criticism can bring about awareness of cyborg fictions as a social anaesthetic (Yeaman, 1994b), Another purpose is to demonstrate writing as a way of exploring the social reality of cyborgs. Several genres are employed: A science fiction story tells readers "'All My Teachers Were Cyborgs"; a poem with puns provides the "Concluding Summery: A Virtual Idyll"; factual third-person narrative prose follows the tabloid headline ""Do Motherboards Bake Apple Pies?"; and scholarly first-person writing is used for the case study reporting of "Three Cases of Cyborgization." The analysis sections are autobiography, which is a genre recommended for qualitative research in education; see Gates (1991), Grumet (1990, 1992), and hooks (1990). This cyborg work continues from poststructural criticism of computer anxiety empiricism as mythmaking (Yeaman, 1993). Among the results were several provocative observations towards creating resistance (Yeaman, 1994a, pp. 70-71):

- Computers are sold to schools, as to any other customer, by corporations whose central concern is to produce profits.
- Computers in schools increase public knowledge about how to use computers, and that increase facilitates sales and the rate of adoption.
- Computers are vehicles for social stratification.
- Computers are not easy to use and are difficult to learn to use well.
- Computers do not always work well.
- Computers are not always useful.
- Computers can be a hindrance to getting things done.
- Computers-to-students ratios are a false measure of the quality of education,

The convergence of educational communications and technology with information technology may match this projected history of computers in education (Yeaman, 1994a, p. 71):

> Somewhere between 1980 and 2030, a point would be reached where computers existed among all classes. It is hardly a coincidence that this diffusion should occur at the exact moment when the developments of the information revolution would demand a greater computerization of labor.

The "Cyborgs Are Us" investigation (Yeaman, 1994b) is followed by a case study about the social construction of instructors as cyborgs (Yeaman, 1995). Media analysis of a video about the dangers of television carts leads to its identification as propaganda. However, the psychological use of guilt to ensure compliant behavior only explains part of the video's effect. In the social context there are questions about who identifies "'risk," who is "responsible," and why instructors have become fused with equipment and systems and made into cyborgs. Control is being internalized.

Poststructural techniques are particularly appropriate here. They function well in demystifying modern myths and can untangle the rhetoric of systems to show how technologies are socially constructed (Pinch, Ashmore & Mulkay, 1992). A question is also raised about what the safety video might have been like if the people affected had been allowed to make decisions about the instructional messages and format, as in the advocacy work of the Arhus industrial designers such as Bodker, Greenbaum, and Kyng (1991).

10.6 Conclusion

> Now, what I want is, *Facts.* Teach these boys and girls nothing but Facts. Facts alone are wanted in life. Plant nothing else, and root out everything else. You can only form the minds of reasoning animals upon Facts; nothing else will ever be of any service to them. This is the principle on which I bring up my own children, and this is the principle on which I bring up these children. Stick to Facts, sir! (Dickens, *Hard Times,* 1854/1990, p. 8).

With these words, Thomas Gradgrind, a fictitious Victorian schoolmaster with excessive cultural literacy values, helps conclude this chapter section, Aside from the detailed analysis presented by Whaley (1989), it is enough to declare that Gradgrind's educational philosophy is:

l. Authoritarian, fanatical, and bullying in its application
2. Rigid, abstract, and barren in quality
3. Materialistic and commercial in its orientation. (Lodge, 1969, p. 90)

In opposing the undeserved reverence for authorized facts, the postmodern and poststructural theories explored in this chapter are valuable to the designers of instructional messages and to other professionals in educational communications and technology. Without considering criticism, the field is only the institutional processing of students and trainees with machines and programs. The functionality should be redirected to enable freedom and respect for others, Application of the humanistic critical theories of the postmodern and the poststructural may provide the neces-sary perspective. The current consequences of postmodern, poststructural concern for the field are political, cultural, and interpretive (Jamison, 1994b, 1996).

Topics for continued investigation include who is doing what to whom, the expression of power relationships with signs, and the problem with language as a model for how minds and societies function. Criticism can address these egalitarian issues and create new knowledge from humanistic points of view. The critical epistemology transcends the nonneutrality of technoscience by regarding the technologies of education as communication and culture.

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10.7 ENVOI (Andrew R. J. Yeaman)

Chapter 10 ends, by way of an *envoi,* with a personal voice, As remarked in the introductory section, there is some difference between metaphorical and supposedly straightforward language. It is a theme that has been present throughout, and it resurfaces in this contemporaneous essay.

10.7.1 Apple Pie with Mustard

References to Derrida, Foucault, poststructural, and postmodern are becoming no more unusual in current academic prose than the salt, pepper, and sugar found on cafeteria tables, These names and terms represent general concepts. Like condiments, they have specific functions, are used in established rituals, and convey general meanings. They may be applied ungrammatically by people who have not yet learned the appropriate cultural associations. Like pouring salt into a cup of coffee, Latour's insightful exploration of

modern scientific knowledge is marred by overreacting to extreme postmodern criticisms (1993). It is Jean Baudrillard in particular whom Latour overrates as representing all postmodern thinkers in not only totally condemning science but also accepting media representations as the only tangible reality. [An article by Baudrillard (1975/1991) has been included in the book of educational technology readings edited by Hlynka & Belland.] Like shaking sugar onto a plate of french fries, Papert spices up structuralist thinking derived from Piaget with ""It is necessary to do a little deconstruction . . " (1993, p. 136). In contrast, Turkle's (1995) connections to Baudrillard, Derrida, Foucault, and Lyotard make sense, but it is reasonable to question how much readers to whom these ideas are new will be able to comprehend. Just as foreign students may at first scoop chocolate pudding onto their plates of roast beef, Webster assembles various postmodernisms (1995, p. 175). [Webster's list seems derived from Poster's response to postindustrial totality (1990), which aligns Baudrillard with television and consumption, Foucault with digitization, Derrida with hypertext, and Lyotard with the politics of computerization.] Abstractions from quite different thinkers have been sampled by Webster as if they come from a smorgasbord at a technoboosters' conference for social, technological, and aesthetic change. However, in Derrida, Foucault, and Lyotard, the emphasis remains on the activities that Webster values: cultural continuity, the persistence of history, and the undiminished importance of seeking to understand rhetoric and power.

These generalizations deserve to be read cautiously, like a browser's hypertextual path. There is at present no intellectual cartographer who has thoroughly mapped the positions of Adorno, Barthes, Benjamin, Derrida, Foucault, Habermas, Horkheimer, Lacan, Levi-Strauss, Lyotard, Marcuse, and Sartre, among other important contemporary thinkers. The chart would show relationships in terms of points of agreement, disagreement, and indifference such as May (1995) answering Dews (1987) on the left, It would show theories in terms of influence and interaction over time such as Derrida (1994) responding to Fukuyama on the right (1992). The enterprise is complex and could not be undertaken without reading, verifying, and cataloging many diverse works. It would be worthwhile but as, in all visual and verbal representations, much would necessarily remain undecidable (Yeaman, 1 995b).

Oversimplifications continue, The following example shows how postmodern, poststructural seasoning in educational communications and technology can be no better than sprinkling salt and pepper on the pages. Tossing in a postmodern reference can be no different from serving apple pie with mustard.

Wright's creed seems to be that school library media specialists must convince everyone to computerize now and forever (1993). The message of *The Challenge of Technology: Action Strategies for the School Library Media Specialist* is along the lines of: Promise people anything to get them to cooperate because technological changes are unavoidable, necessary, and for the good of all, [For diverging views see Crawford & Gorman (1995), Stoll (1995), and Talbott (1995) among other authorities critical of library automation as technolust.]

Wright writes: "Postmodern critics are concerned that technology will allow meaningful consideration of only that which can be treated objectively and computerized, treating all other aspects as meaningless" (1993, p. 14) and then refers to Damarin (1991). In suggesting strategies for taming '"philosophic critics" and "postmodern critics," Wright misrepresents Damarin as a reductionist who believes culture is shaped by the tools available. Wright patronizingly accommodates Damarin: ""This philosophical criticism is helpful where it raises questions about any technological drift toward dehumanizing the educational process" (1993, p. 15). Wright misses Damarin's point by completely leaving out the ""feminist unthinking-rethinking-energizing-transforming of educational technology" (Damarin, 1991, p. 111).

The structure of Wright's writing (1993) draws comment beyond the fact that sentences are quoted from Damarin (1991) out of order. Wright's page 14 parallels Damarin s article (1991). Wright follows Damarin in quoting a definition of educational technology as solutions that are more than hardware (AECT, 1977, p. 1) but bypasses Damarin's criticism that the sources of the problems are unspecified. Next, Wright incorporates another quotation exactly the same as that used by Damarin: ""The underlying premise of modern automation is a profound distrust of thinking human beings" (Garson, 1988, p. 261). Wright takes this for speculation and does not seem to know that Garson writes about work, not school, and that Garson's words are a summary statement from a data-driven book of case studies, interviews, and reflections on site visits. After a couple of more sentences, Wright acknowledges Damarin's work but not the feminist thesis: ln a cultural mesh valuing males over females, educational technologies may be gender biased and should be reconsidered.

The photograph on the front cover of *The Challenge of Technology* shows three girls in computer training for carpal tunnel syndrome. The computer station is set up too high for the girl at the keyboard who has her wrists pressed against the sharp edge of the table. That Wright (1993) has no comment to make on this obvious problem confirms Goodall Jr.'s fieldwork in highly technological industries: "'Technology is sorcery, word-magic, the secret tongues of a burgeoning civil religion. It is something its adherents *believe* in rather than do" (1994, p. 167).

Although it is not illegal to eat your apple pie with mustard, nor with ketchup and pickles, it is possible to rethink the social aspects of design processes. More of the people affected can participate in planning without being sidetracked

and silenced. There is a very positive review by Napper in *ETR&D* (1994) of *Design at Work,* edited by Greenbaum and Kyng (1991). Although mostly influenced by Frankfurt School critical theory, rather than Derrida and Foucault, the procedures demonstrated in the book are an excellent alternative to unreflective, uncritical, technological illiteracy and infatuation with whatever is new.

10.7.2 Coda: What on Earth Is Going to Happen Next?

ln this chapter, Hlynka and Muffoletto write about paradigms. They are not making sociohistorical statements but are employing figurative conventions for engaging readers. If you are tempted to read explanation for events into Hlynka and Muffoletto's paradigms, you should disregard that feeling. As much as Nicholas Copernicus wrote to Pope Paul III in 1543, in regard to establishing a system that agrees with the phenomena (Kuhn, 1957, 1966, pp. 136—38), there are about a dozen competing theories of sociotechnical change at this time (Bijker, 1995, pp. 303-04). In addition, there are theories available from other disciplines such as anthropology, history, and sociology. The explanatory power of paradigms is deficient much as the Copernican solar system is deficient when compared with astrophysics. A descriptive model is being offered but without explaining why planets formed and spin around the sun or why scientists' beliefs orbit around points of consensus,

The positivist idea of paradigms lacks currency and is approaching intellectual bankruptcy. Popularizers aim at both predicting and shaping the future (Tapscott & Caston, 1993). Popularizers admit that their broad applications to the human condition are utilitarian (Barker, 1992, pp. 38—40). Popularizers combine the authority of the Ancient Greek etymology of paradigms with instances from history and science so they can sell books and seminars for managers (Covey, 1991). Through a poverty of understanding, the paradigm myth is a modern, structuralist grand narrative. On the grounds that nature is adequately reflected in the mirror of mind, it justifies the unfolding of the truth through society as it stands today. Invoking the paradigm metaphor gives reassurance that there is a subject to be examined, but it is not a productive explanation; see Robinson (1990, 1995) and Yeaman (1989, 1990a) for further discussion of the overreliance on empiricism in this sociocultural and creative profession.

When Hlynka and Muffoletto write about paradigms, it is not to offer a social theory but to describe their views and preferences. The academic timbre of the second half of the 20th century is revealed, There are days when it still seems almost impossible to express oneself in a college of education except in language inflected with a scientific tone of certainty. Ironically, to discuss paradigms introduces postpositivist uncertainty (Lather, 1991; Yeaman, 1990b). For example, there is as much literary theory in the creation and consumption of hypertext as underlies Advent calendars, job aids, and traditional scholarly prose containing references and footnotes. The link between communication technology and the humanities is congruent because scholarly work has always been hypertextual. Engineers writing technical reports and academic philosophers in the third millennia of philosophy both need to reference those who have written before. Not only may the concepts be deep but also there are connections to reading other texts. ln business, research, and the academy, making a connection between literary theory and hypertext serves to benefit those particular groups of social actors in the 1990s. Behind the smooth facade of textbook facts is the uneven reality of knowledge being relativistically shaped by personality clashes and the polities of negotiation, and produced through the social causation of material and economic circumstances. Scientific pretensions are detected and uncovered when interrogation shifts to the deconstruction of frames of meaning.

10.7.3 Postmodernisms and Poststructuralisms

As in Agger's review of sociology (1991), intertextuality blurs the boundaries between educational communications and technology and other disciplines. Jurisdictions over territory may be renegotiated with theory. In this context, the contribution of postmodern and poststructural theory appears not in a new social theory but as a sensibility modulating existing theories. It is demonstrated by the refocusing of measurement and evaluation, one of the most conservative areas in the educational research establishment (Moss, 1994, 1995). No posturing about an age of revelations is necessary. Despite social change there is continuity in culture. The present-day computerization of society and the medieval cathedralization of society should share the same explanations. While its definitions may develop and overlap with other fields, educational communications and technology continues as "'a web of beliefs, activities, and products" (Yeaman, I 995d, p. 73).

10.7.4 Cadenza

Anderson and Damarin's feminist section in this chapter has an overtly self-reflective, political position: Instructional technologies should be evaluated on their ability to introduce ethical perspectives consistent with social ideals. Note that their reference list contains first names in order to improve the visibility of women,

A sea change in theory and practice is already underway in educational communications and technology from being technical to becoming more ethically minded, If people are to know for themselves instead of in obedience to authority, then instruction should be assessed for implicit values (Yeaman, 1995c). A similar development has taken place in composition studies where there is a resurgence of interest in rhetoric (Jarratt, 1991). Postmodern, poststructural, critical theory (along with constructivism) enlarges the ""debate about the purpose and role of education in designing and

delivering instruction" so that "social, ethical, and cultural responsibilities must be addressed" (Walster, 1995, p. 254). The ECT Foundation has established an award to sponsor and recognize such qualitative work in educational communications and technology (Yeaman, I 995a). The renewed focus on purpose acknowledges that there truly are real-world problems to solve. For instance, the diversity issues facing the United States in the next decade may be comparable in severity to the dilemmas experienced by the South African people in the 1970s.

The tools for postmodern rethinking and poststructural criticism are already present. If you missed them, turn back into the pages of this chapter. Designing. managing, and delivering good instruction is different from creating instruction that is materially and intellectually beneficial for people. The ethical question we should always ask is not about doing our work well but "Are we doing good?"

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