
Sustaining the Culture of the Book: The Role of Enrichment Reading and Critical Thinking in the Undergraduate Curriculum

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ABSTRACT

OVER THE LAST DECADE, THE EDUCATIONAL community has focused on the importance of developing reasoning and analytic skills in the learner at all levels, with a particular emphasis on a critical thinking curriculum for postsecondary students. The role of language—whether speaking, reading, or writing—may be virtually inseparable from the development of higher order reasoning ability. Academic libraries have served not only as traditional repositories of written knowledge but also increasingly as essential partners in undergraduate education. Bibliographic instruction itself has emphasized the importance of curriculum integration and the incorporation of critical thinking in teaching. Simultaneously, most academic libraries evidence a belief in the role of libraries in promoting and encouraging student reading. As part of a culture moving increasingly from a print to image and electronic forms of communication, libraries need to reexamine their role and explore what sustaining the “culture,” if not the form, of the book might mean.

INTRODUCTION

Provoked by a number of sweeping indictments of the state of education in this country, the higher education community began a major reassessment of the goals, quality, and curriculum of undergraduate education. Publications such as *A Nation at Risk* (1983) and Boyer's (1987) *College: The Undergraduate Experience in America*, decried the decline in student motivation, in standardized test scores, in any interest in reading, in the ability to reason qualitatively and quantitatively, and in the capacity to

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think critically. The ensuing reevaluation was soon accompanied by a growing commitment among educators to establish a core curriculum at the college level. Curricular reform included a particular emphasis on writing, information handling, and reasoning skills across the curriculum, as well as a recommitment to develop independent, self-motivated, lifelong learners.

At the same time, fueled by changing demographics of the student population, debate over the canon and what actually should constitute a core or general curriculum at the college level rocked college and university campuses. A radically transformed knowledge and information infrastructure awaited students, most of whom had spent more time watching television than reading and had grown up synthesizing information from image and sound bytes rather than complex rhetorical analysis. Among all the controversy, analysis, and redirection surrounding the undergraduate curriculum in the 1980s, critical thinking is one of the most significant elements.

CRITICAL THINKING AND THE UNDERGRADUATE CURRICULUM

"Humans are the only animals whose thinking can be characterized as clear, precise, accurate, relevant, consistent, profound, and fair; they are also the only animals whose thinking is often imprecise, vague, inaccurate, irrelevant, superficial, trivial, and biased" (Paul, 1992, p. 3). Noting the inherent paradox in human nature, Paul describes the necessity for humans to think critically and not simply trust their instincts:

They should not unquestioningly believe what spontaneously occurs to them. They should not accept as true everything that is taught as true. They should not assume that their experience is unbiased. They need to formulate, since they are not born with, intellectually sound standards for belief, truth, and validity. They need to cultivate habits and traits that integrate these standards into their lives. (p. 3)

He goes on to warn that few students understand what it means to think analytically through the content of a subject; few use critical thinking as a tool for acquiring knowledge.

An explicit definition and statement of curriculum-related critical thinking skills comes from Chancellor Glenn Dumke's (1980) *Executive Order 338* announcing the requirement of formal instruction in critical thinking throughout the nineteen California State University campuses:

Instruction in critical thinking is to be designed to achieve an understanding of the ability to analyze, criticize, and advocate ideas, to reason inductively and deductively, and to reach factual or judgmental conclusions based on sound inferences drawn from unambiguous statements of knowledge or belief. The minimal competence to be expected at the successful conclusion of instruction in critical

thinking should be the ability to distinguish fact from judgment, belief from knowledge, and skills in elementary inductive and deductive process, including an understanding of the formal and informal fallacies of language and thought.

One of the most frequently cited factors in the failure of American education is the inability of American students to read and think critically. The National Commission on Excellence in Education reported alarmingly that “many 17 year olds do not possess the ‘higher order’ intellectual skills we should expect of them Nearly 40 percent cannot draw inferences from written materials; and only one-fifth can write a persuasive essay” (*A Nation at Risk*, 1983, p. 9) and recommends that all subject-matter areas contribute in developing critical-thinking skills. Chaffee (1985) defines critical thinking as “making sense of our world by carefully examining our thinking and the thinking of others in order to clarify and improve our understanding” (p. 51). Critical thinkers carefully analyze situations, issues, and messages, checking for logical and supported arguments. Critical thinkers are not swayed by clever communicators who appeal to one’s emotions or sense of patriotism nor are they influenced by messages without adequate supporting evidence or by arguments loaded with faulty reasoning (Postman & Weingartner, 1969; Sacco, 1987). Additional aspects of critical thinking include cultivating a healthy skepticism, encouraging students to challenge in positive and well-reasoned ways what they read or hear, and helping students understand how writers purposefully manipulate language (Sacco, 1987). The ability to think critically is one of the most crucial survival skills in today’s world. Lacking such skills, people cannot participate effectively in a democratic society (Toulmin et al., 1979; Sacco, 1987).

Clarke and Biddle (1993) argue the increasing importance of knowing how to use information to discover further information or to solve problems in an age where access to knowledge is both general and immediate. Echoing a theme common to most analysis on the need for critical thinking, they question how any of us can find what we need to know, make sense of the expanding pool of knowledge in any area, or put knowledge to work in solving human problems. The need to think critically in this “tumultuous” intellectual environment means that “the challenge in today’s curriculum is to teach students to manage the work of their own minds” (p. 1). Noting that there are nearly as many definitions of critical thinking as writers on the subject, Clarke and Biddle offer a definition of thinking relevant to the classroom: “[T]he process by which the human mind manages information to understand established ideas, to create new ideas, or to solve problems” (p. 3). Extending Resnick’s (1987) research on the kind of thinking required for success in modern life, Clarke and Biddle define ideal thinking as that which:

- Is nonalgorithmic; the path of action is not fully specified in advance.

- Is complex; the total path is not mentally "visible" from any single vantage point.
- Often yields multiple solutions, each with costs and benefits, rather than unique solutions.
- Involves nuanced judgment and interpretation.
- Involves uncertainty; not everything bearing in the task is known.
- Involves self-regulation of the thinking process, not regulation by others.
- Involves imposing meaning, finding structure in apparent disorder.
- Is effortful. (p. 3)

Repeating the importance of "managing the work of the mind," the authors argue that if thinking strategies were taught explicitly, and demonstrated in the academic disciplines, high school and college students could better see them to make sense of classroom experience, make sense of experience at large, and control and direct intellectual work. "Instructors in the academic disciplines could and should therefore teach them as surely as they teach the subject knowledge those strategies have produced" (p. 12).

If there is general agreement on the importance of critical thinking in the current undergraduate curriculum, there is considerable debate on precisely how such skills should be inculcated. Talaska (1992), noting the tendency of scholars to focus on the practical educational reforms intended to teach critical reasoning, has compiled a collection of essays by a number of scholars representing diverse contemporary theoretical views of critical reason. He identifies two central questions:

1. whether critical thinking is a general skill separate from content or knowledge context; and
2. whether critical thinking should be taught as a skill in itself or integrated with teaching/learning within the scholarly disciplines (Talaska, 1992, p. xv; Ennis, 1992; McPeck, 1992).

THE ELEMENTS OF CRITICAL THINKING

It is possible, however, to synthesize from a host of researchers and writers the several essential elements that characterize higher-order critical thinking and curriculum elements that develop these abilities.

Active Participants Rather than Passive Recipients

Educators invariably conclude that thinking strategies cannot be taught by a teacher standing at the front of the room but must be learned by individual students, working cooperatively or alone, to make sense of course material (Clarke & Biddle, 1993, p. 1).

Didactic lectures, extensive coverage of content, and mindless drill combine with student passivity to perpetuate the lower-order thinking and learning that students have come to associate with school.

When students do not actively think their way to conclusions . . . they do not achieve higher-order learning. They end their schooling with a jumble of fragmentary opinions, rigidly understood procedures, and undisciplined beliefs. Their ability to mature intellectually and morally, and their capacity and motivation to learn are stunted. (Paul, 1992, p. 4)

Self Direction and Individual Motivation

Lipman (1991) warns that “educators must be wary on many scores, but two are outstanding. One is that it is very difficult to educate uninterested students. The other is that without the presence of certain favorable conditions it is very difficult to educate students well even if they are interested” (p. 212). Other analysts stress the importance of self direction, learning control, and the active self-management of the intellectual process (Clarke & Biddle, 1993, p. 13).

To perfect one’s thinking, to develop intellectual discipline, one must develop intellectual values. In other words, genuine education transforms the whole person by transforming one’s basic modes of thinking. Indeed, properly understood, education implies a self-motivated action upon one’s own thinking and a participation in the forming of one’s own character. Through it we cultivate self-directedness of thought and transform our values. (Paul, 1992, p. 8)

Teaching students to search and interpret information must allow for considerable individuality. The teachers . . . have all developed ways to show students how to set a purpose for their intellectual work, design a structure for holding information in place, and apply interpretive strategies to the material they have collected. (Clarke & Biddle, 1993, p. 22)

Conceptual Frameworks in Organizing Knowledge and the Role of Prior Knowledge

Ausubel (1968) speaks for many prior and subsequent learning theorists when he concludes that meaningful learning occurs when we connect new information to what we already know. The most important single factor influencing learning is what the learner already knows. Hirsch (1985; Hirsch et al., 1987) argues for “cultural literacy” on this basis. Researchers have further found that:

- Students who already know a lot find it easy to learn more.
- Students who know little have little basis for learning more.
- Students who have included errors in their learning may only confirm those errors in trying to learn new information. . . . Students who know little are more easily misled by the little they know. (Clarke & Biddle, 1993, p. 18)

Abstract Thinking to Extrapolate from Experience to Ideas or Conclusions

Knowledge originates in experience. One way of extending it, however, without recourse to additional experience, is through reasoning. *Given what we know, reasoning permits us to discover additional things*

that are the case. . . . Our knowledge is based upon our experience of the world; it is by means of reasoning that we extend that knowledge and defend it. (Lipman, 1991, p. 40)

Thinking can move between concrete experience and abstractions that explain that experience (Clarke & Biddle, 1993, p. 4). Researchers note three levels of abstraction ability: (1) low road transfer (the automatic triggering of well-practiced routines to new contexts that are very similar to the original learning situation); (2) high road transfer (the mindful abstraction of skills and knowledge from one context to another), followed by the possibility of (3) "far transfer" (transfer of learning to situations substantially different from the context in which the learning took place) (Perkins & Salomon, 1988; Smith, 1993). Kolb's (1976) studies of learning style also discovered distinct differences among various disciplines in the role abstraction plays in critical inquiry within the subject area. Physics and mathematics, for example, usually begin with an abstraction, a law, principle, or theorem and then move toward confirmation in concrete experience. History and literature often begin with a verifiable record and then move toward abstraction of trends or themes (Kolb, 1976).

Researchers agree on one additional conclusion: that language—in particular, reading and writing—is perhaps the most significant element in higher order reasoning and in an effective curriculum designed to teach critical thinking.

LANGUAGE AND REASONING

Descriptions of innovative teaching define the prominent role that writing plays in the teaching of critical thinking across the curriculum:

Writing is the most powerful tool we have for making thought visible. In their own writing, students can recognize their own thought process and amend those processes to better suit their aims. Writing slows the tumult of the mind, making the mechanics of thought susceptible to change. With thought represented in physical form, we can help them exert greater control over its development. Used for informal exploration of facts, theories, relationships and procedures, writing serves to help students gain control of their own mental work. (Clarke & Biddle, 1993, p. 15)

While the importance of reading in the humanities might seem obvious, reading is cited across disciplines as essential to critical thinking. A microbiologist emphasizes that:

Reading and thinking are intimately related; and reading is the foundation for the writing exercises in my class that lead toward CT. I am sure that I don't have to convince this audience of the importance of reading so I'll say no more. . . . The tasks for the students to learn in microbiology are: to read critically, to summarize, to digest com-

plex ideas, then translate them into understandable written form, to show relationships to previous knowledge, and to build a knowledge base. (Cannon, 1993, pp. 58, 61)

Talaska (1992) suggests that a theoretical underpinning for looking at reasoning from this perspective is to be found in Wittgenstein's insight about the very intimate connection between thought and language. "For Wittgenstein, anything which you or I would recognize as significant thought is fundamentally linguistic in character (or more precisely, if the thought is not in words, as such, it will be in some kind of public symbol system—which is most often language)" (McPeck, 1992, p. 33). Lipman describes the intrinsic relationship between a discipline and the language of that discipline.

We immerse ourselves in a discipline as we might immerse ourselves in a culture, for in a sense every discipline is a culture, a language (or manner of using language), a form of life. To learn to think in a discipline such as history is to learn how historians think and to think like them. (Lipman, 1991, p. 238)

Talaska cites Postman (1979) on this subject: "As one learns the language of a subject, one is also learning what that subject is" (p. 165). Hirsch (1985) concludes, along with Postman, that reading and thinking are not merely inseparable but inseparable from background knowledge that is discipline related. Lazere (1992) defines a set of criteria for critical literacy based on higher order critical thought through language. Several of the abilities such literacy requires:

- to unify and make connections in one's experience and academic studies;
- to sustain an extended line of thought through propositional, thematic, or symbolic development;
- to reason back and forth between the concrete and the abstract;
- to be attuned to skepticism, irony, relativity of viewpoint . . . ambiguity, and multiplicity of meaning in linguistic or aesthetic structures. (p. 56)

Finally, we get a glimpse of one apparently unique possibility why reading and writing are such powerful factors or tools in critical reasoning. That power is the ability of narrative structure—stories—to construct unifying conceptual frameworks that organize concepts into a coherent whole. Lipman (1991) notes that we construct concepts "clustering" the information in a given cognitive domain and thereby making it manageable. Narration appeals to our power to understand movement and growth and has a natural ability to attract and structure data. Further, it energizes the reader at the same time that it provides a logical organization to the domain where every new detail that it incorporates has an impact and effect upon every other element—every detail counts and adds to the quality of the whole. "This is why the average unscholarly reader feels refreshed by reading short stories and novels but drained and exhausted by attempting to read technical or highly abstract expositions" (p. 220).

THE POWER OF STORIES

Language incorporated into a narrative structure, particularly as literature, appears to have a peculiar power to extend our own experience by providing us with the opportunity "to come to know men and women we would never otherwise meet, to participate in their lives, indeed to use their lives as dress rehearsals for our own" (Clarke & Biddle, 1993, p. 24). Further, the very act of meaningful reading requires that readers be active "meaning-makers" rather than passive recipients of information (p. 29). deCastell (1989) also draws heavily on the work of Havelock to describe the nature of writing to move human thought beyond the concrete work of particulars to the abstract realm of general ideas. She deplores the failure of educators to recognize the ways language as speculative storytelling (as opposed to factual documentary) expands human capacity to abstract from concrete information to higher-level critical understanding (p. 39). Lipman (1991) suggests that we dismiss storytelling because it is a frivolous activity (pp. 214-15), but he further suggests that the sheer power of narrative to inspire true critical thinking and inquiry may be one reason for the surprising absence of any extensive exploration of this subject among specialists in cognitive development and curriculum:

[N]arrative is intoxicating. . . . It suggests to us other ways of living in and thinking about the world we inhabit—ways that might be at odds with propriety and common sense. Literature provides us with models of thinking, feeling, and acting, models that we fear may be seductive to the innocent mind of the child. (p. 215)

Reviewing the perspectives of other thinkers outside the specific realm of cognitive theory and the undergraduate curriculum, we find that Roszak (1994) and others frame the need for conceptual frameworks in our technological and information-intensive society as a warning. We hold a dangerous illusion that an abundance of information equates with knowledge.

For better or worse, our technological civilization needs its data the way the Romans needed their roads and the Egyptians of the Old Kingdom needed the Nile flood. . . . Nor do I want to deny that the computer is a superior means of storing and retrieving data. There is nothing sacred about the typed or printed page when it comes to keeping records; if there is a faster way to find facts and manipulate them, we are lucky to have it. . . . But I do want to insist that information, even when it moves at the speed of light, is no more than it has ever been: discrete little bundles of fact, sometimes useful, sometimes trivial, and never the substance of thought. (p. 87)

Rozzak argues that the mind thinks with ideas, not with information, and consequently that the principal task of education is to teach young minds how to deal with ideas: how to evaluate them, extend them, and

adapt them to new uses. He describes the relationship of ideas to information as what is commonly called a generalization, where generalizing is the basic action of intelligence. When confronted with a myriad of disjointed facts (from personal perceptions or secondhand reports), the mind tries to create a sensible connecting pattern. Conversely, confronted with very few facts, the mind tries to create a pattern by enlarging what little information it has (p. 88).

Wurman (1990) echoes the learning theorists' assertion that knowledge acquisition and retention rests in the facility of associating that idea with another, either in contiguity, in sequence, or in contrast. He derives his "first law" from this principle of making connections between one piece of information and another: "[Y]ou only learn something relative to something you understand" (p. 168). Defined in the nineteenth century, "apperception" is a process where new ideas associate themselves with old ones that already constitute a mind (Bigge, 1982). Wurman notes that apperception implies "that the mind is like a framework on which ideas can be hung" (p. 169). He goes on to suggest stories as a powerful vehicle for making facts and numbers come alive while permitting information to be imprinted into memory. Stories encourage the application of information which invests it with real meaning, and storytelling is another way of putting information in context and sustaining the flow of memory:

Our whole history, which is the history of the world, was communicated by stories told by one person to another. So everything from generation to generation was passed on by storytelling. . . . Storytelling is probably in our DNA profile. Memory and learning were locked in the embrace of stories, which can often be much more evocative and even more accurate than facts. (p. 236)

Stories are still an extraordinarily powerful way to organize what would otherwise be isolated bits of information (data); and more, they convey ideas and feelings that actually convey more truth than just the information (more real meaning). But, as a civilization, are we becoming increasingly data rich and story poor?

There are many nonempirical arguments and program descriptions for the use of literature to develop critical thinking skills. Markle (1987) advocates teaching students analytical and reasoning skills, suggesting that success in every field is dependent upon an individual's ability to perceive clearly the complete meaning and intent of written material. But, although analytical reading is a primary means of learning, students often receive little direct instruction in analytical reading, creative thinking, problem solving, or decision making. While most students adequately comprehend the literal information in written material, many exhibit weakness in higher-order thinking and evaluating. He warns that children, reading less and less or being read to less and less, get few opportunities to form abstract images in our visual society. Roth (1989) relates reading more explicitly to critical thinking:

A well written literary tale unfolds from a problem and leads to the critical thinking skills of planning, decision making, reflecting and evaluating. Critical reading actively involves the participant in many levels of thinking, beginning with anticipation, forecasting, and inquiry and continuing through the problem-solving processes. (p. 143)

Recent studies have sought to investigate formally the relationship between critical thinking (or reasoning skills) and the process of reading. In a study of undergraduate students' reading, writing, and problem solving mechanisms, Roseberry et al. (1989) discovered that successful college students share an important belief that writing and reading are fundamentally purposeful acts of communication. Their research illuminates the nature of problem-solving in skilled reading and writing processes that are held as goals for college students. They note that college students are faced with the problem of constructing meaning from some purpose and of activating prior knowledge to understand a written text.

Knowledge is not just used to situate a text. It is used in all phases of reading, from thinking about a text or a topic before reading to evaluating its central theme or argument during or after reading. Readers continually look for connections between the ideas in the text and their prior knowledge. Prior knowledge can, in this way, help readers draw inferences about an author's intentions and beliefs and can serve as a basis for acquiring knowledge. The successful reader continually questions the assumptions that are implicit in the understanding he has built; he will reread the text for specific kinds of evidence; and he will formulate and revise hypotheses regarding the author's intended meaning. (pp. 4-5)

The researchers conclude that students need to realize, in particular, that authors have beliefs and intentions, and that these influence the meanings of texts.

Farley and Elmore (1992) examined the relationship of reading comprehension for underachieving college first year students to their critical thinking skills, vocabulary, and cognitive ability. Their synthesis of current research suggests that reading is a process of constructing meaning through the dynamic interaction of the reader, the text, and the context of the reading situation that results in the acquisition of knowledge, experience, or information. Reading comprehension is thought to depend upon the reader's ability to interrelate appropriately acquired knowledge with the information suggested in the text. Researchers have reported that college students with lower verbal ability were able to identify individual words and facts but were unable to combine the information in the text with the previously acquired information. This inability to integrate ideas was accompanied by an inability to draw logical inferences and the inability to check ideas while reading to see if the ideas contradicted one another. College students were found lacking in deductive and inductive reasoning, the ability to infer, to recognize assumptions,

and evaluate conclusions. Thus, reading comprehension was directly linked with a variety of cognitive or critical thinking abilities. Based on their research, the authors suggest that study skills programs involving verbal, spatial, and quantitative reasoning skills may serve to increase reading comprehension (Farley & Elmore, 1992, p. 929).

Lipman (1991) criticizes the emphasis on vocabulary weaknesses, spelling deficiencies, and a lack of stylistic appreciation in the way reading is taught. Citing research indicating that reading comprehension rests upon the formal skills of deductive inferential reasoning and upon such skills as analogical reasoning, he argues that reading comprehension would be improved if these primary reasoning skills are strengthened. Reasoning skills appear to contribute directly to the reader's acquisition of meaning and the accessibility of meaning that most effectively motivates the reader to continue pursuing the reading process (pp. 38-39). Noting test evidence confirming a very high correlation between student performance on reasoning tests and reading comprehension tests, Lipman summarizes a body of research demonstrating that, if reasoning and reading were both taught to students, the results would be better than if reading alone were taught (p. 47).

CRITICAL THINKING AND BIBLIOGRAPHIC INSTRUCTION

Not surprisingly, critical thinking in higher education has been the focus of considerable discussion and program development within academic libraries in recent years, primarily as both a teaching strategy and as a desired outcome for bibliographic instruction. Kirk (1984), Mellon (1982), McCormick (1983), O'Hanlon (1987) and others built on the thinking of a core of seminal thinkers in bibliographic instruction who examined learning theory and the importance of conceptual frameworks in user instruction. Bodi (1988) suggests that the important question is not whether academic librarians should teach students how to find information on their own, but how academic librarians can most appropriately encourage and reinforce what is being done in the classroom. She emphasizes that "academic libraries support their institutions' curricula with a variety of materials in a variety of formats. An equally valid role of the academic library should be to support and reinforce the development of critical thinking among students" (p. 151).

Citing the need for alternatives to the term paper assignment, Gibson (1989) describes the college student following the practices he learned in his secondary school experience and hastily stitching together yet another research report with little or no critical analysis, synthesis, or evaluation of the sources used. He goes on to argue for a critical thinking component in the general education curriculum, suggesting that:

in becoming critical thinkers, students learn to see connections between disciplines, to focus to significant questions, to sort out the genuine from the spurious, and to examine their own assumptions and limitations. . . . Through efforts at improving critical thinking

in the general education curriculum, librarians can help restore some of the real knowledge, as opposed to mere information, in the minds of students and faculty. (pp. 308-09)

Mirroring the debate between courses on critical thinking for its own sake and critical thinking within a knowledge-centered context, Plum (1984) advocates the discipline-centered model as a structure for bibliographic instruction and suggests that students must recognize that research methods, or the principles behind criticism, are not universally accepted within the discipline. A variety of critical approaches to a single work can legitimately arrive at different, yet valid, interpretations and criticism. MacAdam and Kemp (1989) extended the discussion to the role of bibliographic instruction in helping students develop understanding and skills in critical inquiry.

While the nature of research is fundamentally inquiry, it is inquiry . . . with a specific object in mind....Further, it is inquiry with an implicit standard against which the results...will be judged . . . even the student's own sense of validity or "rightness." At its best, bibliographic instruction can and should give a student the wherewithal to formulate the research problem, translate this into the basic inquiry to be investigated, establish a standard or set of measures by which all information gathered will be accepted or rejected based on that standard, and finally, be able to articulate a defense and justification for the entire character of this process. The student learns in essence to think, to think in a new way, and to question, challenge, keep, discard, and analyze information. These are skills that are crucial and intrinsic to the self-directed, life-long learner. (p. 237)

These analyses are distinguished by the absence of any significant discussion of the role of reading and critical thinking. MacAdam and Kemp, noting that intellectual courage is the first attribute requisite for critical inquiry, cite Handlin's sentiment that the sheer contemplation of the wide range of possibilities represented by the wealth of resources available in a research library should inspire confidence that "not all the correct answers are known; not all the right questions have ever been asked. There is still the opportunity for involvement in the long process of asking and answering of which these collections are evidence" (Handlin, 1987, p. 216). Bibliographic instruction programs, then, become instruction framed in the context of information the students already know, directed at the intellectual framing of an inquiry, formulation of search strategy, and the critical ability to select and synthesize information into knowledge. At the same time, students develop the curiosity, motivation, and independence characterizing true critical thinking.

BOOKS AND UNDERGRADUATES

With an understanding of the apparent relationship between reading and critical thinking, it is necessary to examine the role of books and reading in the contemporary undergraduate curriculum. In a major over-

view of student reading among university students in Great Britain, we find trends reflecting changes in colleges and universities in the United States. Graham (1986) describes changes in teaching methods toward seminar and tutorial teaching, and the development of assignments requiring a greater degree of independent work by the student (undergraduate theses, open examinations, and extended essays and projects, for example). He also notes the individuality of student needs and consequent user behavior in relation to libraries and bemoans the fact that most librarians and academics, if they think of books and libraries in relation to students, generally concentrate on the issue of adding correct titles to the reserve collection. He adds that "one aspect of the gap between lecturers' expectations and the reality of student behaviour is the tendency for such material not to be used as heavily as intended" (p. 15). Graham cites a tension all too familiar to academic librarians: greater and more varied demands on libraries, and increasing demands on both material and staff resources at the same time that budgets are static or declining.

McElroy (1986) suggests that, if a student is to read profitably and with some enjoyment, then library collections and services, curricular demands, and his own study skills and expectations must be in harmony. He emphasizes that students' personal reading needs—as well as those imposed upon them by reading lists, assignments, and examinations—are important and must be met if academic progress is to be made. He proposes a model showing how different needs (categorized as library, curricular, and skill/attitude needs) are related to each other and to the student. Faculty and students clearly hold differing views toward reading. Faculty, including librarians, have chosen to serve a discipline and the literature while college students generally expect that the discipline and the literature must serve them and their different, perhaps job- or career-related, objectives. College students seek the assurance that the material they are asked to read (and the time thus spent) will contribute directly to learning, academic success, and graduation. McElroy describes a powerful role for the faculty in conveying a real need to read and show personal enthusiasm for reading. Faculty should be willing to allow teaching to be shaped by the reading that the student actually undertakes, as evidenced by the student's questions and responses in the classroom, and should encourage their students to read not merely by reading lists but by constant reference to their own contemporary reading. Students should recognize that different authors take different approaches to the same topic. Further, the process of "reading" may encompass the identification, retrieval, synthesis, and representation of intellectual matter in a variety of formats from print to visual.

Echoing the role of student motivation in developing reasoning skills, McElroy (1986) stresses motivation as a key factor in considering the students' information handling skills and their impact on reading needs and attitudes. "What does the student need/wish to be able to do? How can the problem-solving abilities of the literature be made manifest? How can the perhaps reluctant or non-habitual reader be brought into comfortable and fruitful contact with problems of information retrieval, study, synthesis, and representation" (p. 55)?

Harrison (1986) elaborates on the suggestion that "reading" is not necessarily limited to traditional print materials and offers for the first time a distinction between basic information gathering and reading to serve the purpose of higher understanding of complex ideas. Student reading needs become the library provision of information to students in whatever format the information is best presented. Evans (1986) further extends the "great debate" surrounding book provision in higher education, noting changing attitudes toward the book reflecting a changing society as various technologies compete with it as a storehouse of knowledge. Evans argues for greater leadership and innovation from book publishers and vendors in examining the role of reading and the changing formats of knowledge, as well as greater cooperation among faculty, booksellers, publishers, and librarians. She questions where electronic technology and new ways of knowledge storage and retrieval have left the book as a "tool of learning" for the modern student. Evans warns that the issue is more complex than generally recognized, with text-based learning alive but not in very good health. Noting a slowing in the reading rates of many of her students who seem to regard the activity of reading as a form of avoidable work, she suggests one consequence is that "the student's own critical ability is being significantly under-used or by-passed by the pre-selection of the 'most relevant' highly subjective secondary source material by the lecturer himself" (Kingston, 1986, p. 172). Evans astutely points out that faculty are, by definition, individuals who have thrived in the world of the written word and may have an unrealistic nostalgia for the highly literate undergraduate while confronted with students possessing a new literacy residing "principally in the domain of (verbal) articulacy and technical aptitude" (Kingston, 1986, p. 174).

Finally, Mann (1986) summarizes the discussion on the importance of independent reading and teaching students "to learn how to learn." He notes the number of scholars who argue that "learning how to use books is a part of the total learning process. . . . A great deal of university learning (perhaps the best parts) comes from what the student teaches himself or herself" (p. 183).

Metz (1983) has extensively analyzed undergraduate use of subject collections in a university library and reports that, of the items in circulation at any given time, 33 percent of the charged materials were charged to undergraduates (p. 80). He further notes that, while the reading patterns of graduate students in various fields resemble those of the faculty:

undergraduates in all areas of study rely less on specialized materials than do faculty and graduate students; that is, knowledge of an undergraduate's major gives us significantly less ability to predict what library materials he or she will borrow than we gain from knowing the affiliation of a faculty or graduate borrower....undergraduates rely on the literatures associated with their major fields for less of their reading than do the other patron groups [particularly in the physical sciences]. (p. 81)

In summarizing and confirming earlier data by McGrath (1976), Metz found that a larger percentage of undergraduate subject reading is typically by "outsiders" (students concentrating in disciplines other than their selected reading) than graduate student reading (p. 92). "Undergraduates read in a much less predictable and selective fashion . . . but it is almost certainly true that for students, no less than for faculty, a library system provides the single best form of access to literatures across the entire span of knowledge" (p. 94). It would appear, then, that the undergraduate experience presents a unique opportunity to encourage students to read more widely than their field of study, provided there is adequate motivation to do so.

A fundamental question obviously is: Do students read for pleasure and, if so, what are they reading? A study by Davis (1975) of the three year's worth of campus best-seller lists as published in *The Chronicle of Higher Education* from 1970-1973 confirmed that students read many of the same best-sellers read by the general public but at the same time also read many books reflecting their seeking new perspectives in their quest for identity, including books on self-understanding, social issues, fantasy, religion, sex, and alternative science. Students read very little poetry but did read novels, "although the novels [didn't] always make the best-seller lists because students read an author and may select from any one of several books the author has written" (p. 220). DePalma (1991) notes:

In interviews with more than 65 students at colleges throughout the Middle West . . . few students said they read newspapers regularly or venture into literature beyond course requirements. When they bought a book that was not required for class, it tended to be something simple: the comics characters Calvin & Hobbes top many a campus bookstore's bestseller. (p. 220)

And *The Chronicle of Higher Education* list for that same month (November 1991) echoes Davis's study of overlap with general public best-sellers (six best-selling novels, two pop-psychology, one science bashing book, and a Gary Larson cartoon book).

Williamson (1987) provides teaching anecdotes reflecting changing tastes in college students' literature preferences, noting:

College students today seem utterly unsentimental and rather ungenerous in their responses to [19th century] fiction. They have little sympathy for romantic love, self-love, self-sacrifice or self delusion....Pip of *Great Expectations*, who longs to better himself and

become a gentleman, makes sense to them. . . . Austen's girls they like. . . . They are interested to learn how these girls get ahead in love and at the bank, and how they maintain their integrity and individuality at the same time. (p. 159)

Faculty at the University of Buffalo have drawn up an "Unrequired Reading List" as a way to encourage students to read. Recognizing the need to help undergraduates enjoy reading, faculty admit the list is not intended to be a compilation of great books. The selection of titles is decidedly eclectic, ranging from *The Adventures of Huckleberry Finn* and *Zen and the Art of Motorcycle Maintenance* to the *Joy of Cooking* ("A College Reading List...," 1993).

In one of the most reasoned arguments for academia to resolve the argument over "canon" and what works constitute the proper foundation for an undergraduate curriculum, Graff (1992) warns that the real issue is the failure of students to embrace reading at all:

it won't matter much whose list of books wins the canon debate if students remain disaffected from the life of books and intellectual discussion, as too many have been since long before any canon revisionists arrived on the academic scene. It is easy to forget that for most American students the problem has usually been how to deal with books in general, regardless of which faction is drawing up the reading list. (p. 11)

He reminds the academic community that the traditional role of the university is an essential contradiction: on the one hand to preserve, transmit, and honor our traditions, yet at the same time to produce new knowledge, question received ideas, and perpetually revise traditional ways of thinking (p. 7). Graff provides a lengthy discussion on how both "canonical" and contemporary works can be taught to acquaint students with the nature of the debate and instill both critical thinking and an enthusiasm for intellectual investigation and dialogue. Describing his own early dislike of books and the world that books represented, he describes how he came to a love of literature, history, and other intellectual pursuits through exposure to critical debates over the works he read. We cannot help reading books, Rorty (1988) says, "with questions in mind—not questions dictated by the books, but questions we have previously, if vaguely, formulated" (p. 32). Finally, Graff argues against the fear that reading works other than the classics will destroy students' ability to consider complex questions. "The fact is, with the world of knowledge becoming increasingly larger and more complex, the last thing anyone needs to fear is that the study of culture will become too easy. The seductive assumption, however, is that only certain classics possess enough substance to justify being studied" (p. 97).

ENRICHMENT READING AND ACADEMIC LIBRARIES

Library efforts to stimulate student interest and encourage reading fall into several categories:

- maintaining popular reading collections or “browsing rooms,”
- programs in promoting enrichment or pleasure reading, and
- reading lists compiled often in collaboration with faculty.

Christensen (1984) describes the Brigham Young University browsing collection and his analysis of circulation statistics which led to collection changes including: more paperbacks, emphasis on fiction especially science fiction, fantasy, and romance (which had been found to be the most popular subjects). He notes the problem of selecting titles for popular reading collections, often little more than a guessing game in many libraries. A literature search on the subject produced no substantive sources, and “gut feelings” seemed to guide book buying for browsing collections. Suggestion boxes, reading lists, lists of recommended authors, observation of what is circulating, book wear, personal reading habits, inventory and circulation losses, and visual appearance of the cover were among the methods used to develop such collections.

Zauha (1993), in her extensive review of recreational reading, readers’ advisory services, and browsing rooms in academic libraries, notes that today’s browsing rooms are vestiges of the 1920s and 1930s, developed in an era when academic libraries vigorously promoted recreational reading by students:

As repositories of works chosen from the main collection for their ability to uplift, relax, and stimulate the student reader. . . . Browsing rooms still perform this function today, offering readers the cream of the university’s newest acquisitions. Works of popular fiction, poetry, biography, and current events are selected out of the larger collection, enabling readers to cope with the profusion of information that has become characteristic of the academic collection. (p. 57)

Noting that almost no evidence can be found that browsing rooms are promoted or widely discussed today, she warns of the decline of institutional support and of the danger that they are in jeopardy of extinction in times of scarce money. How does the academic browsing room further the mission of the academic library to support research and curriculum? Wiener (1982) asserts that recreational reading should be considered a necessary and inevitable element of service, as a low-cost high benefit means of readers’ guidance, and as a center of intellectual and cultural activity for individuals and for groups. Zauha goes on to suggest mission-based roles for browsing rooms: as a public relations tool, a general stimulus for the intellectual life of students and faculty, a way to combat the academic library’s tendency to overwhelm users and stave off information overload, as a bridge to the regular collection, and as a gathering place for students unaccustomed to academic life in general.

The following strategies are among those that have been used to promote reading:

- At New Mexico State, the library compiles "In Celebration of Spring," an annual spring booklet of faculty reviews of novels to promote summer reading. Criteria include entertainment value, insight, and significance of the work. The longer-term goals of the publication are to encourage students in a lifelong reading program, to stimulate students' recreational reading, to allow students to get to know faculty on a more personal basis, and to promote good public relations between the community and the university (Mayhood & Stabler, 1993).
- Library staff at the University of Tennessee at Martin were delighted at the response from officials, including the chancellor and the governor, when they invited top administrators to list "the book that made a difference" in his or her life. The titles were subsequently incorporated into a display in the library (Nance, 1992).
- Bucknell University Library invited faculty and administrators to come to the library to speak about a significant book in their lives, not a review or academic critique, but about the personal influence of a particular book on an individual life. The goal of the series of presentations, "Books that Made a Difference," was to gain more insight into our colleagues and to bring more people into the library (Thompson & Sims, 1992).
- At the University of Texas at Austin, the College of Liberal Arts designed a four-year enrichment reading program, "The Texas List of Unrequired Reading" (1986). The stated purpose is to promote interest in good reading not by requiring students to read but rather by suggesting titles which might provide a sound program for personal study.
- Many libraries prepare enrichment or pleasure reading lists for students for a variety of contexts. At the University of Michigan, the Shapiro Undergraduate Library reference staff compile "Read, Read, Read," an annual list the University Admissions Office sends out to 10,000 potential students nationwide. Printed poster-format on high-quality newsprint, the list is designed to encourage pleasure reading and to help college-bound students get a taste of the enjoyment, richness, and variety of books at the college level.

But if faculty and librarians still believe in the importance of encouraging reading as an important component of the intellectual life of the undergraduate and for lifelong learners, what are the implications for educators of students who are growing up in an image culture?

REASONING IN AN IMAGE AND ELECTRONIC CULTURE

Birkerts (1994), in *The Gutenberg Elegies*, describes the cultural metamorphosis from the stable hierarchy of the printed page to the rush of impulses afforded by electronic communication. Suggesting that the price

of retooling for the electronic millennium is a sacrifice of the incompatible aptitudes required for reading and meditative introspection, he questions “who among us can generate the stillness and concentration and will to read Henry James, or Joseph Conrad, or James Joyce, or Virginia Woolf as they were meant to be read” (p. 191)? Describing books as portable enclosures, places one can repair to release the private, unsocialized, dreaming self, Birkerts writes:

The shadow life of reading begins even while we have the book in hand—begins as soon as we move from the first sentence to the second and start up a memory context. The creation and perpetuation of this context requires that we make a cognitive space, or “open a file,” as it were. Here is the power, the seductiveness of the act: When we read, we create and then occupy a hitherto nonexistent interior locale. (p. 98)

If we lose this ability to focus on the interior, apart from the external, world, we risk the “progressive atrophy of all that defines us as creatures of spirit” (p. 194).

Offering a near-apocalyptic vision of the death of higher civilization as we know it, Sanders (1994) weaves a complex argument on the relationship between human reason and language. Beginning with an analysis of oral preliterate culture and its dependence on ritualized languages and stories to sustain the culture and store information, he cites Havelock’s (1986) belief that:

Such language has to be memorized. There is no other way of guaranteeing its survival. Ritualization becomes the means of memorization. The memories are personal, belonging to every man, woman, and child in the community, yet their content, the language preserved, is communal, something shared by the community as expressing its traditions and its historical identity. (p. 70)

But written language and the existence of “authors” permit originality, the emergence of the self, and an individual separate from the community, able to speak with a singular voice shaped by singular individual experience. Sanders (1994) describes this transformation explicitly:

Writing—in particular, as we shall see, alphabetic writing—enabled this major change to take place. The reader could go over the same sentence time and time again, puzzling out its meaning, analyzing its structure. . . . A sentence could be scoured and sifted, finally for the very last drop of its truth. Reading and writing provided the key exercise for the literate mind, allowing a critical eye to be turned to everyday experience (p. 19). The fact that sentences can be read many times—re-searched for content silently by a person and in seclusion—slowly feeds and fills out that activity we call self-reflective critical thinking. (p. 67)

A world dominated by electronic media may ultimately deprive people of the ability to engage in reflective thought. Pearce (1992) provides an analysis of the potentially devastating effect of the bombardment of electronic images on human neural development:

Television floods the infant-child brain with images at the very time his or her brain is supposed to learn to make images from within. . . . Television feeds both stimulus and response into that infant-child brain as a single-paired effect and therein lies the danger. . . . As a result, much structural coupling between mind and environment is eliminated; few metaphoric images develop; few higher cortical areas of the brain are called into play; few, if any, symbolic structures develop . . . for there will be no metaphoric ability to transfer those symbols to the neocortex for conceptualization, and subsequently, no development of its main purpose: symbolic conceptual systems. (pp. 165-66)

Healy (1990) also argues that American students are not developing the neural networks upon which higher-level human thinking depends. In the critical periods when these powers must be developed by talking and listening, children are watching television instead. She describes the plasticity of the brain and its failure to form vital neural pathways in the absence of the experiences it needs to do so. She further warns that we may be raising children with "different brains" at particular risk for language-related learning, unable to think successfully about any problem requiring higher order thinking skills (pp. 45-46).

Steiner (1989) and Sanders (1994) explore the role of literacy and the ability of humans to reason abstractly, specifically by envisioning the future and by framing and considering "counter-factuals" (the ability to imagine realities other than those of immediate experience). "The future, counter-factuals—these two very crucial grammatical constructions serve as vessels into which we pour dreams and desires of change, of progress, of hope" (p. 56).

Sanders (1994) relates the decline of language directly to a decline in the loss of a sense of self among young people, perhaps a whole generation of "post-illiterates" who have abandoned, and even disdain, the book. He describes the unthinkable: a generation dispossessed of language—both verbal and written (p. 73). But Sanders appears to lump all electronic tools together, from the use of computers for writing to the emergence of a media dominated culture. He argues that: "Revising and editing *are* simplified with a PC, but what the student is doing is not writing in the truly literate sense . . . it would be impossible to compose *The Adventures of Huckleberry Finn* on a word processor" (p. 146). When one considers that most writers, even the most scholarly, use electronic means to record their thoughts, perhaps the debate runs afield when it attributes an unfounded monolithism to emerging technology.

Bolter (1991) argues for a more complex vision of the role of the book:

The printed book . . . seems destined to move to the margin of our literate culture. The issue is not whether print technology will completely disappear; books may long continue to be printed for certain kinds of texts and for luxury consumption. But the idea and the ideal of the book will change: print will no longer define the orga-

nization and presentation of knowledge, as it has for the past five centuries. This shift from print to the computer does not mean the end of literacy. What will be lost is not literacy itself, but the literacy of print, for electronic technology offers us a new kind of book and new ways to write and read. (p. 2)

And Lanham (1993) repeats Graff when he suggests that the real question is not whether students will be reading “Great Traditional Books or Relevant Modern ones” in the future, but whether they will be reading books at all (p. 3). He further suggests that we explore ways to use electronic technology to preserve “the book” without “preserving it in pickle” (p. 197).

Popular laments like Boorstin’s (1987) *The Image* and Postman’s (1985) *Amusing Ourselves to Death* describe the decline in values and reasoning in a media-dominated culture. Postman attributes the breakdown in cultural values to the media-induced decline in critical reasoning. Electronic media appear to have irreversibly changed the character of our symbolic environment in a culture whose information, ideas, and epistemology are given form by television and not by the printed word. Print is the hero; image is the villain because it does not require higher order abstract thinking (Lanham, 1993, p. 237). But Lanham argues for a distinction between mass media and the emerging digital environment: “We should not confuse this narcotizing of American society, horrible as it is, with the mixture of word, image, and sound emerging now through digital multimedia techniques (p. 201). Kernan (1990) and Hardison (1989) argue that electronic technology has destroyed the print-centered product we think of as literature along with the book-centered culture it created. But Bolter (1991) again takes a far more optimistic view of the ability of electronic technology to offer us a new kind of book and new ways to write and read, “a fourth great technique of writing that will take its place beside the ancient papyrus roll, the medieval codex, and printed book” (p. 6), suggesting “in fact, hypermedia is the revenge of text upon television. . . . In television, text is absorbed into the video image, but in hypermedia the televised image becomes part of the text” (p. 26).

Ulmer (1989) urges a positive response by schools to what may be a profound change in the process of conceptual thinking in an image and electronic culture, suggesting that schools participate in the invention of a new style of conceptual thought. He challenges educators to learn how to write and think electronically—in a way that “supplements without replacing” analytical reason. One essential paradox in any current examination of the issues at hand—namely the optimism expressed for electronic text—is that the analysis reflects an experience of print literacy that an electronic generation will lack. What will happen “to future generations of students who differ from Lanham, Landow, and Bolter in not having spent the first forty years of their lives mining the base cognitive

and psychological resources of print literacy. Those future generations may lack training in literate reason, linear argument, left brain conceptualization" (Tuman, 1992, p. 80).

But more recent analysis (Forsberg, 1993) offers some insights on helping students develop critical and higher order thinking in an image culture. Arguing that responsible education must teach children how to assess the image world in which they find themselves and how to evaluate the messages bombarding them on a daily basis, Forsberg warns that educators do not yet know how to teach students to think critically about this "enigmatic" world (p. ix). Recognizing that a major factor behind this cultural transformation is the shift in our dominant forms of communication—the movement away from a print-based culture toward an image-immersed culture—Forsberg warns that the television age may produce a new generation of people whose only vision of reality is the fragmented distorted image. She pinpoints the essential curricular challenge:

Books, in contrast to television, normally present us with logically ordered ideas: an overall theme, an introduction, a body, and a conclusion. . . . We know how to teach students how to evaluate a book. Television . . . has no such order or logic. At one moment it may show the most tragic image of human suffering and in the next moment it may present us with an image of McDonald's golden arches. There is no coherent line of reasoning, there is no standard for measuring the validity of one image over another, nor is there a logical flow to the sequence of images. . . . From what framework do we criticize this medium? (pp. 16-17)

Forsberg and Postman describe the way in which television or visual electronic media fail to allow the development of abstraction ability. Words refer to abstract ideas whereas television presents us with concrete images. The word is always an abstract concept removed from what it represents, whereas the image is always a concrete representation having some correspondence to what it represents. Postman (1982) asserts: "Pictures do not show concepts; they show things. Images do not require analytical thought; they do not require critical thinking skills, they ask us to feel not to think. . . . Televised images do not require critical thinking skills, nor do they foster critical thinking skills" (p. 79). Forsberg's research, however, concludes that it is not only crucial, but *possible* to develop image-based critical thinking skills. Extending Korzybski's (1958) theoretical concepts for the critical evaluation of language to the critical evaluation of images, Forsberg defines four underlying principles of critical thinking about any system of symbols: understanding the correspondence between symbols and reality; being conscious of abstraction; recognizing the correct order of symbolizing; and understanding the structural biases of our symbols (p. 87). She describes a general model for a critical think-

ing curriculum in an image universe, a curriculum designed to create an awareness of differences, context, change, relationships, what has been neglected, forgotten, or left out, and finally a healthy skepticism (pp. 165-84). Future research in this area may offer some hope that the transition from a print to electronic culture does not have to be at the sacrifice of reasoning and analytical skills, providing elementary and secondary education moves quickly to incorporate image-based critical thinking in the curriculum.

THE ROLE OF THE ACADEMIC LIBRARY

What are academic librarians to make of this rapidly changing world, much of which is seemingly beyond their power to influence? And what role should academic libraries play in the undergraduate curriculum when teaching faculty are confronting a new generation of students cognitively and affectively different from their predecessors? If the future of the traditional codex appears bleak—if not completely moribund—conflicting views suggest differing interpretations on how damaging this marginalization of print as a medium might be. The issues are far too complex to lend themselves to easy prescriptions, but it is possible to synthesize several conclusions from the volume of research and discussion on reading, critical reasoning, and the increasing digitization of knowledge.

The book, even in its traditional form, is still far from dead. Stoll (1995) raises some provocative questions challenging our overconfidence that information technology will preserve the breadth of our knowledge, particularly in ways that are meaningful and accessible. Negroponte (1995), *soi disant* nonreader and head of MIT's Multimedia Lab, explains why his book *Being Digital*, was being shipped by Knopf as atoms residing on a printed page rather than as transmitted in digital bits. The current technological interface is still clumsy; the success of his text-only column in *Wired* magazine confirms the large audience for information integrated as stories; interactive multimedia leaves very little to the imagination, while the written word sparks images and evokes metaphors that get much of their meaning from the reader's imagination and experiences. Imagination is still a powerful human extension for understanding things outside the realm of personal experience (pp. 7-8). At the same time, for many kinds of information, the printed text has been perhaps the least effective and most restrictive medium of communication. Emerging technology, from hypertext to multimedia and beyond, can enhance understanding rather than limit it.

Stories, narrative, literature, and art appear to be intrinsic components of human culture, but the assumption that any particular medium—even one that lasts for centuries—will exist unchanged forever is naïve.

Coover (1992), in his widely read essay in *The New York Times Book Review*, notes that "you will often hear it said that the print medium is a doomed and outdated technology, a mere curiosity of bygone days and destined soon to be consigned forever to those dusty unattended museums we now call libraries" (p. 1). But Coover goes on to offer a vision of reader/author cohabitation in a new nonlinear discourse afforded by hypertext. A curriculum established around writing in hypertext is emerging at colleges and universities across the country, and librarians must be willing to explore new collection development and curricular roles in this context. Sustaining the culture of the book may mean preserving our stories and fostering the student's engagement with those stories regardless of the format used to record them.

Critical thinking is likely to continue as a significant component of secondary and postsecondary education. Librarians as faculty, as designers of user instruction, and as collaborators on curriculum issues must keep abreast of research and emerging models in this area. Further, librarians need to extend the body of research and practice in academic librarianship related to learning theory and critical thinking in order to devise appropriate models for the electronic environment.

If, as some researchers suggest, human cognitive development is being profoundly altered by image-intensive stimuli from infancy, it is certainly true that higher education must respond to those changes. But it is also likely that the elementary and secondary curriculums will have to reckon with this issue first. There is a critical role for academic libraries to play, not only in even closer partnership with teaching faculty and administrators working on redesigning undergraduate education, but in cooperation with elementary and secondary schools to build effective partnerships in the education continuum. At the same time, librarians must develop new and stronger partnerships with publishers and media developers, all of whom are diversifying in response to the bottom line. From electronic reserve systems and customized textbooks to multimedia product development, scholarship and learning may suffer, not from the technology, but from decisions made on market factors alone unless higher education institutions are actively involved.

Finally, academic librarians must be willing to accept the distinction among text and print, art and information, knowledge and its medium of transmittal. There is a future for the making, though not to be won without a profound sense of relinquishment and extraordinary transformation for all of us who serve as the bridge from our own past to our students' very different futures. How we design our facilities, what we define as "collections," how we teach students, and, most important of all, how we sustain our commitment to preserving our culture's stories and encouraging students to know them—the success with which we do this will determine our future.

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