Influence of the Digital Environment on Literature for Youth: Radical Change in the Handheld Book

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ABSTRACT

A RADICAL CHANGE, AN UNALTERABLE TRANSFORMATION in form and content, is underway in handheld books for youth, influenced by the digital environment of the 1990s. The multilayered, nonlinear, nonsequential, graphic, interactive nature of digitized communication and the affinity of children for it are examined. Numerous examples of handheld literature for youth reflecting these digital influences are woven into the discussion. A new framework for literary criticism and evaluation, taking account of the radical changes in literature for youth, is proposed. The author suggests that: (1) those involved with criticism or evaluation of children's literature will take account of the constructs of radical change in order to employ an appropriate holistic context for examination; (2) children's increasing freedom from the dominance of a limiting adult definition of their capabilities will be reflected in how their handheld literature is structured; (3) printed handheld literature will continue to be calibrated to changes in the digitized environment; and (4) further radical changes in literature for youth will develop in a nonlinear, nonhierarchical fashion.

INTRODUCTION

The influence of the digital world on literature for young people extends well beyond materials produced in actual digital form. The extent to which the digitized format has affected or is reflected in the familiar handheld book for youth is substantial. A radical change, an unalterable transformation in form and content, is underway in the arena of

print materials for children, a manifestation that is natural and inevitable in an increasingly electronic society.

Intermittent precursors to the transformation that is permeating much of children's literature can be found well before the current digitized world emerged into full public view and the rapid move toward ubiquity of the computer began. The synergy between words and pictures in the nineteenth-century illustrations of Randolph Caldecott and the nonlinear text in Lewis Carroll's Alice books are similar to certain literary characteristics manifested in contemporary books influenced by the digital environment. Important to note is that these and others of the scattered precursors to the many radically changed books for youth now identifiable do not represent the beginning of a trend or linear progression that can be traced to the present but were produced by artists whose understanding of children and of communication was far ahead of their time.

A pivotal difference exists between past environments and the milieu in which the literature is now created. An environment which calls for pondering "the child and the digital library" provides a setting which, while not necessarily a primary cause, is a catalyst for the fundamental alteration which is taking place in the body of literature for children. The nature of the change suggests a calibration of the literature—unpremeditated and often unrecognized by its creators—to match certain features of the digital environment. One relevant feature of this environment is an increasing understanding of children, their abilities, and how they interact with information resources, including the book, in the electronic age.

Some of the differences in today's literature for youth result from advances in the technical aspects of publishing—i.e., the replacement of such traditional tasks as typesetting and color separation with electronic processes affects what the end product can be. These procedures are often economically more advantageous and provide more flexibility to authors and illustrators in how literature can be created and presented. The focus of this analysis, however, is on the changes that are taking place in the content of the books rather than their manufacture. Concentration is on how these alterations reflect similar properties of digitized information rather than on *how* these transformations occur. An assumption underlying all that is said is that the computerized production process makes many of these changes possible.

Radically changed literature for youth calls for a new approach to literary criticism, a new acknowledgment of what constitutes the act of reading itself, one which is appropriate in an electronic era and can allow the critic—be she or he scholar or librarian—to move easily from one mode of literary presentation to another. Dresang (in press) has analyzed and categorized multiple changes that are occurring with youth and their literature in the digital world. This article focuses on only one

of the three major types of changes identified by the author in her book
and presents only a portion of the critical framework for examining
children's literature of the digital age. Even this partial examination of
how the particularly germane capabilities of digital information translate
and successfully incorporate with pertinent features of books offers in-
sight into often ignored relationships between traditional and electronic
modes. The constructs of this new paradigm can ease the tension and
build a bridge of understanding, a way of communication, between those
who embrace the new and those who value the traditional presentation
of literary matter for youth. It can pave the way for an expansive model
of a digital library for children.

THE VOCABULARY OF CHANGE

Literature, as used in this discussion, means text or illustration or other
graphic representation having excellence of form in expressing ideas of
widespread or long-term interest published in a handheld printed book
format. Information, as it will be used in this discussion, means facts or
ideas which have been interpreted and applies to the content of both
fiction and nonfiction literature. Digital environment will be used in the
context of the current and recent past in which capabilities for commu-
nication offered by the personal computer, the Internet and Web brows-
ers, and digitized electronic formats such as CD-ROM have become wide-
spread in use and even more widely recognized as well as the influences
which these capabilities have had on the properties of the communica-
tion and exchange of information. This influence of the digital world on
communication represents a complete paradigm shift, yet many are not
aware of the extent of its impact. According to Nelson (1992) as he dis-
cusses the new paradigm of the digital world: "A paradigm is so much a
part of the way you think that you are not even aware of it" (p. 43).

Burnett (1992, 1993), Poster (1990), Deleuze and Guattari (1988),
Harnad (1990, 1991), and others have proposed a fundamental theoreti-
cal framework within which to understand and explain communication
in the digital world and its lack of linearity. The rhizome is offered by
Deleuze and Guattari as a model for this framework and elaborated upon
by Burnett. A rhizome is a large root-like structure which is often
subterraneous and horizontal. Stems and buds do not grow up from it
but root below in a hierarchical pattern, and buds, nodes, and leaves
sprout here and there in an unpredictable nonlinear arrangement. A
hierarchical structure or pattern may be part of a rhizome but the overall
structure is not a hierarchy. It is this nonlinear, nonhierarchical nature
of communication in the digital environment that has had a profound
influence on literature for youth.

The "current and recent past" era which constitutes the digital envi-
ronment begins with the last decade of the twentieth century—the decade
when digitization became commonplace and visible to children—but in-

corporates qualities of preceding electronic advances both digital and nondigital. Dresang and McClelland (1995, 1996) have documented the changes taking place in children's literature in the 1990s which reflect qualities of this digital environment. Throughout the decade, the best of literature for youth each year has evidenced influences of the digital world in greater numbers and percentages (see Figure 1). Award lists, the "best" in various categories, show similar increases. All three 1995 Newbery Award and Honor books, published in 1994, *Walk Two Moons* by Sharon Creech (award), *Catherine Called Birdy* by Karen Cushman, and *The Ear, the Eye, and the Arm* by Nancy Farmer are, for example, books exhibiting these digital environment influences. *Children* in this context refers to those young people living in the United States who are reading books published by the juvenile divisions of trade publishers. The beginning of this era is at the birth of an individual and the end may be early to late teens.
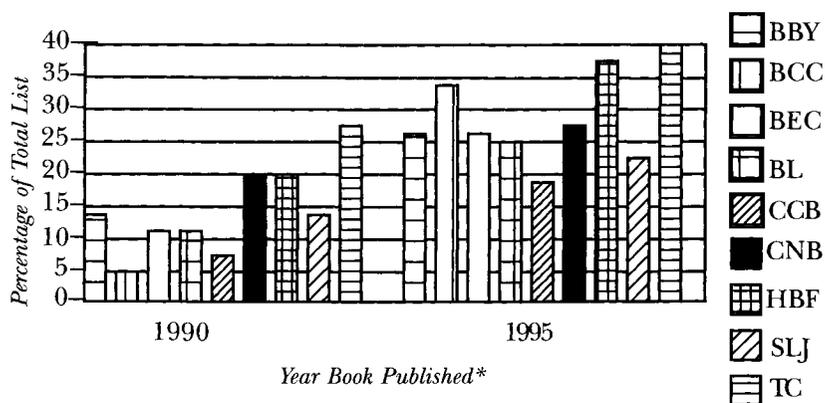
A content analysis of annotations, matching characteristics of radically changing books as defined by Dresang with descriptive terms, was conducted to produce the percentages. The content analysis, however, was not based on strictly controlled terms and is a general indicator only.

Key to journals: BBY = *Best Books for Young Adults,* BCC = *Bulletin of the Center for Children's Books: Blue Ribbons,* BEC = *Booklist: Editor's Choice,* BL = *Book Links,* CCB = *CCBC Choices,* CNB = *Children's Notable Books,* HBF = *The Horn Book Fanfare,* SLJ = *School Library Journal's Best Books for Young Adults,* TC = *Teachers' Choices.*

*Some lists are labeled as year published, others as year cited. Chart reflects year published.

Figure 1. Percentage of books for youth reflecting characteristics of the digital environment on annual best book lists 1990 and 1995.

Other concepts of the digital age which have specific meaning in this context—i.e., *hypertext, hypermedia, interactive,* and *graphic*—are explained as they appear.

CHILDREN IN THE DIGITAL WORLD

The transformations of handheld books in the digital library relate to children and their seemingly innate affinity for certain of the communication capabilities offered by data which have been digitized. In order to understand how life differs from former eras for children in the digital environment, in order to understand how the radical change in how they are perceived parallels the radical change in their literature, it is necessary to have a broad perspective of how adults have construed and constructed the world for children from the time of the invention of the printing press in the fifteenth century until this last decade of the twentieth century.[1] The printing press made possible and seemed to call for a previously less specifically differentiated world for adults, who felt the need both to own and to "protect" children from many of the ideas which were now written and widely circulating. Grendler (1983) discusses the concomitant spread of ideas and urges for censorship—an occurrence that was particularly isolating for children.

Numerous scholars have studied or commented on adults' perceptions of childhood (Aries, 1962; Cleverley & Phillips, 1986; Pollack, 1983; Hawes & Hiner, 1985; Nodelman, 1992; Warner, 1994, pp. 43-62; Nodelman, 1996, pp. 67-87). Academic research has considered as well how the adult perception of children is revealed in their literature (Avery, 1994; Bingham & Scholt, 1980; Lurie, 1990; Griswold, 1992; Rose, 1992; MacLeod, 1994; Nodelman, 1996, pp. 91-136). There is considerable debate among these scholars and others about the exact perceptions adults have had of children and, in fact, whether the end of the Middle Ages and spread of the printed word was the beginning of childhood as "other" rather than some former time. Adults have characterized children as innocent, naïve, and good; as undisciplined, even savage; as morally inferior; as morally superior, sometimes positing contradictory characteristics to be exhibited simultaneously. Warner (1994) points this out in her analytic essay "Little Angels, Little Monsters." Certain contemporary writers believe that children have been "hurried" into adulthood (Elkind, 1981; Postman, 1982), wishing to preserve what they regard as the sacred space of childhood for children. Nodelman (1996) comments on these many assumptions about children:

> The danger in the assumptions [is that]...they define childhood almost exclusively in terms of its limitations: What most characterizes children is that they are less knowledgeable, less resilient, less resistant to influence than adults. If these ideas are true then children's ability to respond to literature with any degree of. . .understanding is seriously limited. (p. 74)

As Nodelman points out, although there have been varying and con-
flicting attributes ascribed to children and childhood over the past five
centuries, the central tenets of society at large have never described chil-
dren as capable of, or suited for, making complex decisions or creating
knowledge. The emphasis, rather, has been on the need for children to
know or at best discover in limited measure what others have already
thought. Textbooks and teachers have been commissioned for this pro-
cess. Literature for children has reflected this widely held point of view
of the need to instruct the young in preparation for later contribution
but to protect them, in general, from the "world." In his preface to *I
Dream of Peace: Images of War by Children of Former Yugoslavia*, Maurice Sendak
(1994) refers in the face of today's world conditions—conditions of the
global village—to the irony that children should be protected rather than
taught to deal with the environment in which they live:

> The children know. They have always known. But we choose to think
> otherwise; it hurts to know the children know. The children see. If
> we obfuscate, they will not see. Thus we conspire to keep them from
> knowing and seeing. And if we insist, then the children, to please
> us, will make believe they do not know, they do not see. Children
> make that sacrifice for our sake—to keep us pacified. They are re-
> markably patient, giving and all-forgiving. It is a sad comedy: the
> children knowing and pretending they don't know to protect us from
> knowing they know.

From diverse walks of life, Perry Nodelman, Maurice Sendak, and
Seymour Papert present evidence that children's abilities have been un-
derestimated, and that they can deal with far more complex situations
than previously acknowledged. Seymour Papert is a professor at the Mas-
sachusetts Institute of Technology, a former professor of mathematics,
and co-director of the Artificial Intelligence Laboratory, founding mem-
ber of the Media Laboratory, and director of its Epistemology and Learn-
ing Group. He has worked extensively with children and computers and
invented a computer language for children—Logo—which, because it is
used with Lego images, has become known as Lego Logo. In *The Children's
Machine: Rethinking School in the Age of the Computer*, Papert (1992) speaks
directly to the qualities of thinking that permit children to succeed in a
digital world. It is actually the *process of learning*, an empowering, connec-
tive, exploratory, creative process, which children need to learn rather
than a specific knowledge content. Digital technology offers—actually
demands—a way that schools can encourage this empowered type of learn-
ing rather than stifled, regulated, regimented thinking.

Papert notes that children have an affinity for the computer that is
difficult for adults to understand. Nicholas Negroponte (1995), profes-
sor of Media Technology, also at the Massachusetts Institute of Technol-
ogy, observes in his book, *Being Digital*, that children, unlike many adults,

take the interchangeability and nonlinearity of bits of data as normal. For children, the openness of the digital environment provides for them an opportunity to explore and make connections with others and within themselves in a way that has not previously been accessible to them.

One aspect of children's capabilities that fosters the changes occurring in the digital world and the concomitant changes in children's literature relates to their active involvement in information seeking. Dresang's interest in the current interaction of children with resources and within resources in the digital world stems from a 1981 quasi-experimental study in which she demonstrated the value of children's active participation in the decision-making process when seeking information on a particular topic. She studied several conditions during which young people were exposed to media about persons with disabilities. The impact of the message on changing attitude in a positive direction was the greatest when the young people viewed, heard, or read information on topics which they had chosen rather than those which the teachers had deemed best, even within the constraints of a set topic. Linked to this observation, Dresang has taken note that the broad range of choices in which many children are involved in the digital world enable them to hone their ability to select, gain, integrate, and organize knowledge, and then to apply it, all within the process of interacting with resources. The digital world is expansive and so are the changes in literature for youth, and the opportunities for choice these changes afford lead to positive results for those who take advantage of them.

RELEVANT CHARACTERISTICS OF DIGITAL COMMUNICATION

If children are ready to receive, what is the digital world ready to give? Multilayered, nonlinear, nonsequential, graphic, interactive—these are descriptors frequently applied to the digitized format which allows direct access to any bit or byte of data. Digitized communication for years was predominantly text based. It has now come to be associated in the general public with graphical interfaces such as Netscape for the World Wide Web or Windows and Macintosh applications for personal computers. In 1996, 20 percent of homes in the United States had access to digital information, but its influence has spread far beyond that range. The characteristics of the digital environment have evolved in another communication mode—that of literature for youth, which traditionally has been considered *sequential* ("what comes next" clearly and directly related to what comes before), *linear* (a step by step "one way only" progression), graphic only for the very young, and with narrow parameters for interactivity prescribed by the author of the text.

Digitized media often, but not always, are associated with what is known as *hypermedia*, a term which, in turn, was preceded by a concept known as *hypertext*. Theodor H. Nelson in the 1960s coined the term

hypertext to refer to electronic text that "branches and allows choices to the reader." George P. Landows, a professor of English at Brown University, is a prominent hypertext theorist. In his book *Hypertext: The Convergence of Contemporary Critical Theory and Technology,* Landow (1992) describes hypertext as "text composed of blocks of words (or images) linked electronically by multiple paths, chains, or trails in an open-ended, perpetually unfinished textuality described by the terms *link, node, network, web,* and *path*" (p. 3). Landow points out that the basic theses of hypertext were developed in the print environment with footnotes serving as an example of a familiar form of nonsequential reading.

The referent to the blocks of texts, *lexias,* was coined by French literary scholar, Roland Barthes. The concept of *lexias*—i.e., freestanding blocks of texts—as they exist in hypertext is one of the most significant in examining the influence of the digital world on literature for youth. DK, known until 1996 as Dorling Kindersley, is the publishing company which stands out above all others in producing information books for young people which contain, actually are composed of, numerous lexias. Said *Publisher's Weekly* when this British-based firm opened its American office: "The DK 'look'—with its liberal use of photography and innovative layouts—is a natural for children, especially the TV and computer-jaded generation" (Richheimer, 1991, p. 30). *Stephen Biesty's Cross-Sections Castle* (1994) can be read sequentially, but it is unlikely that children would choose to read all the lexias or blocks of text on any given page or even that they would read the pages in order but rather might explore a theme of interest, going from page to page, weaving their own story, creating a sequence of their own. Any page might be a starting place, and any section of any page might serve as a link to another, very similar to a hypertext structure. Says John Sargent, at the time CEO of DK in the United States: "We want kids to explore at their own pace rather than use our books just to find a specific piece of information quickly" (Lodge, 1996, p. 42).

Burnett extends the meaning of hypertext by looking to the root word for "text" which derives from the Latin *texere.* This origin refers not to the written word but to "weaving." Says Burnett (1992):

> I like the sense that this lends to the meaning of "hypertext" as an art "beyond weaving," allowing for infinite variation in color, pattern, material and structure. It is unfortunate that this is not the way the term is commonly understood, because it gets to the heart of what it signifies (p. 2).

Nelson used *hypermedia* interchangeably with *hypertext.* While Burnett concurs that this is often the practice, she suggests—and her suggestions govern the context of this discussion—that hypertext refers to the structure of any medium that demonstrates traits described by Landow, "traits that are usually obscured by the enforced linearity of paper printing"

with her added dimension of more fluidity in the weaving of information paths. Hypermedia, with this understanding of hypertext, is a vehicle of information transfer for any medium in hypertext structure.

By providing the navigator, as the user of hypertext is often called, with multiple choices that must be made, hypertext forces an experience that is more *interactive* than that of ordinary text. According to Carolyn Meyer and Martha Petry (1992), hypertext novelists, "the difference between reading hyperfiction and reading traditional printed fiction may be the difference between sailing the islands and standing on the dock watching the sea" (p. 24). Roland Barthes, along with Louise Rosenblatt (1937, 1982), a pioneer thinker in reader response theory, would have described this in more scholarly literary terms, saying that there are "writerly" texts and "readerly" texts (Barthes's categories) with the latter being those which demand more involvement from the reader, and give the reader more of an opportunity to share his or her experience with the text. Digital resources often force some level of interactivity that is not usual in the traditional printed book as do books which also reflect the characteristics of the digital environment.

Bull Run (Fleischman, 1993), a readerly text, is a historical novel with sixteen main characters, each represented by an icon preceding his or her three to five *lexias* or blocks of text that are a half page to a page and a half in length. The characters do not appear in a "scheduled" order. In the back of the book they are listed by North and South and their voices reflect gender, class, military, civilian, main player, and observer perspectives, among others. The manner in which Paul Fleischman wrote *Bull Run* gives the reader the freedom to move from lexia to lexia in whatever pattern he or she chooses in numerous nonlinear nonsequential ways. This was *not* the intention of Paul Fleischman, a musician as well as an author, who explains that he wrote *Bull Run* as a symphony and that the blocks of text are in the order that they must be to build into an orchestrated piece.[3] But Dresang assigned this book, without comment on how to approach it, to a class of graduate students in the School of Library and Information Studies at the University of Wisconsin, and found that two-thirds of the students reported, when asked, that they had not read this book in a linear manner. These readers used the index to read favorite characters' pieces first or to read all of the Southern perspective at once or to read by gender and in numerous other ways. These readers in the digital environment took the author's work, written in an icon-based form familiar to them in a digital environment, and turned it into a hypertext experience, something impossible with many linearly written books. This electronic age, icon driven format which Fleischman used provides the opportunity for the reader to participate in Fleischman's vision of the story or to create his or her own. It does, in fact, fit well with Burnett's (1992) description of the "infinite variation in

color, pattern, material and structure" that makes reading an art "beyond weaving" for the reader (p. 27).

Author and illustrator David Macaulay (1990) produced in *Black and White*, for which he was awarded the Caldecott medal, a book with four stories on each two-page spread about which he warns the reader in the beginning: "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." This is a prototype of a book evidencing characteristics of the digital environment. Dresang and McClelland (1995) have made the following observation:

> David Macaulay has succeeded in creating a transformed picture book, a book that maintains the hand-held comfort of the old with the mental and visual challenges, nonlinear interactive, thought-provoking, multilayered, hypertext experience of the new....The nonlinear book forges a new kind of fiction. It assumes that narrative is based as much on accumulated impressions as it is on plot and character development. Although all interpretation of literature depends upon reader response, the more choice given to the reader by the author, the more important the accumulated impressions of the reader are. (p. 708)

There is no one "right" response to the warning Macaulay has introduced at the beginning of his book. In his 1991 Caldecott acceptance speech, Macaulay (1991) said, "it is not necessary to think in a straight line to make sense" (p. 346). This is the message of computer age, hypertext-familiar children. In his Caldecott talk, David Macaulay continues, "it is essential to see, not merely to look" (p. 346) pointing to the in-depth involvement readers must have in order to make sense of his text, to follow links of their choice as they weave together story.

Macaulay, since the publication of *Black and White*, has continued to explore nonlinearity of text—e.g., in *Shortcut* (Macaulay, 1995), a story with nine short picture/text chapters. Through words and pictures, the reader is actively engaged in tracing events in all subsequent episodes back to those that take place in the first. The realization gradually comes, although it is not immediately obvious, that "everything counts," and that the reader must be keenly alert in order to "link" the various story elements. The richness of Macaulay's literature for youth does not come easily. *Black and White* was ten years in the making. For several years Macaulay has worked on a book about the city of Rome, developing a number of almost-complete versions, then discarding them as off-track. In this creative venture, Macaulay is once again challenging the handheld book to exhibit the flexibility of digitized media. His most recent version, with the working title *Eternal City*, connects Rome with any city. In its draft form, it is a book with ten foldouts, a layering of the old and the new. "New things," says Macaulay, "on old things gives significance, reas-

surances." Macaulay's (1991) work continues to emphasize that "it is not necessary to think in a straight line to make sense" (p. 346). Macaulay wants his readers to see and make connections, connections that have meaning for them.

Multilayered is a term which is often applied to information or to digitized media arranged in hypertext structure for the obvious reason that often as one travels from one spot to another in the hypertext structure, one encounters many layers of information, sometimes bringing more specificity to a topic, sometimes relating it to another topic. Multilayered is also a term applied to the tiers of intellectual interpretation that can be applied to a text. The multilayered nature of the handheld book for youth is not so obvious even though, in a certain few books for children, layers of meanings or interpretation have existed. Multilayered literature is much more prevalent in books for adults. Perhaps this is due to the notion that such complexity will confuse children, that they (again in adults' perceptions) need properly to think in a linear logical manner. With the advent of multiple layered electronic devices, children have demonstrated their comfort level with far more complexity than adults previously thought possible or appropriate. The layering of children's literature occurs in various ways but, in each, it calls upon the child to become more engaged, to make more decisions, to interact more with the text in order to complete the reading experience.

In the summer of 1996, the Association for Library Service to Children (ALSC) held a preconference called "Connectivity: Kids, Books, and the Electronic World." The speakers were chosen as those whose work reflects the influence of the digital world. David Macaulay, whose work is not only nonlinear but also multilayered, was the keynote speaker. Sharon Creech, author of the 1995 Newbery Medal book, *Walk Two Moons,* was among panelists for the discussion on "Agents of Change." About *Walk Two Moons,* fifth grader Jerusha Burnett commented: "There are many layers of story—a story on top of a story on top of story." Sharon Creech, a teacher of young adolescents, discussed *Walk Two Moons* at the ALSC preconference:

> Sal, it seemed to me as I followed her along, would tell the tales the only way she could, following the twists and turns of her mind: moving forward, digressing, moving forward again. As she moved both forward and back, collage-like images clump and group, and patterns emerged.
>
>   Some readers will instinctively respond to this collage technique, but it probably requires patience on behalf of some other readers. Children, however, don't seem to be impatient with this technique. They seem to understand that it will all connect; they have faith; they seem to enjoy this piecing together of the collage, and their own role in stitching it together.

Creech has written a nonlinear multilayered "readerly" text. Although

she believes that the nonlinear thinking of children is stimulated by art and music and many other aspects of life, she observes that: "Anyone who has watched children work and play with computers has seen how their brains are *fired* by these contraptions. Part of the appeal is the playfulness of computers: you can tumble with language and images, you can move them around and erase them and combine them. And you can do this quickly and on your own."

A 1996 picture book by George Ella Lyon, illustrated by Peter Catalanotto, emulates this multilayered playfulness of the computer screen by presenting the happenings in *A Day at Damp Camp* on each page as layer upon layer of rectangular pictures within pictures, a format clearly reflecting the digital world. Janet Hickman's (1994) novel, *Jericho*, interweaves the lives of twelve-year-old Angela and her great-grandmother in a nonlinear nonsequential textual pattern. Konigsburg's (1996) *The View From Saturday* provides intricate nonlinear weaving of story bits from the lives of four sixth-grade Academic Bowl scholars.

Observation of children reading these nonlinear multilayered texts offered them gives anecdotal evidence of their comfort with the hypertext structure. Academic research concerning children's use and interaction with hypertext materials is limited and much additional investigation is needed. A study by Shin, Schallert, and Savenye (1994) of children's achievement and attitudes using digitized hypertext lays the groundwork for further investigation and catalogs some of the complexities in this arena. The results of this study show that both low prior knowledge students and those with high prior knowledge can benefit from a hypertext environment under certain conditions.

In observing the increasingly digital world, what is most evident is that the linear, sequential, print-oriented experience for acquiring information—an expectation of the past—is no longer the predominant or favored mode. Where the linear sequential mode continues to exist, it is moving to a place within the hypertext structure and hypermedia mode, rather than serving as the preferred organizing structure and mode. This is recognized in the online environment and, while it is acknowledged to some extent for children as well as for adults, it is not as clear that it is happening offline as well as on. A handheld printed book can be hypermedia, the information transfer vehicle for a hypertext structure.

THE GRAPHIC CHARACTERISTICS OF BOOKS

Literary books are developing in the digital environment to incorporate many of the characteristics that digital storage offers: multilayered, nonsequential, nonlinear, interactive presentation of content, often unlike traits of most previous literature for youth. But in one sense—i.e., the frequent graphic presentation of the digital world—the visual nature of books for young children lay as a particularly fallow fertile ground for

the radical changes that have come.

Graphic is a word that has acquired a specialized meaning for the digital library. It is not simply clear or vivid presentation, the more generic or more common understanding of the term. In this context, graphic refers to the pictorial arts—all types of visual presentations and designs, including the use of the printed word to represent sound or convey meaning from the way it looks as part of the pictorial presentation. A book, therefore, may be described as graphic and contains no pictures other than the arrangement of the words themselves, no words other than the words behind the pictures, or a combination of words and pictures.

Particularly relevant developments are the evolution of the picture book and of the comic book. The picture book of the past was regarded as easier to understand than written text and thus easier for pre-reading by very young children. The comic book of the past, with some good reason, was largely disparaged and ignored as encouraging low-level thinking and nonliterary content—i.e., trash. Current thinking on both of these forms, as part of the radical change taking place, is turning to the realization of the complexity of "reading" pictorial information, including that presented in comic format, and the higher level skills which are, in fact, called upon. Concomitantly, the contents of the picture book and the comic have become relevant to older as well as to younger readers and to those interested in the pleasure of literature rather than simply the pleasure of reading.

WORDS BECOME PICTURES, PICTURES BECOME WORDS

The importance of the visual/visual verbal interplay in books for the very young has been recognized in books for youth since Orbis Sensualium Pictus (1672—original edition circa 1657, first American edition 1805) by Johann Amos Comenius (1967), which is generally recognized as the first picture book for children, other than illustrated alphabet books. Said Comenius in the preface, the book will "entice witty children" because "it is apparent that Children (even from their Infancy almost) are delighted with Pictures & willing to please their eys with these sights." But widespread recognition of the overwhelming importance of visual information to youth of all ages has expanded rapidly in the digitized world with its readily available, often predominant, visual images. Now enough of such books for older youth have appeared to warrant more than nine books and articles on the topic in library and education periodicals during the past four years including Gale Sherman's (1996) Picture Books for Older Readers.

The most comprehensive theoretical look at the picture book for youth, Words about Pictures by children's literature critic Perry Nodelman (1988), professor of English at the University of Winnipeg, contains a detailed analysis of the complicated and profound relationship between

printed word and graphic representation. Nodelman refers to Roland
Barthes's use of the phrase "unity on a higher level" which, Nodelman
explains, is the difference between the words and the pictures, creating a
significant source of pleasure to the "reader" (p. 209).

The radical changes occurring in picture books for youth embrace a
new level of *synergy* between words and pictures, a dramatic manifestation
of this "unity on a higher level" to which Barthes referred, a more sophis-
ticated, more complex interaction of discrete parts with a total effect,
differing from the sum of the individual efforts or from the contribution
of each part standing alone. This heightened verbal/visual relationship
is one change that characterizes the development of the picture book in
the decade since Nodelman penned his words. Words are becoming pic-
tures, and pictures are becoming words.

In Jon Scieszka and Lane Smith's (1992) *The Stinky Cheese Man and
Other Fairly Stupid Tales,* the tales are told with the print visually represent-
ing the intent of various moods and paces within each story—it changes
color, shape, sizes, and font as the stories dictate emphasis of different
sorts. Sometimes the words run off the page or bend or break with the
other visuals. "I'll grind your bones to make my bread" is in a very large
type face while "Shhhh. Be very quiet. I moved the endpaper up here so
the Giant would think the book is over" is much smaller. Often the type
becomes larger and larger as a story becomes more exciting, more dra-
matic. In "The Stinky Cheese Man Goes to College," the title of one of
his "Carte Blanche" columns in *Booklist* , Michael Cart (1995) notes that
The Stinky Cheese Man was cited not only as a Notable Children's Books
and as a Caldecott Honor Book, but "more significantly. . .it was also
named a Best Book for Young Adults." Cart acknowledges that "the
books...have been changing dramatically," and refers to these picture
books for older readers as "crossoverers" (p. 695).

Yumi Heo (1994) plays with the concept of words as pictures in her
picture book, *One Afternoon.* Minho and his mother take a walk to do
simple chores—the story as told by the narrative text is simple, linear,
straightforward. But the narrative text is not the only text that tells the
story—embedded in, and a synergistic part of, each picture are words
that provide the "sounds" of what is happening: the thump, thump, thump
of the Laundromat, the Reeeeeeeee of the ice cream machine, the MEOW
of the cats, the WUF, wuf of the dogs; the WHURRA, Whurra of the shoe
repair shop. And not only are these onomatopoeic words used to evoke
sound, but they are part and parcel of the visual representation: the
Thump, Thump goes round and round in the dryers, the Reeeee ema-
nates from the machine making a milk shake; the WUFS and the MEOWS
romp around the page with the dogs and the cats. The words have be-
come pictures, just as they have in Vera Williams's (1991) *More, More,
More, Said the Baby,* a picture book for the very young in which the hand

painted words become an integral part of the pictures.

In Robie Harris and Michael Emberley's (1994) *It's Perfectly Normal: A Book about Changing Bodies, Growing Up, Sex, and Sexual Health*, words and pictures present a synergistic collage of information. Lindy Hidy is listed as the book's designer—a partner of increasing importance and visibility in graphically sophisticated books for youth, sometimes recognized on the title page in tandem with author and illustrator.

This synergy of words and pictures extends a step further. Books which are not, in fact, picture books or even illustrated books but which have the quality of words becoming pictures are another product of the graphic environment of the digital age. In Vera Williams's (1993) *Scooter*, the main character tells her own story in intermingled words and graphics; in Virginia Euwer Wolff's (1993) *Make Lemonade*, the print visually represents the less-than-linear life of the characters; in Jacqueline Woodson's (1995) *From the Notebooks of Melanin Sun*, Melanin's diary appears in italics; and in Karen Hesse's (1996) *The Music of Dolphins*, the print becomes smaller as Mira leaves her life with the dolphins and becomes more integrated with the human world, only to reverse when she begins to realize she must return to the sea.

The alteration in picture books cannot be entirely explained by this more intricate synergy of words and pictures. In its most radical form, it is the beginning of a "language" of nonverbal communication through pictures. Wordless picture books for children have existed for many years, but in these books the pictures are often merely a prompt for the words underlying them. In fact, Nodelman (1988) makes the case that the pictures alone cannot have the richness of meaning that they have accompanied by a text which focuses them (p. 211). The most radically changed picture book, however, may not be dependent on underlying verbal structure but "speaks" ideas for which the verbal language is inadequate. Tom Feelings (1995), another participant in the ALSC preconference on kids, books, and the electronic world, worked for twenty years creating *The Middle Passage*, selected for the 1996 Coretta Scott King Award. Other than the preface, there are no words in this sophisticated graphic history of the enslaved Africans' crossing of the Atlantic in ships filled with human misery, cruelty, and suffering. Says Feelings of his years of research for this book and of his choice to use pictures for words:

> Enthusiastically I started reading everything I could find on slavery and specifically the Middle Passage....I expected the descriptions of the horror of the slave forts and the inhuman treatment on the journey aboard the slave ships. But some of the writers' overbearing opinions, even religious rationalizations and arguments for the continuance of the slave trade made me feel, the more words I read, that I should use as few words as possible, if any. Callous indifference or outright brutal characterizations of Africans are embedded in the language of the Western World. It is a language so infused

> with direct and indirect racism that it would be difficult, if not im-
> possible, using this language in my book, to project anything black
> as positive. This gave me a final reason for attempting to tell the
> story through art alone. (p. 3)

Feelings's book is not only visually representing a period in history about
which he intends to convey factual information, but he is purposely avoid-
ing the use of words—the illustrations cannot be interpreted by words
but by experience. This picture book for older readers forces a new level
of graphic experience in books for youth.

Nodelman (1988) reviews research which contradicts the general
adult understanding that pictures are easy—easier than words—to "read,"
and demonstrates that, in fact, picture books "imply a vast sophistication
in regard to both visual and verbal codes" (p. 21). According to Nodelman,
many picture books, including a number with subject matter for the very
young which he analyzes, imply that the viewer is "both very learned and
very ingenious" (p. 21). The digital electronic world has provided a mi-
lieu for bringing attention to the sophistication of visual information,
but the printed picture book for children has provided a vehicle in which
application of this realization can be and is being played out.

THE GRAPHIC NOVEL

Graphic novel is the nomenclature applied to narrative fictional litera-
ture in comic book form. According to Weiner (1992), graphic novels
contain few superheroes but rather they are "concerned with ordinary
people experiencing struggles similar to the conflicts found in more ac-
ceptable forms of young adult literature" (p. 269). Weiner records the
mature nature of some of these novels. The proliferation of graphic nov-
els for youth is documented, in part, by the appearance of several articles
and bibliographic round-ups on the topic in *Voice of Youth Advocates* since
1992. *Understanding Comics*, by Scott McCloud (1993), presented in comic
strip form, speaks to the history of comic book art, applying to picture
books the same type of analytical framework that Nodelman does. Many
of the same principles are articulated for what is, in essence, a specialized
form of picture book.

The study of the graphic novel extends the discussion beyond the
relationship of words and pictures to the relationship of both to the space
in between the panels which have neither. In "Blood in the Gutter,"
(McCloud, 1993, pp. 60-93), the interweaving of print and electronic
concepts begins to emerge more clearly, for the lexias in hypertext struc-
ture are somewhat analogous in terms of demands on the reader to the
frames of the comic in the graphic novel with space and "gutters" in be-
tween. "Our perception of reality," says McCloud, "is an act of FAITH,
based on mere fragments" (p. 62). While this is entirely and evidently
true of life, many have not been able, on the one hand, to accept this
space with neither words nor pictures in constructing a piece of literature

for young people or, on the other, to recognize its significance for forc-
ing the use of thinking powers in the comic book format. McCloud ana-
lyzes comic strips for their varied use of transitions across gutters, some
of which—e.g., aspect-to-aspect and non sequiturs—are more demand-
ing than the more typical action-to-action, demonstrating the potential
use of the gutters. *Maus: A Survivor's Tale I* (Spiegelman, 1986), an Ameri-
can Library Association best book for young adults, and its sequel *Maus:
A Survivor's Tale II* (Spiegelman, 1991) are autobiographical graphic
novels focusing on Spiegelman's father's experience in a concentration
camp. Told with mouse characters, these graphic novels follow the more
sequential comic patterns, but an anthology of Spiegelman's works, ac-
cording to McCloud (1993), shows the full range of techniques (p. 77).

Avi, an author for young people, frequently experiments with inno-
vative forms—e.g., letters, diaries, news articles—rather than linear text,
that are becoming more commonplace in the digital environment. He
and illustrator Brian Floca used the comic book form in the mystery tale,
City of Light, City of Dark (Avi, 1993). Richard Jackson, formerly with Or-
chard Books and now with a new fiction division of DK books, has edited
numerous "radically changed" books including *City of Light, City of Dark.*

The use of the "gutter" or the white space in the comic strip has a
relationship to the concept of lexias in hypertext. A part of the graphic
environment is the use of more open space for the reader. As the reader
becomes more involved, "think to think" is visually built into books. The
DK information books provide this space. One ten-year-old reader of
Hesse's (1996) *The Music of the Blue Dolphins* observed that "the short chap-
ters focused on one topic give you time to think in between." A graduate
student reading Sandra Cisneros's (1995) *The House on Mango Street* made
the same comment, musing that the white space before and after each
short vignette gave her time to "contemplate what she had read and pre-
pare for what was to come." In computer programming language there
is no such thing as a "blank space." In a word processing script there is a
code for a blank space of the same type as that for a letter. Perhaps this is
another embedded influence of the digital world—the increased use of
white or unfilled space to provide meaning in books for children.

The graphic novel is a form of verbal/visual expression that is cur-
rently growing in the realm of literature for youth. Though not yet wide-
spread, this format is finding its way into the accepted literature of the
digital age. It is another form whose growing acceptance after years of
rejection may be related to the graphic nature of much communication
in the electronic world.

POSTMODERNISM AND RADICAL CHANGE
The digital environment has come to pass in the postmodern arena.
Modernism, with its dreams of perfectibility, came to an end in the mid-

twentieth century. It is not within the purview of this article to examine the complex relationships between postmodernism and radical change as the focus here is solely on the digital environment. There is, indeed, overlap between the characteristics of postmodernism, those of the digital environment, and those of the radically changed literature—e.g., open-endedness, reinvention of form, playfulness. Dresang examined some of these in a paper, "Radical Change in Contemporary Children's Literature: Postmodernism and Beyond" presented at the Children's Literature Association Conference, June 1996. A more thorough examination will appear in her forthcoming book (Dresang, in press). Suffice it to say, however, that postmodernism and radical change part company on the tenets of connectivity, of relationships, and of in-depth layers of meaning which are avowed as essential elements of the latter but are not necessarily or consistently claimed as characteristics of the former.

CRITICISM, EVALUATION, AND APPEAL WITHIN THE FRAMEWORK OF RADICAL CHANGE

The literary elements of plot, character, setting, style, and tone with which children's literature has been critiqued by scholars and evaluated for purchase by practitioners must be looked at in a new light with the change of the books. The concepts of "radical change" lead to a new framework for this examination. The framework in this essay takes into account only one of the three types of radical change, a type which alters the perspective on plot and style more than on character, setting, and tone. New attributes such as nonlinearity, pictures becoming words and words pictures, and complexity must be juxtaposed with the time-honored properties of linearity, distinct delineation of text and illustration, and simplicity, for example, in order to obtain a complete understanding of a book. Adults who apply only the traditional criteria are not as likely to appreciate the radically changed literature or to recognize its appeal to, and significance for, youth.

In *Genie in the Jar*, a collaborative effort by illustrator Chris Raschka and poet Nikki Giovanni (1996), the symbiotic nature of the pictures as well as the open ended "readerly" ending of the picture poem place it in the realm of books influenced by the digital age. The following portions of an analysis by Dresang (1996a) illustrate how it might be described:

> Take a note/and spin it around/spin it around/don't/prick your finger . . . weave the sky/around the Black loom/around the Black loom." Nikki Giovanni's lyrical words and Chris Raschka's bold colored images on textured golden-brown paper are symbiotic, each brilliantly interpreting, transforming the other. In sparse terms and images that are not only concrete and accessible to a child but also resonant with echoes of deeper meaning, these two artists depict the symbolic strength of the universe (the sky), the musical genius found in the Black culture (the note), and the supportive commu-

nity formed by Black women (the Black loom). The folk tale image, "don't prick your finger," ties the story poem to the oral tradition. Throughout, color conveys meaning: words of warning, "don't" and "careful baby," appear on a stark white background, the safety of the community is revealed against a rich black, and the joyful indepen- dence of the child against golden yellow. By the end, the youthful "genie" is ready to be released from the comfort of her figurative jar. Infused with the strength of her culture and the love of her mother, the little girl has the inner resilience to face confidently any dangers she might encounter. The complex yet simple visual representa- tions resembling a child's own art, the cumulative nature of the verse, and the lively figures dancing across the pages will lure children to repeated readings. Here the love and comfort of family and com- munity not only protect, as in so many books for children, but also empower ("listen to her sing"). Though they may not be able to articulate the deep symbolic nature of these words and pictures, children will recognize the love, joy, safety and respect found in this outstanding poetic picture book.

The words at the end of the poem continue the woman's warning to the young girl, "don't prick your finger" (p. 32), perhaps implying to the reader that she is in the same implied danger she was in when the book began. But the visual representation of these words symbolically depicts the young girl as confident, having internalized the blue "sky" and the past as well as current strength of community. Some adults have declared this book puzzling. A group of twelve young adults, ranging from fifth to eighth grade, spent one-and-a-half hours discussing this book, discover- ing and articulating the multilayered meanings which the merger of words and pictures convey. To them, the many complexities were intriguing and at the end of the discussion time they did not want to stop. This is a picture book which seems simple and the style of which is "child-like art." Knowledge of what is happening to books for youth is a crucial ele- ment in appreciating and anticipating the depth of their responses to radically changed books, at first glance, young, simple, and puzzling, such as *Genie in the Jar.*

Another book which adults, applying only traditional criteria, have found disturbing is Maurice Sendak's (1993) *We Are All In the Dumps With Jack and Guy.* In the three years since its publication, scholarly analyses of this book by Neumeyer (1994), Donovan (1994), and Sipe (1996) have appeared. The academic critics have recognized and appreciated the multilayered nature of this book, unusual though it is in a picture book for children. Although reviewer Brian Alderson for the *New York Times* would rather have children "dancing round the maypole with the real Randolph Caldecott," he acknowledges that: "Children are as quick at do-it-yourself deconstruction as the rest of us, and they will find their own stories to tell and their own visions in Mr. Sendak's somber picture show" (p. 12). The "plot" which is clearly conveyed by the graphic illustrations

of two previously obscure nursery rhymes leaves the child protagonists living in a dump, although if one accepts that the cover is really the end of the book and vice-versa, the children have found shelter in a cave symbolically formed by the protector moon. Unexplicated "leaps" in the illustrations take place—e.g., the ever watchful moon becomes a cat. Alderson is right: children are able to handle this demanding involvement and in fact they enjoy it—whether in similar settings or not. A fifth grade teacher from Omaha, Nebraska, reports in the September 1995 issue of *Book Links* that her students wanted repeated readings of this book. One of the children said, "I liked this book a lot, but some adults won't like it at all. Adults who are really serious won't want kids to read this book" (p. 11). At the Ohio State Children's Literature Conference, February 1995, a third grade teacher from inner city Chicago spoke about how much this book means to her students: they write letters to Jack and Guy whom they consider their friends.

The critique of *Genie in the Jar* and the review of *We Are All in the Dumps With Jack and Guy* take into account the changed literature for youth, acknowledging their positive aspects or appeal to children. It is essential to recognize these elements of design and presentation in order to fairly evaluate literature that will draw children in much as the digital representations in electronic form do.

IS THE HANDHELD BOOK A VIABLE FORM IN THE DIGITAL WORLD?

The expansion of literature for children in varying forms and formats has not decreased the availability or profitability of the handheld book. *CCBC Choices*, an annual publication of recommended children's books published by the Friends of the Cooperative Children's Book Center in Madison, Wisconsin, has a section called "Observations About Publishing in 19. . .". A summary comment on publishing in 1995 which appeared in the edition of *CCBC Choices 1995* (published spring 1996) notes that *"Children's Books In Print* lists 100,875 books 'published in the U.S. for children and currently available for purchase,' an amazing increase of more that 6,545 titles from one year earlier" (p. 8). In addition: "During the past five years, the number of children's books in print in the U.S.A. has increased by 44,607" (p. 8). In commenting on this increase, editors Horning, Kruse, and Schliesman (1995) note that: "[T]he increase in the number of books published during the 1990's represents decisions made by U.S. publishers to invest in children's books. Such an investment was made with the expectation that in all parts of the nation people are eager and ready to buy books for the young" (p. 20). The expanding proceeds from the juvenile market can be verified by the quarterly reports over the past five years in *Publishing Research Quarterly*. Forecasts in *Publisher's Weekly* state that "total consumer spending on children's books is forecast to top $3 billion in 2000, a 35.5% increase over 1995"

(Milliot, 1996, p. 30).

These statistics, of course, do not single out literary publications as opposed to others, and assurance that these publications "having excellence of form in expressing ideas of widespread or long term interest" will continue to occupy a significant place in book publishing for children is a crucial reason to recognize and be able to evaluate the radical changes taking place with literature for youth in the digital world.

WHAT DOES THE FUTURE HOLD FOR HANDHELD PRINTED CHILDREN'S LITERATURE IN THE DIGITIZED WORLD?

The construct of radical change as an approach to analyzing and understanding literature for youth is only partially explained in this essay. To apply this framework as one adequate for in-depth criticism, the entire construct must be understood as presented by Dresang and McClelland (1995, 1996) and expanded upon in Dresang's book (in press). The influence of the digital literature on literature for youth presented here, however, would suggest that:

1. Those approaching the criticism of children's literature from a scholarly point of view or the evaluation and selection of children's literature from a practical point of view will take account of the constructs of radical change in order to experience an appropriate holistic context for the examination.
2. Children will emerge more and more from the dominance of a limiting adult definition of their capabilities and, in doing so, their abilities to be active partners in the choice and shaping of reading experiences will be further reflected in how their handheld literature is structured. As Sherry Turkle (1995), professor of the Sociology of Science at the Massachusetts Institute of Technology and a licensed clinical psychologist, says in her *Life On the Screen*, "it is our children who are leading the way, and adults who are anxiously trailing behind" (p. 10). If children are leading online as they choose and interact with resources, their offline literature will reflect their proficiency at participating in an interactive collaborative information-seeking process. "The creators of these books for the digital child share a profound respect for their child audience—some considering the child very carefully and with great insight and others without consciously attending to who that audience is" (p. 4). None ascribes to the "other" positions enumerated by Perry Nodelman. None writes down to a child's level; in fact, many state that they regard the child as a very complex being.
3. Printed handheld literature will continue to be calibrated to changes in the electronic environment (the aspects of the digitized environment which are affected by the qualities of print have not been scrutinized here but will also continue to be present). "The purpose of

computers is human freedom," says Nelson (1992, p. 43). No less so is the purpose of handheld books, and this purpose takes on new dimensions when incorporated with compatible characteristics of the digital world.

4.   The continuing radical changes in children's literature will follow a rhizomic pattern, a nonlinear, nonhierarchical alteration, just as many of these changes exhibited now have sprung up not as further developing linear trends but as outgrowths of an organic whole.

Applying radical change as a basis for literary criticism and anticipating a rhizomic pattern of communication suggests that literature in many forms of print and electronic media will survive independently and in combination. This construct makes the perceived polarity between literature in a digital form and handheld literature in a printed form unnecessary: both will find a place to sprout and thrive as *separate* entities as well as in multimedia packages. Both will be increasingly "readerly," that is, bringing the reader into the process of creation. The delivery mechanisms for the handheld book, indeed, may change, but in a way that will make it more rather than less accessible to the reader. Marc Aronson, senior editor at the Henry Holt Publishing Company, and who has offered courses in electronic publishing at New York University, suggests that the contents of books in the future may be transmitted electronically and printed for the reader in a familiar handheld format on demand. Indeed, "connections replace collections in our thinking" (Lacy, 1993, p. 15). But the handheld book, albeit radically changed and however it may be delivered, will continue to occupy a prominent place in the digital library for children, and changes occurring to this literature must be understood in the context of the digital environment.

NOTES

[1]   It is important to note that most of these histories of childhood and children's literature focus on children of northern European ancestry, often males and often from well-to-do families (Hawes and Hiner [1985] have a chapter by Margaret Szasz on Native American children). How the generalizations stated might differ for children who do not fit this profile is not addressed here because of the limited nature of the essay but is acknowledged. The effect of the contemporary digital environment, however, is broad-based in that virtually all children have contact with television, video games, and the widespread digitization in daily life.

[2]   Burnett has proposed a theory of hypertextual design and, in describing it, extends her work to examining hypertext as a natural mode of expression for feminist writers and writers of color. She examines, for example, the work of Gertrude Stein, Amy Tan, Maxine Hong Kingston, and Zora Neale Hurston and finds the nonsequential weaving together of story. This analysis is significant because much of the theory of hypertext and writing in hypertext form has been attributed to men while Burnett (1993) finds it a natural mode of expression for women.

[3]   Paul Fleishmann related this to the author in response to a question posed by the author at the Ohio State Children's Literature Conference, February 1995.

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