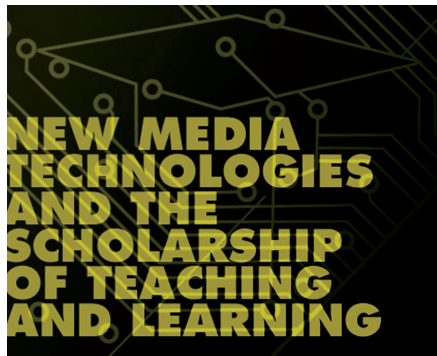




## The Difference that Inquiry Makes:

A Collaborative Case Study of Technology and Learning,  
from the Visible Knowledge Project.

Edited By Randy Bass & Bret Eynon



**"The Difference that Inquiry Makes: A Collaborative Case Study of Technology and Learning, from the Visible**

**Knowledge Project,"** edited by Randy Bass and Bret Eynon

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# Table of Contents

## **The Difference that Inquiry Makes:**

A Collaborative Case Study on Technology and Learning, from the Visible Knowledge Project

### **Capturing the Visible Evidence of Invisible Learning (Introduction and Synthesis of Findings)**

*Randy Bass and Bret Eynon*

### **Reading the Reader**

*Sharona Levy*

### **Close Reading, Associative Thinking, and Zones of Proximal Development in Hypertext**

*Patricia E. O'Connor*

### **Inquiry, Image, and Emotion in the History Classroom**

*Peter Felten*

### **From Looking to Seeing: Student Learning in the Visual Turn**

*David Jaffee*

### **Engaging Students as Researchers through Internet Use**

*Taimi Olsen*

### **Trace Evidence: How New Media Can Change What We Know About Student Learning**

*Lynne Adrian*

### **Shaping a Culture of Conversation: The Discussion Board and Beyond**

*Edward J. Gallagher*

### **The Importance of Conversation in Learning and the Value of Web-based Discussion Tools**

*Heidi Elmendorf and John Ottenhoff*

### **Why Sophie Dances: Electronic Discussions and Student Engagement with the Arts**

*Paula Berggren*

### **Connecting the Dots: Learning, Media, Community**

*Elizabeth Stephen*

### **Focusing on Process: Exploring Participatory Strategies to Enhance Student Learning**

*Juan-José Gutiérrez*

### **Theorizing Through Digital Stories: The Art of "Writing Back" and "Writing For"**

*Rina Benmayor*

### **Video Killed the Term Paper Star? Two Views**

*Peter Burkholder and Anne Cross*

### **Producing Audiovisual Knowledge: Documentary Video Production and Student Learning in the American Studies Classroom**

*Bernie Cook*

### **Multimedia as Composition: Research, Writing, and Creativity**

*Viet Nguyen*

### **Looking at Learning, Looking Together: Collaboration across Disciplines on a Digital Gallery**

*Joseph Ugoretz and Rachel Theilheimer*

### **"It Helped Me See a New Me": ePortfolio, Learning and Change at LaGuardia Community College**

*Bret Eynon*

### **From Narrative to Database: Protocols and Practices of Multimedia Inquiry in a Cross-Classroom Scholarship of Teaching and Learning Study**

*Michael Coventry and Matthias Oppermann*

### **Multimedia in the Classroom at USC: A Ten Year Perspective**

*Mark E. Kann*

## *Close Reading, Associative Thinking, and Zones of Proximal Development in Hypertext*

Patricia E. O'Connor, Georgetown University

### From The Difference that Inquiry Makes: A Collaborative Case Study on Technology and Learning, from the Visible Knowledge Project<sup>1</sup>, edited by Randy Bass and Bret Eynon

In a Scholarship of Teaching and Learning study for the Visible Knowledge Project, I address the problem of what may be called "cursory" rather than close reading of texts by college students.<sup>2</sup> In such reading, a person does not deeply engage with the words, ideas, images; instead, s/he only passively accumulates them. Such an additive rather than truly constructivist approach to learning suggests that knowledge is acquired by mere exposure. While this may be minimally accurate, a more concerted kind of reading through engagement, productive puzzling, and contention produces a more effective approach for understanding. In college classrooms, a cursory or preliminary reading can be amplified by a professor's lecture. The lecture can call attention to reading between the lines, a reading behind the assertions, a diachronic explanation of the shifts over time, and a synchronic analysis of current relevant issues, and thus the professor's lecture can create a knowledgeable "reading" that demonstrates ways to fill the gaps present in texts. As a constructivist educator, however, I want my students to become co-laborers in those rich fields of inquiry, rather than benefiting passively from my illumination. I suggest that as educators we should analyze the skills used to produce close,

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<sup>1</sup> About VKP: In all, more than seventy faculty from twenty-two institutions participated in the Visible Knowledge Project over five years. Participating campuses included five research universities (Vanderbilt University, the University of Alabama, Georgetown University, the University of Southern California, Washington State University, and the Massachusetts Institute of Technology), four comprehensive public universities (Pennsylvania's Millersville University, California State University (CSU)--Monterey Bay, CSU Sacramento, Ohio's Youngstown State University, and participants from several four-year colleges in the City University of New York system, including City College, Lehman, and Baruch), and three community colleges (two from CUNY--Borough of Manhattan Community College and LaGuardia Community College, and California's Cerritos College). In addition to campus-based teams, a number of independent scholars participated from a half dozen other institutions, such as Arizona State and Lehigh University. The project began in June 2000 and concluded in October 2005. We engaged in several methods for online collaboration to supplement our annual institutes, including an adaptation of the digital poster-tool created by Knowledge Media Lab (Carnegie Foundation), asynchronous discussion, and web-conferencing. The VKP galleries and archives (<https://digitalcommons.georgetown.edu/blogs/vkp/>) provide a wealth of background information, including lists of participants, regular newsletters, and reports and essays by participants, as well as a number of related resources and meta-analyses. For this article, the author gratefully acknowledges the students whose work is cited here. All students whose work is included have granted the author permission to use the material.

<sup>2</sup> Preliminary analysis of this project begins in my article, "Hypertext Monsters: Student Web Pages and Associative Thinking" in *Engines of Inquiry: Approaches to Teaching, Learning and Technology in American Culture Studies* (Washington, DC: American Studies Crossroads Project, 2003), 419-432. This paper expands that analysis, especially by contextualizing the project within ideas on associative thinking and constructivist learning and using recent examples from student projects. In addition to sources referenced below, other sources for this essay include Richard A. Lanham, *The Electronic Word: Democracy, Technology, and the Arts* (Chicago: University of Chicago Press, 1993); James F. Slevin, "Genre Theory, Academic Discourse, and Writing within Disciplines" in *Audits of Meaning*, ed. Louise Z. Smith (Portsmouth, NH: Boynton/Cook, 1988), 3-16; Rand J. Spiro, Paul J. Feltoich, Michael J. Jacobson and Richard L. Coulson, "Cognitive Flexibility, Constructivism, and Hypertext: Random Access Instruction for Advanced Knowledge Acquisition in Ill-Structured Domains," *Educause Review* 5 (1991), 24-33; Lev Vygotsky, *Thought and Language*, trans. Alex Kozulin (Boston: MIT Press, 1934/1986).

connected, and critical readings. Drawing on my experience using hypertext assignments in literature courses, I suggest that we can capitalize on a natural process of associative thinking in ways that lead to critical inquiry that creates deeper linkages and promotes new understandings.

The term “association” might in many readers’ minds merely refer to spontaneous word associations. If I say “tree,” you might say “bush,” or “branch,” or “leaf” (or— if you are in your dog persona—you might say “relief”). This language play has had some productive use in psychological inventories accessing a path into the sub-conscious. Randy Bass in “Story and Archive in the Twenty-First Century” refers to associations as “the apparent connections between thoughts represented *by* and *in* the link between two thoughts or text lexias” [italics in the original]. Bass suggests that associating is an “increment of meaning, but it is not, without some broader sense of containment, productive of meaning or understanding.”<sup>3</sup> Such associations, he suggests, become mostly additive in the new media environments. With that caution in mind, and drawing upon my experience of the Bay Area Writing Project and in Writing Within the Disciplines, I work to develop assignments that begin with the additive but move beyond it.<sup>4</sup>

In writing theory, free-associative word-play came into a more productive, more “captured” and articulated use in the Writing Across the Curriculum movement in the 70’s and 80’s. The work of Gabriele Lusser Rico, in particular, advocates accessing both left and right brain functions through associations gathered through “clustering” in *Writing the Natural Way*. Peter Elbow’s *Writing with Power* and Donald Murray’s *Writing to Learn* also demonstrate ways of mapping the brainstorming process to help generate breadth and then focus for organizing writing topics. All three of these authors demonstrate how a writer can shape the associations circling out from a key word into expanded areas of inquiry. Similarly, in my hypertext assignments I re-shape this activity of making associations into a way of making reading more “visible,” making it an obviously more generative than additive process and, as such, a process that can move toward creating the kind of multiplicity and productive reflexivity Bass suggests be part of a “disciplined design” in teaching and learning.<sup>5</sup>

Also useful to consider when we explore this methodology is background on associative thinking in psychology. Associative learning has moved from the conception of learning as markings made in a void to a view that learning occurs when evidence and experience correct preliminary hypotheses. Greeno et alia suggest that “[r]ather than the view that associations are etched by experience on a blank tablet, we are led to a hypothesis that association is a form of cognitive organization, depending on relational ideas that the learner already has in cognitive structure.”<sup>6</sup> Thus, by associating, writers and readers actively draw upon prior as well as new information and construct possible (and changeable) worlds of meaning—a notion prime for hypertext.

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3 Randall Bass, “Story and Archive in the Twenty First Century,” *College English* 61, no. 6 (1999): 663.

4 In 1982-83, I was invited to be part of James Slevin’s NEH-funded Articulation Program: Writing Within the Disciplines, an effort that included public and private high school teachers in the District of Columbia. That work, as did the Bay Area Writing Project, spawned a process approach to teaching writing that has since been used to encourage interdisciplinary pedagogy and critical inquiry in general.

5 Gabriele Lusser Rico, *Writing the Natural Way* (Los Angeles: Jeremy P. Tarcher, 1983); Peter Elbow, *Writing With Power* (New York: Oxford University Press, 1981); Donald Murray, *Write to Learn*, 3rd ed. (Ft. Worth: Holt, Rinehart, Winston, 1990); Bass, 661-662.

6 James Greeno, Carlton T. James, Frank J. DaPolito, and Peter G. Polson, *Associative Learning: A Cognitive Analysis* (Englewood Cliffs, NJ: Prentice-Hall, 1978), 8.

## New Media Interventions

New media technologies offer opportunities for learners to create webs of understanding that set up structures of reasoning that can promote critical and dialogic analysis and literacy. In the following section, I demonstrate, via samples of student work, how definitional, connective, analytic and synthetic levels of understanding in “mediated” assignments demonstrate cognitive associations that can show a learner’s path toward understandings of deeper concepts. I also explore how students use these hypertext spaces not only to assemble associations with diachronic and synchronic materials, but also to create new texts to interrogate the original materials.

## The Hypertext Assignments

Briefly, I assign students to select a “rich” paragraph or page of text from one of the course readings. From a single page, I ask them to build an understanding of that book or article, using an “ever-expanding ripples” method based on close reading, considering other texts in the course, and linking to concepts that expand from these texts to larger issues. My study over six years suggests that hypertexts promote as well as illustrate rich expression through associations. Students worked to illustrate, interpret, and illuminate these texts and the themes within them through various levels of definition, synthesis, and analysis.

## Intermediary Step

How do we get students to take risky steps in revealing their thinking patterns, steps that can reveal their inadequacy? From the student perspective, an author’s text is seen as sacrosanct, best illuminated by the professor. As a constructivist teacher, however, I ask students to build their knowledge on inquiry, rather than passively accepting and mimicking mine. Similar to the questioning Randy Bass seeks in his work on intermediate cognitive practices of learners, I seek ways to have learners articulate the gaps in their knowledge base. This at first uncomfortable articulation of uncertainty can lead to inquiry and research.

In order to mediate uncertainty, I developed an intermediary step where I ask students to work in groups to comment collectively on words and phrases in a sample text prior to building the websites. I ask that the students retype a fictional passage and use the comment feature in Microsoft Word to articulate their perceptions, to speculate about connections to what they already know, to wonder about what they do not fathom, to connect what they relate from this word to the rest of the book or poem, and, importantly, to figure out how these words and concepts connect to larger themes running through the course. For example, in reading the short stories of West Virginia author Breece D’J Pancake, my Appalachian Literature students face a challenge not only to overcome preconceptions of West Virginia in Appalachia, but also to familiarize themselves with the world of working class life Pancake so cleverly and leanly depicts.

COMMENT FEATURE EXAMPLE

**A Room Forever**

Because of New Year's I get the big room, eight dollar room. But it seems smaller than before, and sitting by the window, looking out on the rain and town, I know the waiting eats at me again. I should never show up in these little river towns until my tug puts in – But I always come early, wait, watch people on the street. Out there the vapor lamps flicker violet, bounce their light up from the pavement, twist everything's color. A few people walk along in the drizzle, but they don't stop to look into cheap shop windows.

Always past the streets I see the river in patches between buildings, and the black joints of river are frosted by this foggy rain. But on the river, it's always the same. Tomorrow starts another month on the river then a month on land – only the tales we tell will change, wrap around other times and other names. But there will be the same crew on the Delmar, the same duty for eighteen hours a day, and pretty soon there won't be tales. For now, I wait, watch the wind whip rain onto the panes and blur the glass

I plug in the hot plate for coffee, look through the paper for something to do, but there is no wrestling or boxing for tonight, and even the bowling alley is closed for New Year's. I could maybe go down to a bar on First Avenue, sort of tie one on, but not if I have to watch barge rats and walk the wet steel edges tomorrow. Better to buy a pint and whiskey myself into an early sack, better not to think about going out.

Emily 2/10/09 4:36 PM  
**Comment:** Is this a time period? What kind of hotel has an eight dollar room? Is eight dollars a lot? Are the other rooms booked?

George 2/10/09 8:49 PM  
**Comment:** He has been here in the past.

Emily 2/10/09 4:36 PM  
**Comment:** He seems lonely. Who is he waiting for? When has he been here before? Where is "here"?

Emily 2/10/09 4:36 PM  
**Comment:** Tug – tugboat?

Emily 2/10/09 4:37 PM  
**Comment:** Vapor lamps – is this 19<sup>th</sup> century? How do they work? Nice description of the light, how it moves, how it appears.

Emily 2/10/09 4:37 PM  
**Comment:** The river freezes over, right? The town is built from the river – river economy?

Emily 2/10/09 4:37 PM  
**Comment:** Is he a sailor in the Navy? - I don't think so.

George 2/10/09 8:52 PM  
**Comment:** Suggests something to do with working on a boat

Emily 2/10/09 4:37 PM  
**Comment:** WHAT IS HE WAITING FOR?!

George 2/10/09 8:53 PM  
**Comment:** Alliteration: "w" sound

George 2/10/09 8:54 PM  
**Comment:** Hint to time period – electricity used to heat up coffee – I am not sure what a "hot plate" is though

Kathleen 2/10/09 9:33 PM  
**Comment:** What time period is this if these are the preferred activities of entertainment.

Kathleen 2/10/09 9:33 PM  
**Comment:** Does this mean get really drunk?

George 2/10/09 8:56 PM  
**Comment:** He will be working somewhere on the river. What are barge rats? Are they men that would steal from the boats that came in? Are they the fellow men he works with? Wet steel edges – does this mean the edge of the boat?

As we can see from the several colors of comments showing individuals' reactions to the text, members of the group asked a variety of questions about the passage. Emily and Kathleen's comments suggest an effort to locate a time frame through examining the price the man pays for the room and the "activities of entertainment," and by speculating about vapor lamps. George also tries to figure out the time period by noting that electricity is used in heating up coffee. The students' lack of understanding of how a "hot plate" operates signals unfamiliarity with the kind of place eight dollars will buy for a working man's lodging. Important in this exercise is the slowing down and the questioning of the reading process. Equally important as the comments themselves is the debate the queries bring up when this annotated passage is shown to the whole class. For example, tracking the actual invention of vapor lamps makes students contemplate a place wherein change for the working class does not readily occur, even when modern times ensue, a theme prominent in Pancake's work. These classroom discussions articulate how doubt about one interpretation yields to research and comprehension, thus modeling a constructivist process for all of the students.

As a narratologist and discourse analyst as well as a teacher of literature, I want students to become very conscious of how pieces are written. I use the hypertext technology to reach into and reveal the hidden spaces that literature poses for readers. Works of literature build anticipations in readers and often ask the readers to work to make solid connections that signal meanings not yet clear.<sup>7</sup> This is part of what we expect in literature—gaps and blanks that compel us to enter into the tension, the “play” of the text in the terms of Wolfgang Iser’s reader response theory. That play yields for us a “live” text, one for whom Iser’s changing “referential fields” must be unpacked by the active reader. Such a reader, I suggest, makes repeated use of associative reasoning.<sup>8</sup>

### Hypertext: Making Further Connections Visible

In the hypertext project I want students to realize (through associative thinking and visualization) how much the writers know, and how much is being revealed or concealed, in every word choice or phrasing structure. I like to think of us as humble before the text—but not vanquished! Such probing for understanding thus promotes and capitalizes on associative thinking.

Through their practice with annotations, additions, and illustrations, students makes overt the connections and discoveries made in reading and in supplemental research through a dramatically slowed-down process. These hypertext constructions become windows through which a viewer of the website can not only see the students’ paths of understanding, but can also see the richness of associations found in the course texts and in themes that connect a course like Appalachian Literature to other areas of concern: poverty, class warfare, economic change, immigration, work, religion, and familial patterns.

Thus, for example, in an Appalachian literature course, a student group created a Web site to analyze *River of Earth*, James Still’s novel of Kentucky life in the 1930’s.

The screenshot shows a website interface with a dark background. At the top, there are three navigation links: "Coal Mining in Kentucky", "Passage and Index", and "Women & Patriarchy". Below these are three small images: a person in a coal mine, the book cover of "River of Earth", and a woman sitting in a room. In the center, a text passage is displayed in white and orange. To the left of the text is an image labeled "Homeplace" showing a landscape. To the right is an image labeled "Biography of James Still" showing a man in a hat. At the bottom of the text passage, it is attributed to "-Alpha Baldrige (Still 179)".

Coal Mining in Kentucky

Passage and Index

Women & Patriarchy

Homeplace

Biography of James Still

"Since I married, I've been driv from one coal camp to another," Mother said, taking her hands out of bread dough. "I've lived hard as nails. I've lived at Blue Diamond. I've lived at Chavies, Tribbey, Butterfly Two, Elkhorn, and Lackey. We moved to Hardburly twice and to Blackjack beyond counting. I reckon I've lived everywhere on God's green earth. Now I want to set me down and rest. The baby is buried here, and I've earnt a breathing spell. We done right well this crap. We got plenty."

-Alpha Baldrige  
(Still 179)

Passage selection from student website on *River of Earth*, <http://cndls.georgetown.edu/lumen/faculty/oconnor/river/passage2.htm>

7 Mieke Bal, *Narratology: Introduction to the Theory of Narrative*, 2nd ed. (Toronto: Univ. of Toronto Press, 1997), 95-97.

8 Wolfgang Iser, *Prospecting: From Reader Response to Literary Anthropology* (Baltimore: Johns Hopkins University Press, 1989), 8.

This site uses minimal text, clear analytical essays, archival photos and other images to illustrate the intricacies behind this small passage.<sup>9</sup> Themes of patriarchy, workplace life in mining and the role of the homeplace are well defined, historically depicted and carefully analyzed. The site shows a good balance between the aesthetic and the analytical.

In the passage shown, links on the words “coal camp” in the first sentence lead the reader to a page of archival photos from Chavies and Hardburly, Kentucky, coal camps mentioned by character Alpha Baldrige in the selected paragraph.



Photo of Hardburly, Ky Coal Camp, c.1923, photographer unknown. (Kentucky Foundation <http://www.coaleducation.org/CoalHistory/coal-towns/hardburly.htm>)

Options on the Web page take the reader to a number of other areas of the Web site, including a list of sources of the photographs from archives in Kentucky and the on-line archives of the Library of Congress. Other links from that first sentence lead to detailed discussions of mining and miners. Clicking on the quote “I’ve lived hard as nails” takes us to a well-articulated essay by student Neil Goldman contrasts mining with farming, a life preferable to the speaker over the “hard as nails” life in mining camps. With this analytical statement, “The economic vicissitudes of the mining industry constantly forced families and workers to move from camp to camp in search of work,” Goldman connects the passage via links to other key essays about patriarchy and work. He further relates this depiction of hard living to other texts studied in the Appalachian literature course, in particular to *Storming Heaven* by Denise Giardina. We not only witness the mother’s discussion of hard living in the novel, but we learn about the difficulty of underground mining and the shifting responsibilities of families that restructure work roles for men and women. The web of cross-links suggests very clearly the interrelatedness of economics and family structures in a very sophisticated set of associations that go deeply as well as topically through the passage chosen. This web of links exists as a reader-created complement to the already intriguing narratives provided by authors James Still, Denise Giardina, and Harriette Arnow.

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<sup>9</sup> This site created by Georgetown University students Steve Long, Andrew Owen, Neal Goldman & Rory Boyle in December 2003: <http://cndls.georgetown.edu/lumen/faculty/oconnor/river/>

Much of this connectivity is shared through in-class workshops in which students benefit from face-to-face collaborations on finding and using such pictorial and graphic representations of words in texts. Students observe how to move from merely definitional images to historically accurate archival photos that synthesize several modes of learning connecting through the visual to historical as well as synchronic materials.<sup>10</sup>

Such hypertext assignments promote generative and connective associations with nearly every word or phrase the students encounter in a text. Forcing students to slow down the process of reading a passage makes them more aware of the grand scope of meaning behind all texts. Thus, in completing a hypertext assignment, students become co-learners and co-shapers of the given (and newly and endlessly interpretable) text, which provides countless interpretations as negotiated in mediated sites of learning. Such situated learning takes place in “communities of practice.” The media-rich (or mediated) classroom becomes, then, a new community of practice.<sup>11</sup> The Web pages the students build become more than individual spaces, they become places in the Nicholas Burbules' sense wherein the “dual character of hyperlinks” become “avenues of movement” and “occasions for meaning-making” that are inhabited by the users.<sup>12</sup> Inviting students into such meaning-making, I assign them to create a web of associative understandings that provides a window into their thinking while also modeling ways to approach critical thinking. Thus, the students shape and are shaped by the meaning-making in which they engage and which they invite viewers of their Web sites to explore.

### Resistance to Non-linearity

American novelist Dorothy Allison ends her autobiographical performance piece, *Two or Three Things I Know for Sure*, with pictures, reminiscences, and remonstrations, with a suggestion made by two members of an audience at one of her readings:

He said, “Hypertext. I’ve been wanting to tell you about it.”

“Hypertext?”

“Your work. I’ve read everything you’ve ever published three or four times—at least. I know your work. I could put you in hypertext.” There was a girl behind him. She reached past his sleeve, put her hand on mine, said, “Oh yes, we could do it. We could put you in hypertext.” She spoke the word with conviction, passion, almost love.

“Hypertext?” I spoke it through a blur of bewilderment.

“CD-ROM, computers, disks, files, it doesn’t matter,” the boy said with a rush of intensity. “It’s the latest thing. We take one of your stories, and we put you in. I know just the story. It goes all the way through from beginning to end. But all the way through, people can reach in and touch a word. Mouse or keyboard or a touchable screen. Every time

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<sup>10</sup> In addition to single pictures they have learned to include picture galleries that change as the reader scrolls over the text, increasing the power of association of words to images Web site created about Harriette Arnow’s *The Dollmaker* uses this enhancement: <http://cndls.georgetown.edu/lumen/faculty/oconnor/dollmaker/>

<sup>11</sup> On “communities of practice” see, for example: Jay Lemke, “Cognition, Context, and Learning: A Social Semiotic Perspective” in *Situated Cognition: Social, Semiotic, and Psychological Perspectives*, ed. David Kirshner and James A. Whitson (Hillsdale, NJ: Erlbaum, 1997), 37-55, <http://www-personal.umich.edu/~jaylemke/papers/sit-cog.htm>, following Jean Lave, *Cognition in Practice* (Cambridge, UK: Cambridge University Press, 1988); Ron Scollon, *Mediated Discourse: The Nexus of Practice* (London: Routledge, 2001).

<sup>12</sup> Nicholas C. Burbules, “The Web as a Rhetorical Place,” in *Silicon Literacies*, ed. Ilana Snyder (London: Routledge, 2002), 82, <http://faculty.ed.uiuc.edu/burbules/papers/rhetoric.html>

you touch a word, a window opens. Behind that word is another story. You touch the word and the story opens. We put one of your stories behind that story. And then maybe, maybe you could write some more and we could put in other things. Every word the reader touches, it opens again."

The girl tugged my arm urgently. "It's so beautiful," she said. "After a while it's like a skin of oil on the water. If you look at it from above it's just one thing, water and oil in a spreading shape. But if you looked at it from the side, it would go down and down, layers and layers. All the stories you've ever told. All the pictures you've ever seen. We can put in everything. Hypertext."

Allison's reaction is that she will "think about it"; but we feel that she hates the intrusion even as she has been incredibly open in her writing of *Two or Three Things We Know for Sure* in which she revealed being raped as a child. Yet, she may reject the exposure implied in hypermedia in her "blur of bewilderment." As Bass has pointed out about this scenario, Allison next takes the reader on just such a reverie that jumps from one family association to another. He states that hypertext is "how memory works" and that Allison illustrates that phenomenon with words.<sup>14</sup>

The hypertext design of Allison's fans in the passage, to interweave all the works of the writer into a touchable text, in many ways mirrors the requests I make of students to think behind the words of the texts they read. Some students are hesitant to expand the flat text into a more multidimensional analysis. What do we fear when we complicate linearity? What do we gain?

Resistance to working in hypertext can be considerable. One very capable student in an Appalachian Literature course shows his reluctance through his minimalist approach to making a Website on Lee Smith's novel *Oral History* despite his rich analytical ability. Rather than use the opportunity to demonstrate paths of speculation, he wrestles the Web pages into unconnected mini-essays critiquing writers who had analyzed the region. He chose a passage on roads and "inroads" to Southwestern Virginia and Eastern Kentucky.



Carl Mydans, "Road Building, Shelby Forest recreational demonstration project. Near Memphis, Tennessee, March 1936" (from *America from the Great Depression to World War II: Photographs from the FSA-OWI, 1935-1945*).

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<sup>13</sup> Dorothy Allison, *Two or Three Things I Know for Sure*, 90-91.

<sup>14</sup> Allison, 90-91; Bass, 661.

Andrus' written analysis of Lee Smith's novel *Oral History* in this site shows keen understanding of the text, but little use of the hypertext medium to demonstrate or to entice readers into the interconnectedness of the texts' passages and themes. The homepage's WPA photograph shows a good connection to the general time and depicts the type of scene witnessed when city dweller Richard Burlage arrives in the mountainous area where mules were more common than cars. Andrus' fine work on the analysis of the themes, make a good supplement for anyone reading *Oral History* or anyone interested in development/modernization, fatalism, faith and religion—themes that permeate the text and the course. However, Andrus' failure to use productive linking from the selected passage defeats the purpose of the hypertextual, visual, and interactive assignment. Andrus' good sourcing, his rigorous critiques of essays, and a few insightful connections to other course texts show Andrus' intellect at work. His refusal to build the associative paths from the text exhibits discomfort with the inherent ambiguity allowed by having a reader decide to click or not to click on a link. My assessment comes from the obvious hard work he put into the mini-essays, but also from a later e-mail correspondence long after classes had ended.

9-14-2005

Dr. O'Connor,

*I was reading the NY Times this morning and noticed an article about archeologists who had unearthed evidence of brine-boiling in China, supporting a theory that the production of salt has a correlation to the success of a civilization—fond memories of your course last semester immediately flooded my mind.*

Andrus had thus made an association with one of the industries we studied in the Appalachian pre-coal economy. I applauded him on constructing the association. He wrote again the next day to amplify his newfound understanding of the power of such jumps. He wrote: "Associative thinking is something that I had not thought much about until taking your course, and it was somewhere on the back of my mind all summer."<sup>15</sup> He noted that he was now able to connect the new information with information studied previously, exactly the kind of work many in the class modeled in their hypertext projects, the very kind of work he had resisted. Although Andrus may not have willingly succumbed to making a Web site illumination of his exploration of a text through associative thinking, he obviously learned its value.

James Paul Gee asserts that a constructivist understanding of reading relies upon a model of the human mind as not so much a "calculator and rule follower" but as a "flexible and adaptable pattern

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<sup>15</sup> Alex Andrus, e-mail message to author, Sept. 14, 2005; Andrus, e-mail message to author, Sept. 15, 2005. Andrus wrote:

*Associative thinking is something that I had not thought much about until taking your course, and it was somewhere on the back of my mind all summer. What I had wanted to talk to you about was twofold: first, to share with you some of my summer experiences. I worked as a Trail Crew Foreman at Philmont, the Boy Scouts' National High Adventure Base in northeastern New Mexico . . . . What is truly remarkable about the "Philmont experience" is the way that the history of these mountains is preserved through the boy scouts who presently own the land (this is the associative thinking which kept your course on my mind so much this summer). There are nearly three dozen backcountry camps (some only accessible on foot—their supplies are packed in on burros) and many of them are interpretive camps, trying to recreate a period in history. What makes this remarkable is the personal details which have been preserved (many through an oral tradition). There are homesteading camps which tell the story of a family which settled on the very site 150 years ago—the staff lives in the cabin built by the actual family, raises livestock, and does farm chores as the historical homesteading family did. There are camps which recreate the cabin and "homestead" of gold miners—but again it's the details which are marvelous. The camps are not just about miners but rather about the very individual miners or roving prospectors who walked those very hills a century ago. One camp is amidst the ruins of a once-booming mining town (population of over 300 in the 1910s) replete with tours of decommissioned mines and even the frame of a rusted jalopy, 2,000ft below the peak of the 12,000ft mountain.*

*This was my second summer working at Philmont but my first summer truly appreciating all that it had to offer in terms of American history on the personal level (a dearly fascinating subject). I owe this appreciation which so enriched my summer entirely to you and your App Lit course. Thank you.*

recognizer." "Situated meanings," patterns we learn in practice, must be "re-cognized" to guide actions.<sup>16</sup> Gee notes that such actions are greatly shaped by cultural models, which in themselves are subject to re-shaping by practitioners. In the academic realm, "cultural models" exist as traditional assignments that have long privileged the linear and logico-scientific essay, a form that student Andrus had mastered. Therefore, he had trouble shifting into an unfamiliar academic model which may have caused him discomfort at the time but clearly had an effect on him after the course ended.

### Trails and Trail Blazers

In July 1945 a non-rule follower, Vannevar Bush, published a provocative essay titled "As We May Think" in *The Atlantic Monthly*. It discusses the way that our minds work and how this defies the traditional methods of categorizing information:

The human mind does not work that way [numerically or alphabetically]. It operates by association. With one item in its grasp, it snaps instantly to the next that is suggested by the association of thoughts, in accordance with some intricate web of trails carried by the cells of the brain. It has other characteristics, of course; trails that are not frequently followed are prone to fade, items are not fully permanent, memory is transitory. Yet the speed of action, the intricacy of trails, the detail of mental pictures, is awe-inspiring beyond all else in nature.

Man cannot hope fully to duplicate this mental process artificially, but he certainly ought to be able to learn from it. In minor ways he may even improve, for his records have relative permanency. The first idea, however, to be drawn from the analogy concerns selection. Selection by association, rather than by indexing, may yet be mechanized. One cannot hope thus to equal the speed and flexibility with which the mind follows an associative trail, but it should be possible to beat the mind decisively in regard to the permanence and clarity of the items resurrected from storage.<sup>17</sup>

Bush then discusses the role of a Memex machine that should be built to accommodate this kind of retrieval, a model for what has become the computer and the path into which we now take our journeys into the hypertextual on the World Wide Web.

That associative trail, some suggest, cannot be so clearly made given the technology of "links." In *Imagologies* by Mark C. Taylor and Esa Saarinen, they note at the outset of the chapter "Inter-standing": "When depth gives way to surface, understanding becomes inter-standing. To comprehend is no longer to grasp what lies beneath but to glimpse what lies between."<sup>18</sup> I suggest that my students show such paths to both what lies "under" and what lies "between" when they engage in the world building that expands the original texts.

In this effort of building the hypertextual amplification of a textual passage, we are exploring new technologies by putting ourselves in a Vygotskian Zone of Proximal Development vis-à-vis the creation of hypertext to provide mediated understandings of written texts. Similar to the way the psychologist

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<sup>16</sup> James Paul Gee, "Thinking, Learning, and Reading: The Situated Sociocultural Mind," in *Situated Cognition: Social, Semiotic, and Psychological Perspectives*, ed. David Kirshner and James A. Whitson (Hillsdale, New Jersey: Lawrence Erlbaum, 1997), 236; Gee, 243-4.

<sup>17</sup> Vannevar Bush, "As We May Think," *The Atlantic Monthly* (July 1945; accessed via Project Gutenberg) <http://www.ps.uni-sb.de/~duchier/pub/vbush/vbush-all.shtml>

<sup>18</sup> Mark C. Taylor and Esa Saarinen, *Imagologies* (New York: Routledge, 1994), 1 [numbering mine].

Lev Vygotsky shows a child learning a new word, this project sets up learning sites for acquiring new concepts in concert with others in a ZPD. Such a zone allows for internalizing newly-tried ideas and skills before we present them in the public sphere where they are then evaluated and further refined. In the hypertextual, we expand linear texts, relying on permeating once-assumed boundaries between readers and writers. Reader-response theorists such as Iser have proposed that the scaffolding of a written text sets up gaps and blanks into which a reader should engage. In that sense the writer is setting up the spaces for puzzlement and inquiry—a necessary engagement without which a text remains incomplete. Hypertext websites, blogs, etc. allow for, even insist upon, multiple readings and expression of the thinking that those gaps entice.

In these hypertext assignments we reclaim the activity of “merely” making associations and shape it as a way of having readers and viewers of the hypertext make reading more “visible,” make it an obviously more generative than additive process and, as such, a process that can move more toward creating new Zones of Proximal Development. As teachers we are tasked with making the learning opportunity increasingly more challenging and more beneficial. This hypertext work produces an awareness of learning, a meta-display of the paths of thinking. Though not always welcomed or easy, such activity can be part of a “disciplined design” in teaching and learning. As teachers and researchers we ought not fear that sort of slowing down and its reliance on a most productive uncertainty.