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Expanding the Constructivist Metaphor: A Rhetorical Perspective on Literacy Research and Practice

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In this review we summarize some of the accomplishments and shortcomings of constructivist accounts of reading and writing activity as part of our argument for social and textual views of literacy. Arguing that reading and writing are inseparable from each other and from other modes of meaning making, we aim to foreground studies and theories that depict the rhetorical dimensions of literacy. We define rhetorical *as referring to the means and circumstances through which readers and writers represent and negotiate texts, tasks, and social contexts. A rhetorical perspective on literacy research and practice calls attention to the ways in which language use crystallizes relations between readers and writers. Such a perspective also brings into focus the extent to which the ways authors position themselves within a certain social space is contingent upon (a) authority (e.g., a disciplinary community's conventions for inquiry, the institution of school, or a writer's expertise), (b) the purposes that bring writers together within a particular social forum, and (c) the topic of their discourse or task at hand. In trying to expand the constructivist metaphor, we intend to contribute to a conceptual vocabulary and imagery for literacy research and practice that draw upon textual and intersubjective explanations of constructive activity in composing.*

As educational research on connections between reading and writing progressed during the 1980s, a "constructivist" account of literate activity gained prominence (Tierney & Shanahan, 1991). The term *constructivism* is sometimes confused with discussions of social construction of reality (e.g., Rorty, 1978), and many associate constructivism with child development, often from a Piagetian perspective. But as part of the "cognitive revolution" (Gardner, 1985) in cognitive psychology, constructivism has become a common metaphor for the active and authoritative processes of readers and writers. We view this usage as significant, because theory building in disciplines is as much about institutionalizing a discourse as it is about reasoned or evidential inquiry (Foucault, 1972).

Constructivism in literacy research is not a complete theory of cognitive or literate activity in the way that schema theory has been rendered in research on reading comprehension and its applications. (For reviews, see Anderson & Pearson,

1984; Pearson & Fielding, 1991.) Rather, constructivism in reading and writing operates at the level of a disciplinary belief, helping to sustain an image of literate people who deliberately and inventively negotiate social and textual contexts—even if this image has been underspecified in terms of what this negotiation entails. At the same time, constructivist research on reading and writing has typically favored ideational over social or discourse processes because of the influence of cognitive science on literacy research in education (e.g., Spivey, 1990). The cognitive revolution did free the composer from behaviorism and from inquiries into a priori structures of meaning (e.g., Chomsky, 1972), but it often depicted the composer as a "problem solver" who, as a reader or writer, mapped old knowledge onto to new knowledge encountered in a process of representing (and acting upon) a literacy task.

In this review, we summarize some of the accomplishments and shortcomings of constructivist accounts of reading and writing activity as part of our argument that researchers should begin to account for social and textual views of literacy in a more complete way. We argue for the inseparability of reading and writing from each other (e.g., Tierney & Pearson, 1983) and from other modes of meaning making (e.g., Witte, 1992) in portraying the sociocognitive literate behaviors of older students. Our main goal is to foreground studies and theories that depict rhetorical aspects of literacy, which we define as the means and circumstances through which readers and writers represent and negotiate texts, tasks, and social contexts. A rhetorical perspective on literacy research and practice calls attention to the ways in which language use crystallizes relations between readers and writers. Such a perspective also brings into focus the extent to which the ways authors position themselves within a certain social space is contingent upon (a) authority (e.g., a disciplinary community's conventions for inquiry, the institution of school, or a writer's expertise), (b) the purposes that bring writers together within a particular social forum, and (c) the topic of their discourse or task at hand (cf. Dyson, 1993).

We have organized this review in four stages. We begin by returning to models of reading and writing that assume interactivity between mind and page and that illustrate early attempts to represent literacy contexts. In the next two sections, we discuss research on how readers and writers draw upon content and textual information to create rhetorical contexts for meaning making. We then extend the notion of task representation to discuss given and assumed authority in composing tasks and the influence of communities on literate practice. Finally, we present research and theory that assumes that the textual space of readers and writers is intertextual and intersubjective in nature, to include a textual space that criss-crosses (McGinley & Tierney, 1989; Spiro, Visopel, Schmitz, Samarapungavan, & Boerger, 1987) modalities such as graphic, aural, imagistic, and physical systems of meaning. In doing so, we intend to contribute to a conceptual vocabulary and imagery for literacy research and practice that has limited itself to the study of constructive processes apart from the ways readers and writers make use of what they know within the context of school.

In retrospect, it is not surprising that early attempts at modeling the connections between reading and writing relied on cognitive theory. Clearly, information processing and schema theory have dominated much research on reading comprehension from the 1970s to the present (Tierney & Shanahan, 1991) and were

therefore tempting theoretical arenas that shaped studies of writing processes and connections between reading and writing. Constructivism as a metaphor suggested that readers and writers share common mental activities and purposes, such as constructing "drafts" of meaning. Tierney and Pearson (1983) effectively modeled this commonality by linking the authorial processes of writers with those of readers. But as Spiro (1980) surmised, "Constructed meaning [in comprehension] is the interactive product of text and context of various kinds, including linguistic, prior knowledge, situational, attitudinal, and task contexts, among others" (p. 246). Spiro and others with constructivist orientations (e.g., Rumelhart, 1977; Bransford & Johnson, 1972) gave authority to the composer, saw readers and writers as comparable, and acknowledged a host of external influences on mental activity. Yet, historically, research in a constructivist tradition has focused primarily on two factors: prior knowledge and task representation. Often citing Bartlett's (1932) claim that understanding entails making "an effort after meaning," constructivists locate meaning-making activity primarily within a composer's mental reach: composers represent and thus act upon tasks using textual cues and prior knowledge organized in cognitive structures (often schemata) as they interact with texts. Through this mental process, they make connective inferences, such as causal links, and elaborations to fill gaps of understanding to refine their textual representations.

Spivey (1987, 1990, 1994) has applied constructivist beliefs to writers who read from sources as they exhibit the broad activities of organizing, selecting, and connecting information. She argues that reading and writing processes combine to form "hybrid" literate activities (cf. Bracewell, Frederiksen, & Frederiksen, 1982) and that writers read to construct unique representations of texts and tasks, structured by propositional units (W. Kintsch & van Dijk, 1978). These new representations for the composer are both mental and material, and this usage of the metaphor of constructivism assumes a close approximation between the informational units that stir in the mind and those that result in a written work. For Spivey (e.g., 1984, 1991; Spivey & King, 1989), a "template" of propositional information becomes a tool for the researcher but also depicts the translation of information across source texts, tasks, prior knowledge, and written draft, a process termed "discourse synthesis" (cf. Ackerman, 1991).

Constructivist research on reading and writing of this kind has succeeded in demonstrating many of the active ideational processes in composing, and it has broadened the scope of reading comprehension to include multitext and intertext composing (e.g., Ackerman, 1991; Greene, 1992; Hartman, 1993). This review, however, rejoins Spiro's (1980; Spiro et al., 1987) conjectures that the constructive metaphor, in its most robust form, includes social and subjective contexts. That is, in addition to constructing a coherent template of ideas, composers author an identity in the world related to other composers, and the object of composition is at play in a broad textual field of social and historical activity.

We have gathered research and theory that assume that writers always read (Murray, 1986) and thus see reading and writing not as hybrid literate acts as much as inextricably intertwined in everyday practice. Reading and writing are rhetorical in that writers reciprocally read, think, and compose (Nystrand, 1986) for audiences both imagined and material. From our perspective, a composer's effort after meaning is aptly described as participation in textual space (Bakhtin, 1986;

cf. De Beaugrande & Dressler, 1981) where the authority of the composer is contingent upon intellectual, social, and material relationships (Bloome & Egan-Robertson, 1993). Therefore, it seems important to expand the constructivist metaphor that has guided research on literacy processes by opening discussions of theory and practice to a wider band of historical, intersubjective, and even spatial dynamics.

Interactive Models and the Role of Context

Efforts to connect reading and writing processes began with models of parallel composing processes (e.g., De Beaugrande, 1980; Kucer, 1985; Tierney & Pearson, 1983). These models illustrate the compatibility of modalities and propose a theoretical common ground. They share a concern for the knowledge and intentions of the composer (i.e., as a reader or writer) and the influence of text structure in the form of text cues or an emerging written draft. They also present these components as interactional, within the composer's awareness and control. The composer's mental representation is the site for this interaction, and, true to information processing theory (e.g., Chase & Simon, 1973; Anderson, 1983), the task represented evolves throughout the duration of the activity. For example, Kucer's model (see Figure 1) consists of three "cognitive universals": background knowledge, context, and strategies for integration that produce "surface representation[s] of meaning." Kucer uses the notion of a "text world" to depict the evolution of meaning; yet in this model the locus of activity remains in the composer's short-term memory.

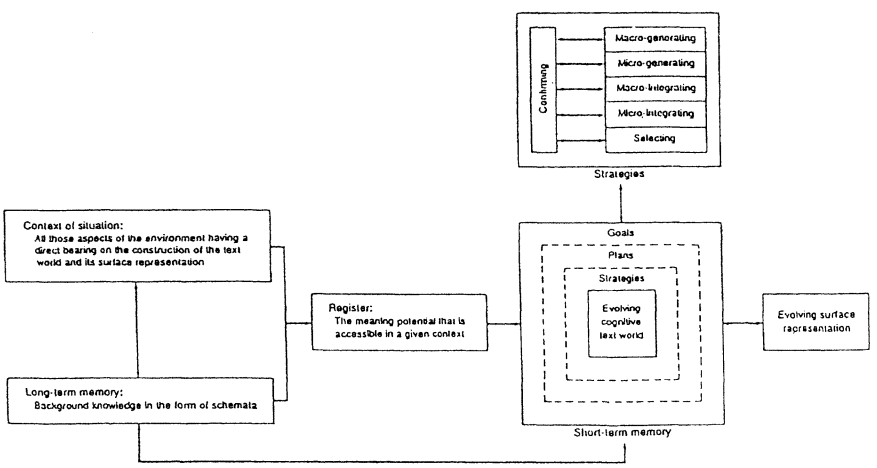

FIGURE 1. *Kucer's (1985) model of text world production*
Note. From "The Making of Meaning," by S. L. Kucer, 1985, *Written Communication, 2,* p. 320. Copyright 1985 by Sage Publications. Reprinted with permission.

Literacy researchers of this type subscribe to the basic tenets of task representation drawn from information processing theories. First, the task given, in the form of an explicit text or assignment, differs from the task perceived. Composers vary in the knowledge and expertise brought to an explicit task, and thus perceptual differences between experts and novices (see Chi, Feltovich, & Glaser, 1981; Glaser, 1988; Larkin, 1985) provide experts with strikingly different solution paths to problems. Also, representations of a given task vary sharply depending upon the original purpose of composers and their evolving representations (Flower, 1987, 1990). For example, writers and readers in school may view a teacher's assignment to read for understanding or to write to summarize as easy or difficult depending upon their rituals of performance (Brooke, 1987; Nelson, 1990) and upon a cultural orientation to correctness and recitation (Hull & Rose, 1989, 1990; Hull, Rose, Fraser, & Castellano, 1991; cf. Applebee, 1984a).

Recently literacy researchers have tried to explain more carefully the role of context in interactive theories of literacy. In an effort to promote consistency in terminology across knowledge research, Alexander, Schallert, and Hare (1991) outline "sociocultural knowledge" as a powerful influence on conceptual knowledge, as their illustration in Figure 2 depicts. This model, similar to other models of composing (e.g., Flower & Hayes, 1981; Flower et al., 1990), tries to represent cultural and contextual influences but always symbolically on the periphery of activity. What remains unclear, understated, or perhaps untranslatable in such models is the substance of sociocultural knowledge and its degree of influence. Knowledge researchers have been able to coin terms and theories, such as schemata, nodes, propositions, and content units, that appear to efficiently represent the interaction of mind and page. Less compatible with these systematic and often atomistic approaches are forms of culturally and historically situated knowledge, such as cultural preferences in learning, self-expression, and gendered authority.

Describing at-risk students, Hull and Rose (1990) write compassionately about how readers with very different cultural orientations may not satisfy a teacher's expectations for a correct interpretation of a source text, but can produce an interpretation consonant with their cultural experience and literate habits. Their research is philosophically in line with the cultural anthropology of Scribner and Cole (1981) and Scribner (1984), who countered "great divide" theories of literacy by establishing cultural relevance to literate habits that otherwise might be judged as less sophisticated or inappropriate (cf. Brandt, 1990). Students often bring diverse forms of cultural and experiential habits to school and literacy tasks, and students' representations of what is expected, possible, and reasonable will reflect these orientations (Dyson, 1993, 1995). Nelson (1990), for example, found ample evidence of what some teachers might consider to be aberrant intellectual behavior in the decisions college students made in giving priority to writing tasks according to their experiences in school and their prior success at "psyching out" the minimal demands of writing tasks.

We contrast Hull and Rose's (1990) account with Kucer's (1985) and Alexander et al.'s (1991) models to illustrate an important bias in most composing models. Models of reading and writing activity are best at depicting the interactive, and at times systematic, nature of composing; by doing so, they often weigh equally such "universals" as knowledge, strategies, and context. Other researchers of literacy tasks, however, seek to unbalance these features, suggesting that external influ-

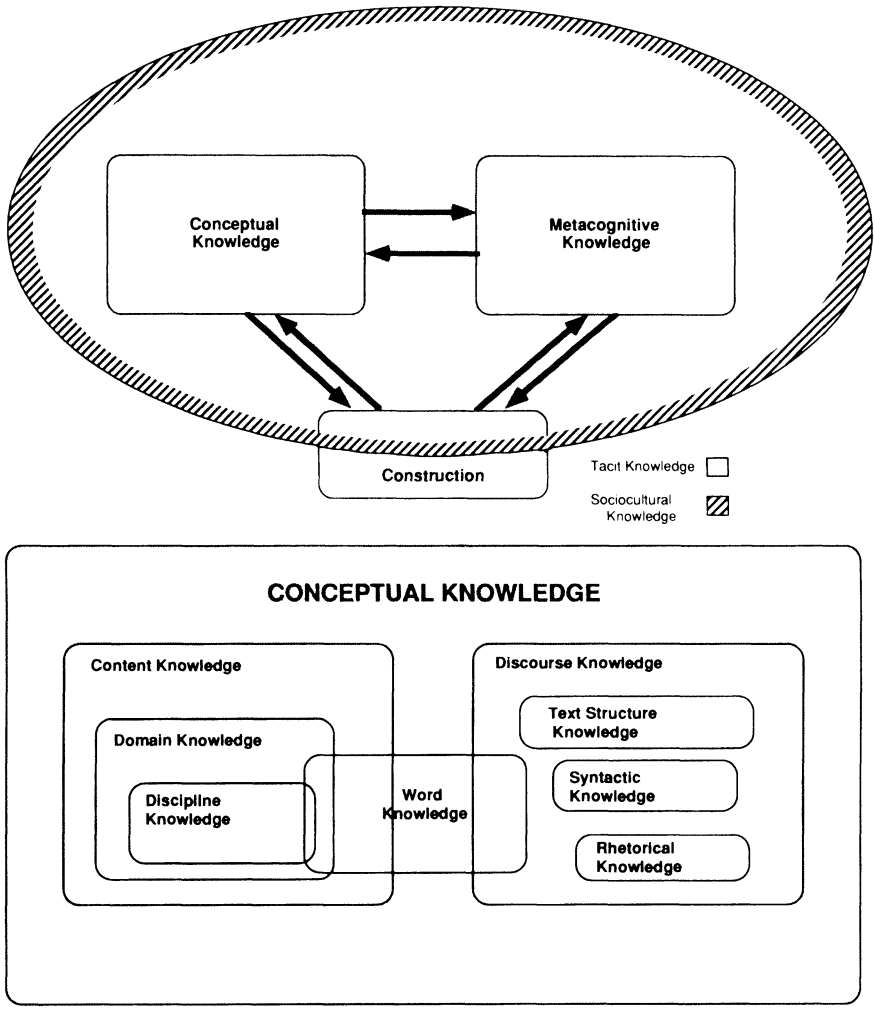

FIGURE 2. *Alexander, Schallert, and Hare's (1991) model of conceptual knowledge*
Note. From "Coming to Terms: How Researchers in Learning and Literacy Talk About Knowledge," by P. Alexander, D. Schallert, and V. Hare, 1991, *Review of Educational Research, 61,* pp. 324, 327. Copyright 1991 by the American Educational Research Association.

ences such as cultural orientation and history in school can alter any apparent system of interaction. Some models have tried to account for such imbalances by shifting the analytical emphasis toward social, material, and cultural contexts. Short (1984), for example, modeled a learning process by placing the learner at center stage in a constellation of people, texts, events, and material objects (although still generalizing cultural difference). This model retains the flavor of

constructivism insofar as it represents the composer as active and interactive, but it foregrounds a variety of social, textual, and material influences. The evolving knowledge of the learner (or composer) appears far more participatory and interdependent: what one knows and does depends upon social and material relationships.

Prior Knowledge as Elaborations of Rhetorical Context, Perspective, and Authority

Assuming that old knowledge meets new, constructivist researchers have theorized that the active processes of integrating prior experience involve first elaborating information beyond what is given in a task or source text. Elaborations that support "effort after meaning" have been shown to serve several purposes. First of all, elaborations can help form generalizations based on the details of a text (e.g., E. Kintsch, 1990; van Dijk & W. Kintsch, 1983) or inferences that are not directly implied in a source text (W. Kintsch, 1988). Elaborations can also add available information (Reder, 1980), such as examples, details, analogies, and restatements (Reder, Charney, & Morgan, 1986) that augment meaning making and that help the composer to reorder textual information (cf. Charney, Reder, & Kusbit, 1990; Weinstein, 1982) for either comprehension or composition. Reder (1980) has described this information as an important "redundancy" in short-term memory and has described how it facilitates comprehension by creating a context for constructing meaning (Bransford, 1979; Bransford, Sherwood, Vye, & Rieser, 1986; Reder, et al., 1986; Whitney, 1987).

Thus, elaborations contribute to evolving representations of a task by fleshing out a mental context that extends the task and often leads to a structure for organizing and selecting relevant information. Stein's (1990) research has presented this context as fostering critical thinking in that composers use what they know to generate examples and counterexamples to evaluate claims (cf. Ackerman, 1991; Reder et al., 1986; Weinstein, 1982). Bransford and Johnson (1972) have also illustrated the importance of building a context for understanding and composing by studying the conceptual structures relevant to integrating elaborations from long-term memory. Students who had not been given any sort of advance organizer rated a passage about washing clothes as incomprehensible; they contrasted dramatically with students who had been given the topic before reading. Bransford (1979) asserts that such a study helps to demonstrate that the ability to understand and remember is always a function of relationships that a learner perceives between new and prior information and that take the form of inferences that contextualize meaning.

Because the effort required for composers to construct a mental context is considerable, they extend that effort only when there is need, and some elaboration research has demonstrated the importance of the goals of learning—whether students are expected to learn factual information or to apply their knowledge in situations that challenge them beyond reciting given information (cf. Reder et al., 1986). Researchers have found, for example, that adjunct aids in comprehension, such as questions provided before and after reading, can improve recall. Yet, as Reder (1980) has suggested, merely asking questions will not necessarily facilitate improvement. Instead, questions must force students to process relevant aspects of

the text in useful ways (cf. Rothkopf, 1972; Watts & Anderson, 1971). What is not clear in this research is the balance of will: although intervention strategies, such as adjunct aids, may prompt elaborations and may be used strategically by the composer, the effectiveness of such aids will probably wane if the user has not accepted and created a purposeful context for them. Weinstein's (1982; cf. Weinstein & Mayer, 1986) research has demonstrated that elaboration strategies, designed to integrate prior knowledge and new information, can significantly increase students' comprehension, but strategies such as paraphrasing, summarizing, and answering questions also imply the need for students to be engaged socially and rhetorically in such activities.

One challenge for cognitive researchers, then, has been to determine how to code an elaboration as topical, textual, or strategic within social relationships (Flower, 1994). Process-tracing researchers often rely on protocol data, but these verbal fragments index much larger constellations of meaning. Hayes and Flower (1980) likened research on artifacts of mental processes to watching dolphins, in that researchers theorize mental processes with only glimpses of activity that operate below the surface of conscious articulation and demonstration. In many cases, researchers can only guess (however informed) about the origin and relevance of an elaboration in that a verbal fragment may simultaneously reference semantic information, its community or cultural relevance, and its immediate rhetorical value. What appears clear in elaboration research are the efforts by composers to render this elaborated information into some form of coherent and relevant context for meaning making (McGinley, 1988; McGinley & Tierney, 1989). Some of these contexts (in school settings, for example) are prescribed by others or accepted as an institutional value, but composers who assume an authorial identity often build a context that serves a multitude of purposes, especially when their assumed task is to produce a text for an audience (e.g., Bazerman, 1986; Greene, 1992).

Some researchers have described the effort to construct a context for meaning as a "rhetorical" activity that entails not only assuming a perspective but situating it in the context of others. In this sense, *rhetorical* refers to those instances when a composer must consider factors beyond the content and organization of a passage. Composing becomes rhetorical when someone chooses to consider other participants in an act of composing, or chooses to consider elaborated and structured information that leads to a context for understanding. Pichert and Anderson (1977; cf. Anderson & Pichert, 1978) suggest that the relative importance of information depends on the perspective that a reader takes. In their two studies, these researchers tested the notion that perspective can determine the significance of information and what is later recalled. In doing so, they attempted to explain the "mechanisms by which importance has its effect" (Anderson & Pichert, 1978, p. 1), something not usually accounted for in structural descriptions of text content. When they asked undergraduates to read a story from the perspective of either a burglar or a home buyer, they found that readers instantiated a "retrieval plan" that varied with the perspective taken and that predicted what information was recalled.

Thus, someone's perspective on a text or problem has social relevance, and rhetorical problems are by nature different from cognitive problems in that they are construed as intertwined with material conditions and social position. As seen

through information processing theory, cognitive problems occupy a representational space (A. Newell & Simon, 1972), which includes possible "states" of a problem and "operators" that can be employed in moving from one state to the next. Solving a problem consists of "reducing the problem space" to its simplest and most solvable form. This process consists of specifying information at various decision points or filling in "open constraints" (Reitman, 1965). Research on rhetorical problems, however, assumes an enlarged problem space, if you will, and also moves the activity of defining the problem space outside of the composer, because all of the decision points along the way are socially validated and mediated.

Studies of expertise, such as those of problem-solving strategies in physics (Chi et al., 1981; Larkin, 1985) or the social sciences (Voss, Greene, Post, & Penner, 1983), have a rhetorical dimension, especially when experts confront ill-defined problems. In solving well-defined problems in physics, a representation is based on schematic knowledge and problems are categorized by principles of physics (e.g., Newton's second law or the conservation of energy), making a seemingly novel problem familiar. However, in solving ill-defined problems for which there are no agreed-upon solutions, experts construct problem representations mediated by circumstance as they identify goals and constraints, evaluating and justifying moves along solution paths. While a problem solver may have a great deal of domain-related knowledge, Glaser (1988) points out that adaptable and flexible mental representations help to mediate what one knows and can accomplish (cf. Chase & Simon, 1973; for a review of expertise in specialized academic domains, see Lesgold, 1984).

In a related study on the ways that expert and novice readers construct meaning, Haas and Flower (1988) have shown that invoking context is a critical strategy that proficient readers use in building representations of a text. Readers use cues from a given text (or texts), prior knowledge and experience, and knowledge of discourse conventions to "infer and discard hypotheses," make predictions, and question assumptions (p. 168). But more expert readers also use a "rhetorical reading strategy" to actively construct a rhetorical context as a way of making sense of textual information (cf. Ackerman, 1991). This strategy includes trying to account for a writer's purpose, the context, and how other readers might respond, enabling these more proficient readers to locate key claims in the text they read.

As an alternative to analyses of the claims, data, and warrants in written arguments (e.g., Toulmin, 1972), Kaufer and Geisler (1991) propose a "representational scheme" that details three key strategies that readers use in "formulating and testing hypotheses about an author's overall direction" in a connected line of argument. These strategies include identifying the main path of a writer's argument with the claims and support that "fall within the writer's perspective." In order to foreground the strengths of a position, writers often introduce what Kaufer and Geisler term "faulty paths," so that readers must search for digressions and irrelevancies as well as the central claims in an argument. Writers include such alternatives to demonstrate their awareness of a rhetorical situation, a social space where many points of view are found. In a way similar to the ways in which readers invoke context (Haas & Flower, 1988) and the ways in which experts solve ill-defined problems, readers intent on composing a novel perspective

(Kaufer & Geisler, 1989) must construct such rhetorical situations beyond the content of a passage.

The authorship to which Kaufer and Geisler (1989) refer can provide a critical referent for understanding what is involved when composers (as problem solvers or not) construct and represent a context to act with agency toward others in a way that is reflective of their social and material conditions. By authorship (as opposed to just writing), we mean the critical thinking that students use in their efforts to contribute knowledge to a textual conversation, knowledge which is not necessarily found in source texts but is nonetheless carefully linked to the texts they read (Greene, 1995; see also Greene, 1994). Authoring a school-assigned text is an inherently rhetorical process in that students must often interpret information and not simply report it. Their elaborations beyond what is consensually available in a text are in the service of authorship, as these elaborations invoke a rhetorical context to account for what readers know and to gauge how much new and old information to include to insure that readers comprehend or are persuaded. Thus, the information in one's text shapes not only what is said but who will be interested (cf. Kaufer & Carley, 1993).

As we will discuss, synthesizing information to advance an argument marks an important intellectual step for authors who seek to reach a community of interested readers. Source texts are the means, not the ends, of their "effort after meaning" at any point when writers are given, or assume, the authority to contribute something new to a community. In postsecondary settings, writing an essay that contributes a unique perspective requires that students synthesize and restructure information within the bounds of "acceptable" disciplinary discourse. Restructuring may entail supplying new organizational patterns not found in sources, appropriating information as evidence to support an argument, and making connective inferences between prior knowledge and source content (e.g., Greene, 1993). The source of an author's authority derives from an ability to create and support his or her vision, one that recognizes that more traditionally accepted sources may fail to function as adequate models or fall short of providing adequate solutions to problems. At the same time, this authority is always provisional, depending not only on authors' ability to develop intellectual projects of their own but also upon the authorizing principles that exist in the social structures of schooling and the conventions of academic inquiry (Greene, 1995).

Linking elaborations, perspective, argument structure, and authority is not without its historical antecedents. It is consistent with Aristotle's notion of division or *divisio*, whereby a rhetor exercises power by "partitioning a subject into constituent parts for the purpose of gaining knowledge" (Porter, 1990, p. 191; see also D'Angelo, 1975). The analytical categories (e.g., *topoi*) that readers and writers create for classifying information, naming things, and establishing a center for an argument both unify and divide. These categories are not found in the world, but are constructs that composers use to set boundaries, organizing collections of facts and ideas into coherent discourse, thus maintaining a certain way of seeing the world. To be rhetorical, then, is to construct a representation of a discourse world, sympathetic (or strategic) to a composer's aim and to communities and participants of value. Seen in this way, divisio—at once the act of unifying and dividing—is closely related to rhetorical invention, thus pointing to the generative potential of content and text structure to empower. Rhetorical inven-

tion is informed by a dynamic process of both finding and creating the substance of discourse (Lefevre, 1987; Young, 1986), a process initiated by a writer's plan or mental representation of the text to be produced, and one that is implicit in any discourse (cf. Witte & Cherry, 1986).

Text Structure, Representations, and Rhetorical Contexts

Thus far, we have tried to show how even cognitive research on elaborations evidences how composers recreate a context for comprehension and that their need and desire to do so is rhetorical in nature. Although researchers have construed these contexts as mental representations, depending on the vantage point of the researcher, each line of research reflects the influence of social, textual, and even material circumstances. In this section, we look more closely at how interactive models of literacy assume a translation of textual cues into mental representations of meaning (Rumelhart, 1977; cf. Rosenblatt, 1978). If composers are prone to elaborate in order to build a context for understanding discourse, then part of that context will probably include textual fragments, strategies for coherence, and rhetorical awareness of the social implications for making meaning. Hillocks (1986) suggests that writers draw upon declarative and procedural forms of content (semantic) and rhetorical knowledge in their efforts to understand a task and to invent, in a sense, a rhetorical context (cf. Scardamalia & Bereiter, 1985). McCutchen (1986) advances a similar theory by differentiating form and function for three kinds of knowledge: content, plans, and discourse. From her study of middle school students composing on the topic of baseball, she concluded that a high level of content knowledge contributed to coherent, elaborated, and specific ideas in essays, but that discourse knowledge may have compensated somewhat for an absence of content knowledge (cf. Langer, 1984). Ackerman (1991) also construed the elaboration of writers as bridging reading and writing activities and serving a variety of functions. In a comparison of writers in two disciplines, composers elaborated source texts and topics to create a rhetorical context, evaluate given material from source texts, isolate possible text structures, and assign rhetorical importance.

Composers engage source texts to invent—or reinvent—a linguistic and rhetorical context within which to situate their written response. That context can never be purely semantic because of the influence of audience and the power of genre, or socially validated forms of discourse (Berkenkotter & Huckin, 1994). A particular problem for students or for writers new to a situation is the challenge of adjusting their text knowledge with explicit and implicit situational demands, as with the assignment "to summarize and critique an authority." Students may begin such a task with partial genre knowledge, that is, with expertise in summarizing but little knowledge about how to structure and support a critique (Charney & Carlson, 1995). Flower et al. (1990) found that college-level students reinvent common writing tasks. Even though students were invited to develop their own rhetorical purpose, or argument, in writing an essay, many opted to write a more straightforward summary of the texts they had read. Despite seemingly explicit assignments and modeling from instructors and peers, many students choose familiar tasks and agreed-upon interpretations of information in the sources they read (e.g., Nelson, 1990).

Part of the motivation to reconstruct a social and rhetorical context involves finding a relevant text structure to enhance understanding and, for writers, to compose a draft. Because structure appears to be an essential characteristic of texts, researchers have sought to describe and classify the semantic content of stories (Mandler & Johnson, 1977; Rumelhart, 1977), scientific reports (W. Kintsch & van Dijk, 1978), and other forms of expository writing (Meyer, 1975; Meyer & Freedle, 1984). These structural descriptions are thought to provide a kind of template, enabling a researcher to compare the organization of a reader's mental representation of a text, inferred from a reader's recall, with the organization suggested by the text. In this way, researchers have examined how readers identify and use text structure in comprehending a text, a process that appears to entail fully appreciating the relative importance of various text elements. Meyer's (1975; cf. Meyer, 1985) analysis of prose, for example, consists of parsing texts into propositions, which include the explicitly stated semantic content of a text and the "relational terms inferred from the text." Such an analysis produces a hierarchically organized representation of a text's passage, which Meyer terms the "content structure." W. Kintsch and van Dijk (1978; cf. van Dijk & W. Kintsch, 1983) have also produced a hierarchical representation of a text in which the unit of analysis is the proposition. The premise in their research on discourse processing is that the propositional form is the representation in which knowledge is used and stored. W. Kintsch (1990) has since discussed the importance of syntax as providing readers with "instructions" for constructing a coherent representation of a text.

Based on their analysis, Meyer and her colleagues (Meyer, Brandt, & Bluth, 1980) found evidence that constructing a mental representation of a text involves an active effort to discover the top-level, or superordinate, structure of a text. Meyer and others observe that readers make choices about what to select on the basis of structural importance and prior knowledge about how texts are conventionally organized (Bower, 1976; Meyer & Freedle, 1984; Meyer & McConkie, 1973). Speculations about readers' use of a "structure strategy" (Meyer, 1985; cf. Hidi & Anderson, 1986) to determine the relative importance of ideas are similar to explanations of a "levels effect" discussed by W. Kintsch and van Dijk (1978). In their model of comprehension, information that appears high in the content structure of a text, signaled by repetition of arguments or concepts, is recalled more readily than ideas placed lower in the content structure of a text. For Meyer and Rice (1984), the hierarchy of ideas is formalized through the use of rhetorical predicates at the macropropositional level and case relations at the micropropositional level. Ideas located in the top-level structure of a text are recalled and retained better than ideas that appear lower in the content structure.

Moreover, readers who are able to identify and use an author's structure in a text are better able to recall more of the ideas in that text (Meyer et al., 1980). Such a finding is consistent with W. Kintsch and Yarbrough's (1982) conclusion that students who are able to identify a writer's rhetorical strategy and use that strategy to organize their own texts perform better on measures of recall than those who do not identify the organizing principle of a text. The ability to use (what they call) a rhetorical strategy provides a framework or schema that enables a reader or writer to interrelate propositions at the micro level and generate the macrostructure or gist of a text.

Though this research lends support for a "structure strategy" in composing to help determine the relative importance of ideas in text and to facilitate the construction of main ideas, recent research (W. Kintsch, 1990) on the comprehension of stories provides evidence that readers produce a situation model of a text that is independent of a mental representation of the text (cf. W. Kintsch, 1988; van Dijk & W. Kintsch, 1983). This model reflects primarily the structure of a situation described by the text, consisting of a reader's knowledge about people, their motivations, the way they achieve goals, and a knowledge about different social relations. While W. Kintsch's earlier work has emphasized the role that text structure plays in how readers construct meaning, a situation model calls attention to the structure and perceived relevance of readers' prior knowledge in building a coherent representation of meaning in text (cf. Charney & Carlson, 1995).

When readers comprehend only to understand or recite, the structure strategy or the recognition of other coherence features (e.g., Halliday & Hasan, 1976; cf. Armbruster, Anderson, & Ostertag, 1987) may provide much of the context necessary. But when the reader is also a writer, or when the reader represents herself as a participant or a witness in a conversation across texts, the accessible structure of a given text falls short, because it alone will not explain or suggest rhetorical relevance. Writers not only seek out structural devices but also assign a rhetorical value to such devices dependent on their intentions and their self-representation as an authority in the company of others. Barthes (1975) saw this "writerly" activity in readers as authorial activity equal to that of a text's original author. More research is needed on the degree to which readers as writers, in school settings and out, perceive the structure of a given text and the echoes of other textual experiences in what they read.

Authority as Engagement in Composing Tasks and Communities

The research reviewed so far suggests that no one piece of information—for example, a source text's structure or coherence—dominates understanding, and in fact much of composing is devoted to figuring out what is relevant and useful. Relevance, then, is another rhetorical aspect of literacy, and it will vary with the composer's familiarity with tasks and texts and with the authority assigned or assumed.

Some researchers have explored the purposes found and assumed by writers who gather explicit information from source texts. Researchers (e.g., Flower et al., 1990) and theorists (Prawat, 1989) have suggested that knowledge remains inert without an awareness of what one knows and how to use this information most effectively. For Bransford and his colleagues (Bransford et al., 1986), people's ability to use what they know, accessing task-relevant information, is a hallmark of intelligence.

Flower (1987, 1990) has pointed out that part of managing the "special demands of academic discourse . . . may not lie in [a] student's ability or even [in] the discourse per se, but in the way [a] student has construed the task" (Flower, 1987, p. 1). In fact, the ability to succeed in school depends on a writer's ability to specify what is asked for and possible in an assignment (see also Doyle, 1983). A task and one's interpretation of that task cannot be separated. When students read and write, they invoke knowledge about discourse, their beliefs about writing

in school, and their knowledge about a given topic or problem. In turn, each of these sources of knowledge can affect the goals students set in planning what they want to write and influence how they will organize, select, and put together information from different sources. Seen in this way, writing actually begins in the act of understanding or "reading" an assignment. Ruth and Murphy (1984) point out that the initial act of reading comprehension and subsequent rereadings at any stage of composing "call into play all of the forces" that make a text meaningful: "activation of schemata or frameworks; interpretations and inferences about an instructor's expectations and assumptions; determination of the relative importance of text elements essential to understanding and carrying out the task" (p. 413). This interpretive act is itself made of other texts formed on other occasions, thus calling attention to the intertextual nature of this process. Learners make sense of new texts and new situations by making connections to familiar tasks and contexts (Rowe, 1987).

In studies of the composing process, Flower (1987, 1990) has observed that the process of constructing an interpretation is an "extended interpretive process that weaves itself throughout composing" (1987, p. 36). In setting forth a theory that interpreting a task is a constructive process, she offers three principles. First, one's image of a task depends in large part on a writer's prior knowledge, as well as schemata, conventions, and strategies that a writer brings to a task. Second, because a writer produces a text in context—making decisions about what kinds of information to select from a source text, and reviewing and evaluating what one has produced in light of what a task requires—the process of constructing an interpretation can extend throughout the course of composing. Finally, Flower points out that an interpretation is not always stable. Writers may develop conflicting interpretations and change goals and strategies, in part because writers are often opportunistic planners. Thus, task representation in written composition is arguably more an interpretive process than a systematic outcome of cognition.

More specifically, in a study of students reading to write, Flower et al. (1990) explored the approaches that 72 students took in writing their essays on the subject of time management and found that despite receiving the same prompt for writing the students interpreted the task quite differently. Some saw the task, one that asked them to analyze and synthesize information, as requiring them to summarize the reading passages they were given; others interpreted the task as inviting them to talk about what they already knew, thus using the sources as a springboard to introduce their own ideas. For the most part, however, students focused primarily on the sources they were given; only a small number of students developed their own rhetorical purpose—that is, adapting and transforming information from the sources and their experiences to make an original claim. While we may expect that students will adapt and transform knowledge (Flower et al., 1990) with a sense of purpose and authority, students' "opening moves" in writing were based on a legacy of schooling that emphasizes the recitation of given information. These students did not feel that they could challenge the authority of received opinion, nor did many students believe that they were invited to include their own ideas (Ackerman, 1990).

Although we may design writing assignments we believe will foster the learning we value, other studies reveal that the learning strategies that once served our students so well at home or in their communities may seem less successful in the

context of school (cf. Heath, 1983). In fact, the strategies they have learned can even be counterproductive (cf. Neuman & Roskos, 1994). Students may be quite capable of fulfilling the tasks we give them, but many of our students are unaware of the ways in which the conventions they have learned in one context may differ from those of academic discourse. For instance, in spoken language students are free to assert opinions without displaying evidence or to recount experiences without explaining what they mean. But in school we reward students' ability to sustain a play of mind upon ideas—teasing out contradictions and the ambiguities of statements (e.g., Rose, 1989). Therefore, when we admonish our students to "be specific," we need to be aware that the conditions for specificity may not be present for them. An equally important point is that students may demonstrate a keen understanding of certain kinds of texts (e.g., film, the Internet) that they may not readily transfer to their reading of more traditional texts (e.g., Foertsch, 1995; Smagorinsky & Coppock, 1994). In turn, they may not construe tasks in the same way in school as they might in other contexts.

In the next section we review common writing assignments in school to examine the degree to which these tasks invite student autonomy and authority. Our goal is not to create a taxonomy of literacy tasks; rather, we present research that posits an interaction between the composer and assigned information in the form of source texts. By examining summaries, analyses, and syntheses, researchers have tried to study intellectual processes basic to many literacy tasks in school. As writers perform such different tasks as writing a report, a comparison, an analytical essay, or solving a problem, they build different representations of meaning because these tasks appear to invite people to approach information differently. Constructivist theory would predict that different transformations of meaning would result because these tasks appear to require different methods of reorganization and different bases for selecting information from sources (Spivey, 1990). However, each task, when referenced within a social and institutional setting, suggests also the degree to which composers can achieve authorship, and when they might break conventional rules or plan hybrid forms of discourse as they negotiate meaning in the context of others.

Summarizing, Synthesizing, and Analyzing Information

Brown and Day (1983; Hidi & Anderson, 1986) point out that summary writing is a relatively complex task that entails orchestrating different cognitive skills. Writing a summary entails comprehending a text and determining the relative importance of information or ideas selected in order to form a coherent mental representation of a text (Winograd, 1984). Moreover, based on their analysis of think-aloud protocols, Brown and Day have identified key strategies that proficient readers use to construct a summary. Such a process consists of constructing the generalized meaning, or macrostructure, of a text (van Dijk & W. Kintsch, 1983). If the main idea is not explicitly stated, readers must "invent" a statement to represent the main idea (cf. Afflerbach, 1990). Readers also use deletion rules to select out redundancy and unnecessary information. In the end, writing a summary incorporates some important analytical skills, for instance, substituting superordinate concepts for more isolated bits of information and integrating information from a text within a writer's own perspective and rhetorical purpose,

all of which may entail extensive planning (Brown, Day, & Jones, 1983).

The difficulty of summarizing a text, however, may depend on a reader's or writer's purpose in reading or writing. Writing a precis or an abstract entails maintaining the order in which ideas were originally presented, but certain kinds of summary writing also consist of restructuring information at both the macro and micro levels (Ratteray, 1985). The strategies one uses in writing a summary rest on the kind of summary one writes, and also on whether a reader is familiar with a given topic. In a study related to summary writing, Afflerbach (1990) examined the strategies that expert readers use to identify and state the main idea of a text when the main idea is not explicit. As in the strategies readers use to summarize a text when the main idea is merely implicit, readers "create one through the macroprocesses of construction" (p. 33). Afflerbach has shown that when readers are unfamiliar with a topic they resort to a draft-and-revision strategy that may entail forming hypotheses or listing words and concepts in order to represent the main idea of a text. Forming a main idea can be a constructed, mediated process not unlike the approaches taken by experts solving ill-defined problems.

The nature of a text (e.g., length, level of difficulty) on which a writer bases a summary often shapes the strategies writers use in constructing meaning. Eileen Kintsch's (1990) research on summary writing has shown that when texts are poorly written, readers must reorder these texts, generate more inferential elaborations than when texts are well written, and produce more macro-level propositions. The ability to perform these transformations, however, is a function of both age and experience (cf. Brown & Day, 1983; Brown et al., 1983).

Although findings from these studies support comprehension instruction, they raise questions about how the researchers define summary activity or construe it as literacy. Applebee (1984a), for example, defines *summary* as a "generalized narrative" that is assumed to be a generically simpler task than an analysis. After all, writing a summary relies to a great extent on the narrative structure of a source text (cf. Britton, Burgess, Martin, McLeod, & Rosen, 1975; Durst, 1987; G. E. Newell, 1984). Applebee contrasts summary writing with analysis, contending that writing an analytical essay requires a writer to employ more "logical modes of argumentation and organization, relying more heavily on classification and categorization" (p. 57). Yet what is problematic in these characterizations of summary and analysis is that a mode of writing and accompanying processes are conflated, thus obviating the potential complexity of writing for different purposes and audiences (Hunt & Vipond, 1992).

If knowledge and rhetorical expertise work together, what happens when readers and writers synthesize information? Research and theory on knowledge restructuring suggests that comprehension and composing may facilitate a "weak" restructuring of knowledge (Vosniadou & Brewer, 1987) as past experience and concepts are revised and perhaps even preliminarily "tuned" to account for anomalies or new ideas. We may think of a summary writer as restructuring knowledge through a process of condensing given information into a gist. This condensation process is far from automatic or an obvious result of comprehension (cf. Brown & Day, 1983). Summarizing requires evaluation and the transformation of previously organized ideas (Winograd, 1984), a process which can facilitate learning (Brown, Campione, & Day, 1981). The process of summarizing has

been shown to include selection and reduction processes (W. Kintsch & van Dijk, 1978) and is sensitive to variations of task, materials to be summarized, and purpose (Hidi & Anderson, 1986).

At some level, summary processes surely complement the process of constructing syntheses. At first glance, there is little perceivable difference between constructing a summary and constructing a synthesis because both require a reduction of information. However, task, purpose, and the materials involved importantly separate the two processes. When constructing a summary, a writer often adheres closely to textually relevant ideas; the task is commonly to (re)present the important ideas in a text. A synthesis, however, opens the selective and reductive processes up to unique criteria; the writer may construe the synthesis task as one where novel organizations or extratextual ideas are appropriate and essential. While the processes of both summary and synthesis are influenced by prior knowledge brought to the task, a synthesis foregrounds the integration of old information with new. A synthesis writing task, such as a review of literature, might consist of a reorganization of information across texts and a restructuring of information to reflect an original perspective or a purpose brought by the writer to the task. Hidi and Anderson (1986), though concerned more with summary processes, drew attention to perspective and purpose by distinguishing "reader-based" and "writer-based" goals (cf. Flower, 1979).

Several educators, psychologists, and composition specialists have taken an as object of scrutiny the intellectual task of synthesizing ideas. A synthesis of information has been construed as a necessary complement to sequenced learning (Van Patten, Chao, & Reigeluth, 1986) because it requires the learner to structure content and, typically, to incorporate new knowledge with old. For example, Bruner (1960) based a theory of learning and teaching at least partly on synthesizing activities: "grasping the structure of a subject is understanding it in a way that permits many other things to be related to it meaningfully" (p. 7). Piaget's (1929, 1930) theory of developmental learning correlated changes in "global" restructuring of information in children with stages of logical development. In addition, Rumelhart and Norman (1981) distinguished three ways in which existing schemata can be modified by new experience: the "accretion" of new information into existing schemata, "tuning" the categories used for interpreting information, and the creation of wholly new structures or "restructuring" schemata to reinterpret or account for new information.

As we have seen in the constructivist's perspective on reading and writing, comprehension and composing require, to some degree, the creation of meaningful relations—whether it is to wed background knowledge with cues from a source text or to restructure an idea to accommodate both genre and audience. The premise that writing restructures knowledge has been a cornerstone in the argument for using writing to facilitate learning because writing requires a symbolic transformation of experience and new information to satisfy the constraints of form and audience (Emig, 1977). Writing specialists have celebrated the "higher-order reasoning" attributed to the process of writing, and they equate learning to write with learning critical thinking (cf. Applebee, 1984b).

To further distinguish summary from other types of higher-order reasoning, several researchers in writing to date have compared summary with analytic writing. *Analytic writing* may be thought of as a version of discourse synthesis if

the critical thinking associated with analytic writing results from comprehension and composing based on multiple source texts. From surveys of academic writing assignments in secondary schools, Applebee (1984a) concluded that much academic writing was analytic and that this class of assignments, ranging from literary interpretations to subject-area reports to persuasive assignments, was worthy of closer analysis because of implications for writing and learning. Durst (1987) contrasted high- and average-ability writers who were given summary and analytic writing tasks. Their essays were analyzed for level of abstractness, hierarchical organization of content, and cohesive devices; composing processes (inferred from protocols) were analyzed for cognitive operations, text units, and focus. Durst found that students writing analytically employed varied and more complex cognitive operations, focused on intermediate and global issues in the readings, and attended more to their own writing processes. In their essays, students writing analytically tended toward more abstract interpretations of their content with more evaluation (instead of description) and with slightly more coherence.

These findings appear to drive a wedge between analytic and summary thinking; the former is more demanding in terms of the critical, reflective thinking admired by educators who espouse writing to learn. Yet as Durst (1987) pointed out, the gap between analytic and summary skills is less apparent in the final products (see also Ackerman, 1991). All of the students in Durst's study relied on narrative patterns at times to cope with the demands of an analytic task. Durst (1987; cf. Durst, 1984) concluded that analytic writing seems to require knowledge of appropriate rhetorical conventions and a familiarity with the central issues, claims, and counterclaims in a topic. Writers who are expected to analyze and thus make their critical thinking apparent must "contextualize" their thinking, constructing a frame of reference.

Durst (1987) used think-aloud protocols to study the effect of two writing tasks—analytic and summary writing—on thinking and found significant differences between the cognitive operations involved in these tasks. The analytic writing task prompted students to engage in more varied and complex thinking—formulating high-level plans, questioning, interpreting the source texts, and evaluating their own essays—than did the summary task. In contrast, students writing summaries focused primarily on "bits of text" without attending to the overall framework and meaning of the source text (p. 373). Interestingly, though the types of reasoning fostered by these two tasks differed, students' essays in both task groups looked surprisingly similar. Nonetheless, Durst concluded that analytic writing can serve as a heuristic for thinking critically about a subject.

In related work, Hoey (1983, 1986) studied problem-solution patterns in spoken discourse (cf. Winter, 1974) to learn whether structure is an essential characteristic of texts or something readers create as they read. In fact, Hoey questions whether problem-solution patterns are as distinct as others have suggested. His analyses of problem-solution texts suggest that such a pattern shares many features with the question-answer pattern and what he terms a *hypothetical-real pattern*, which consists of a thesis, a denial, and some sort of corrective. Hoey (1983) also makes an important distinction between text structure and structure that is realized through a reader's construction of meaning. The organization of a text results from the semantic relations that hold between propositions or sen-

tences, but relations among sentences (i.e., clause relations) are acts of interpretation performed by a listener shaped by prior experiences. Knowledge of a particular type of discourse enables a reader or listener to make predictions about structural importance. However, since patterns are not "as distinct as they seem" (Hoey, 1986, p. 211), it is more difficult to make predictions about the characteristics of text structure. The existence of structure depends upon a reader and "the speech acts performed in spoken discourse as well" (p. 212).

These studies suggest ways in which different writing tasks may potentially affect students' principles of selecting and using information from source texts. Composing to summarize, composing to synthesize, and composing to analyze may invite someone to interpret information from given source texts differently, yet a composer's assumed authority (i.e., social status) and purpose can override predictions that constructivist theory makes about how composers will organize, select, or connect information (Spivey, 1990). Writers, for pragmatic reasons, may translate a synthesis task into a summary (e.g., Flower et al., 1990), and the process of summarizing may require cycles of analysis and deletion before the written, semantic summary can be produced.

Given the powerful presence of sociocultural knowledge and its potential interaction with conceptual knowledge (Alexander et al., 1991), students or less accomplished writers may truly struggle to reconcile the implied authority required in some composing tasks with their identities as language users. Particularly troubling, for some students, is the task of critique, which requires summary and analytic skills and results in a spoken or written position which exposes shortcomings (Mathison, 1993). This agonistic form of analysis is assumed in much college-level composing but can be an ideological hurdle for students whose communities and cultures do not take such confrontation for granted (Rose, 1989).

Literacy as Learning, Literacy as Engagement

Throughout our review, we have assumed that most of our composers are situated in school, where much of their literacy activity is aimed at learning. As many have observed, public schooling's conservative role is to impart received, stable knowledge and skills (e.g., Giroux, 1992), a foundation from which students are assumed to act as citizens or as professional or disciplinary experts with advanced training. However, models and images of composing that posit an author, a participant, or a critic suggest a different, more critical stance toward received knowledge. Indeed, to "think critically" (as many educators now advocate) may require a stance for the composer that is far from neutral or passive, where learning is never separated from doing.

As we tried to illustrate in the previous section, common literacy tasks suggest a relationship between the composer and assigned information, but the most telling factor is often the composer's perception of imagined or real contexts (e.g., rhetorical or social). Qualitative research in England and the United States indicates how ingrained recitational models of literacy are in schools and thus how radical it may be to assume that students can use reading and writing to act as authors (Applebee, 1984a; Britton et al., 1975) or to critically engage assigned topics and texts.

Literacy in school has come to mean learning in school. Our review thus far

illustrates how the research community often construes reading and writing activity as manipulating and controlling knowledge. Because of the key role reading plays in education—in teaching students to comprehend and recall core material—it has become nearly synonymous with learning, and writing tasks have only recently been similarly touted. Together, the growth of writing-across-the-curriculum programs and the writing-to-learn movement in the United States over the past 10 years can account for a shift from the use of writing as an instrument for evaluating students' knowledge of a topic to its use as a tool enabling students to explore new ideas and integrate prior learning with different sources of information (e.g., Maimon, Belcher, Heran, Nodine, & O'Connor, 1981; McLeod, 1987, 1990). This shift represents a step away from literacy as recitation, that is, the transmission of previously organized information by teachers and texts (cf. Applebee, 1984a; Barnes, 1976).

Research on the positive relationship between writing and learning emerged shortly after innovations in writing across the curriculum (Ackerman, 1993). This research, in keeping with the beliefs of many practitioners, assumed that writing activities in school settings fostered unique learning potentials and outcomes. For example, G. E. Newell (1984) compared the effects of note taking, answering study questions, and writing analytical essays on students' acquisition of topic knowledge. He found that students who wrote analytical essays learned more passage-specific content than those engaged in more restricted writing tasks that invited students to review information in a given text. A follow-up study based on these data (G. E. Newell & Winograd, 1989) showed that students who wrote analysis papers were more sensitive to structural importance—that is, to how important ideas in a prose passage related to one another—than those who answered study questions or took notes. There was also a significant effect for task on recall favoring those who wrote essays; for these students, an understanding of structural importance apparently "facilitated their ability to recall the gist" (p. 207).

Current research focusing on the relationship between writing and learning has provided some evidence that different kinds of writing encourage different intellectual processes and thus support different kinds of learning (cf. Penrose, 1992). This evidence, however, is often based on students' performance on relatively structured writing tasks based on single sources. In a study designed to examine the effect that different kinds of writing have on students' understanding of literary texts, Marshall (1987) found that formal analytic writing and personal analytic writing both enabled students to develop a much more elaborated representation of a story than did restricted writing. The opportunity to elaborate in essay writing, in turn, provided the basis for what students remembered and understood over time. Though both forms of essay writing prompted students to interpret and consider textual evidence in constructing a point of view, personal writing enabled students to integrate prior knowledge and experience with new information, and therefore fostered more sustained inquiry about a topic than did formal analytic writing. Marshall speculated that restricted writing, such as answering short-answer questions, may actually discourage students from forming an elaborated representation of a text, that is, from making connections among discrete elements of a text and the overall meaning of a story.

Penrose (1992) sharpened this conclusion by claiming that some writing tasks

may actually interfere with learning, precisely because of the special linguistic and ideational demands associated with writing. In an effort to understand some of these demands, Langer and Applebee (1987) embarked on a 3-year study of writing and learning in classroom contexts. Their research team examined writing instruction in 18 high school science and social science classrooms and described various pedagogies that may or may not enhance learning. Like Penrose, they concluded that blanket claims for writing and learning are not defensible, but other claims for the relative value of writing are important for educators. First, manipulating information seems to improve learning, which means that a host of literacy activities may be equally effective. Second, writing tasks differ in engagement and learning potential, and learning is always confounded by personal knowledge and the environments in which learning and composing take place. Ackerman (1993), after reviewing 38 empirical studies of writing and learning, concluded that neither inferential nor anecdotal studies established the irrefutable evidence sought by researchers. Also, he found that researchers and practitioners operated with similar ideological beliefs in the inevitability of learning from writing, beliefs which often ignored the complexity of institutional settings and cultural performance. More powerful were a host of such confounding variables as culturally specific learning styles, time on task, and classroom and institutional environments.

Other researchers have tried to shift away from reading and writing for the sake of learning content and toward literacy as a critical activity of engagement. For example, Tierney and his colleagues (Tierney, Soter, O'Flahavan, & McGinley, 1989) have investigated whether writing in combination with reading prompts more thinking or cognitive engagement than does reading or writing alone. Three key assumptions inform this research, reflecting a constructivist orientation to reading and writing. First, reading and writing are active, constructive processes in which people create a textual world of meaning based on text, context, and prior knowledge (cf. Kucer, 1985). Different types of reading and writing represent different paths or "traversal routes" for thinking about a given issue or problem, and these different paths can enable learners to apply their knowledge flexibly in novel situations (Spiro et al., 1987). Second, as such, reading and writing are parallel processes. Tierney and Pearson's (1983) composing model of reading, for example, provides a theoretical framework for understanding how proficient readers and writers plan and set goals, draft, align (taking an authorial or critical stance), revise their understanding of textual meaning, and monitor or evaluate the plausibility of an interpretation (cf. McGinley & Tierney, 1989). And third, based on previous empirical research and theoretical speculation, this study embraces the notion that reading in combination with writing results in more learning than when people base their understanding of textual information on either reading or writing alone (Colvin-Murphy, 1986; Langer & Applebee, 1987; Salvatori, 1985).

Tierney et al.'s (1989) findings suggest that reading and writing in combination with one another prompt more critical thinking about a topic than reading or writing alone. Students who were given opportunities to both read and write wrote qualitatively better drafts and were more engaged in their task in that they made more changes to the texts they wrote and were more reflective in their thinking. This element of reflectiveness is, for Ennis (1987), the hallmark of critical thinking that influences the choices people make and the actions they take in

different situations. If we adopt Ennis's view that critical thinking is "reasonable reflective thinking," then Tierney et al. (1989) contend that reading and writing, as invoking thought processes, can help a learner decide "what to believe and do" (p. 166).

McGinley (1988) and McGinley and Tierney (1989) add a much needed perspective to the discussion of the role of literacy in learning and critical thinking. Based on an analysis of think-aloud protocols and students' responses to questions focusing on the purposes served by reading and writing, McGinley (1988) qualifies the ways in which writing in combination with reading can foster critical thinking. Reading and writing can enable students to examine an issue from "their own unique perspective" (p. 262) and to reflect on their own thinking. However, McGinley observes that the kind of reasoning students engage in depends in large part on how and when students choose to read and write, suggesting that the composer's choice to orchestrate a range of literacy activities is a hallmark of authority and is part of the rhetoric of constructivism.

Literacy as Community Practice

The research that we have gathered thus far has led us to conclude that much of the constructivist research on reading and writing reflects larger biases in American education toward the conservation and recitation of knowledge. Common composing tasks suggest this bias, as evidenced by studies of summary, synthesis, and analysis that draw upon psychological models and theories. Learning by reading or writing, then, may invoke an orientation to knowledge practices that is quite different from the one suggested by literacy as engagement. All along, we have tried to show where and how constructivist literacy research is rhetorical, where the effort after meaning entails the need to act in the company of others and to be perceived as an author, someone who contributes to an ongoing conversation. In this section, we examine research concerned much more with social contexts. Although a full review of such work is beyond the scope of this article, we include a perspective on community because of its implicit critique of literacy as a tool to manage information.

How writers (and readers) enter and learn to participate in discourse communities has increasingly been studied by researchers using a variety of empirical and hermeneutical techniques to examine, for example, the difficulties that young adult writers confront as they enter the university culture (North, 1987), their major fields of study (Faigley & Hansen, 1985; Geisler, 1994; Herrington, 1985), or graduate school (Berkenkotter & Huckin, 1994; Berkenkotter, Huckin, & Ackerman, 1988). These studies suggest that students entering academic disciplines need a specialized literacy that consists of the ability to use discipline-specific rhetorical and linguistic conventions to serve their purposes as writers. Academic disciplines have been characterized as communities (Bizzell, 1982; Herrington, 1985; Porter, 1986) that can arguably be conceived as a porous array of intersections where distinct discourse practices crisscross from within and beyond communities' borders (Rosaldo, 1989). Thus, a disciplinary community is not located in a specific physical setting, although Bazerman (1988; Bazerman & Paradis, 1991) and Myers (1985, 1990) have suggested that a community's existence can be inferred through studying the discourse that members of a

disciplinary subspecialty use in such professional forums as journal articles and conference papers. Collectively, these studies locate disciplinary knowledge in social practice, and the evolution of knowledge is strongly influenced if not defined by rhetorical and linguistic norms.

Younger students may not belong to disciplinary communities in the sense of thought collectives, but they do participate in communities of literate practice. Heath's (1983) work remains the most extensive study of the imprint of community literacy practices, especially as they come in conflict with assumed literate performances in school. Other educators (Atwell, 1987; Short & Burke, 1991; Smith, 1983) have used the notion of community to establish as rich a context as possible for students. This context may be an apprentice relationship, as Rogoff (1990; cf. Brown & Palincsar, 1989) proposed, or it may be a socially validated intersubjective relationship. Bloome and Egan-Robertson (1993) argue forcefully for an intertextual and intersubjective model of literacy and learning, where students draw from a full range of textual and material fragments (images, sound, tactile), made relevant through the social interaction within a classroom and imported from other social settings.

Such approaches assume some form of social construction of knowledge and composing, and they contest the assumption that knowledge is foundationally structured. Instead, these approaches posit that knowledge is a construct of community practice (Greene, 1990; cf. Bruffee, 1986). Kuhn (1970) proposed that the structure of scientific knowledge evolves with shifts in paradigmatic boundaries as "facts" gain currency from conflict leading to consensus within a discipline (cf. Lakatos, 1970). From a sociocultural and sociolinguistic perspective, what are commonly recognized as academic or professional disciplines differ according to issues, logic, methods of inquiry, and rhetorical and linguistic conventions which have evolved through social interaction (cf. Geertz, 1973). The structure of knowledge, from a social perspective, is situationally valid, and learning content is of little theoretical interest compared with the contextual, historical, political, and cultural factors associated with entering and participating in communities (cf. Brown, Collins, & Duguid, 1989). From this perspective, education involves teaching students to act both within and across different communities.

Constructivist research on reading and writing that attends primarily to ideational processes (and their linguistic outcomes) leaves literacy researchers in an epistemological bind. Many of the methods and theoretical constructs, derived from psychology and psycholinguistics (e.g., subject or topic knowledge or semantic coherence), do not address either the source of knowledge that people draw upon in building representations of meaning or how this knowledge reflects cultural, social and material circumstances. To think of literacy in terms of the ability to both represent one's ideas and interact with others, as we have argued, suggests that knowledge and its articulation needs to be understood within a broader theoretical framework than constructivist theories provide. We can think of no other reason why so many researchers and scholars have turned to the sociocultural theories of Vygotsky (1978, 1986; see Wertsch, 1985, 1991). In fact, as our final section illustrates, an increasing number of reading and writing researchers have gone even further to reject mind-society binaries, applying alternative theories of discourse and communication to the problems and complexities of literacy in school settings.

The Spaces Between Texts and People

A number of literacy researchers have turned to poststructural theories of discourse and activity to represent the social and textual fiber of literacy activity. Spivey's (1984, 1990, 1991) research on "discourse synthesis" exemplifies a constructivist approach because it relies on propositional and template methodologies. In her work, Spivey conjoined two terms, discourse synthesis and intertextuality, to foreground the active, integrational quality of composing from sources (for a developmental study, see Spivey & King, 1989).

Intertextuality is a concept taken from literary criticism and, as we will explain, has more commonly been used there to describe historical and political relationships across texts situated in culture. Spivey's use of intertextuality was "iterative," to use Leitch's (1983; Porter, 1986) term, because explicit relationships (e.g., propositions) were assumed to exist and were analyzed across texts and composing processes. Intertextuality, however, is concerned with other kinds of relationships: connections between texts, relationships among present and prior texts to include someone's experience, and the processes whereby readers and writers co-construct meaning in a social environment. This latter connection suggests that all social and intellectual relationships can be construed as a text but not as a stable or isolated one.

Such critics as Kristeva (1980) and Barthes (1977) have worked against structuralist notions of singular texts and individual authors, that is, against explicitness and canonical authority. From their vantage point, the semantic core of a source text or the identity of an author would be lost in a matrix of prior textual traces. The page becomes a temporal apparition, at best a mosaic of textual fragments. It is the reader (as interpreter) who forges a relationship between explicit texts and their antecedents. By doing so, the reader assumes the kind of authority that goes hand in hand with authorship. From such a perspective, locating an explicit text on a continuum of textual influences is a highly significant exercise. As Eagleton (1983) explains,

> All literary texts are woven out of other literary texts, not in the conventional sense that they bear the traces of influence but in the more radical sense that every word, phrase or segment is a reworking of other writings which precede or surround the individual work. . . . A specific piece of writing has no clearly defined boundaries: it spills over constantly into the works clustered around it, generating a hundred different perspectives which dwindle to a vanishing point. The work cannot be sprung shut, rendered determinate. (p. 138)

Explicit connections between source texts through propositional analysis or even through citational reference reveal more about the interpretive stance of the researcher than any meaning deciphered or created. Culler (1981) makes this distinction quite forcefully:

> The study of intertextuality is not the investigation of sources and influences. . . . [Rather,] it casts its net wider to include anonymous discursive practices, codes whose origins are lost, which are the conditions of possibility of later texts. . . . Conventions cannot be traced to their source and thus positivistically

> identified. . . . Utterances or texts are never moments of origin because they depend on the prior existence of codes and conventions, and it is the nature or codes and conventions to have lost origins. (p. 103)

Yet, "sources and influences" are often perceived as the responsibility of educators, and other researchers have tried to balance the need to be explicit about intertextual relationships with historical and social origins.

Hartman (1990, 1993) used the intertextual lens to discern two types of textual links. The first are relationships among ideas, events, and people which he termed *intratextual*, *intertextual*, and *extratextual*, depending on whether a relationship could be traced to a passage of immediate attention, to resources within or proximal to the collection of sources, or to resources beyond and prior to the source texts. The second set of relationships were "discourse stances" that accounted for degrees of compliance and resistance toward the authority of a published source. Ackerman (1991) designed a study of reading and writing from disciplinary sources along similar lines. Protocol data were coded for three representations of a synthesis task, according to the authority granted to source texts, composers, or to a compromise between the two. Ackerman also analyzed written products for intratextual and intertextual borrowing by distinguishing imported information from prior textual experience.

Both studies are constructivist in that they retain an active identity for the composer, yet both strive to situate the process and products from composing in a textual world (De Beaugrande, 1980). Studies of intertextuality by example offer a critique of the "single text paradigm," which has dominated most of the work on reading comprehension during the past 20 years (Ackerman, 1989; Greene, 1989; Hartman, 1990), and implicitly challenge images of the solitary composer common to many process or "expressivist" writing pedagogies. The intertextual metaphor espouses one text in many and one author's identity relevant to sociohistorical textual production. We would add that research on intertextual relationships is rhetorical in that the meaning made through comprehension or composing is relative and relevant to the context in which it is found or enacted. The authorial stance that was discussed earlier takes on the additional quality of being situated in a rich field of interrelated utterances, what Bakhtin (1981) termed *heteroglossia*.

As noted, other intertextual relationships gather momentum and currency due to their social value. Bloome (1989) and his colleagues (Bloome & Bailey, 1992; Bloome & Egan-Robertson, 1993) approach relationships between people and texts through Bakhtin's theories of heteroglossia, materialism, and social validity. For Bakhtin (1981, 1986), any construance of reading and writing as separate modalities, or even as companion activities, disguises the social and historical power of an utterance. A single text or author is populated by a limitless number of diverse voices (i.e., heteroglossia), and the challenge for researchers, as interpreters, is to describe fully a constellation of influences.

Bloome and Bailey (1992) invoke the intertextual metaphor but more in the spirit of social negotiation, with texts and participants set in historical relief. Within such a framework, they conceive of meaning as dialogic—at least in the sense that meaning "can only be understood as a response to what has already occurred and what will/might occur" (p. 186; Bakhtin, 1986). The notion of

situation or context is not given but is constructed within a writer's interpretive framework—a representation that reflects a writer's current understanding of a context or situation and other events distant in both time and space. As people interact with each other, they build a theory about what is occurring, what is appropriate to talk about, and how to best express one's ideas. "They create (or recreate) a material and semiotic history of the event" (Bloome & Bailey, 1992, p. 191).

Such discussions of intertextuality hold fairly radical consequences for constructivist research because they undercut institutional biases toward neutral knowledge and recitation, and they are antithetical to single texts comprehended or composed. Studies of intertextuality foreground the social nature of literacy and in doing so decenter core curricula or literacy instruction aimed at consensual understanding, such as reading to get the main idea or writing to learn one preferred style. It is not that people no longer agree with what a text is about or what the best solution to a problem might be; what matters is the relative value of a given meaning or solution and what those constructs offer for further creativity and negotiation. The effort after meaning, through the intertextual lens, is an effort to comprehend and engage discourse that is always "half someone else's" (Bakhtin, 1981, p. 293). No one author or text is the end point of meaning.

Intertextuality also opens textual practice to a confluence of signs and systems of meaning, in that intertextuality does not mean that texts or the textual metaphor is limited to print. Short's (1984) model of learning (see Figure 3) underscores the point that texts have equal status with "things, events, experiences, and other people." Rowe (1987) also used the concept of intertextuality to refer to the range of engagements and meanings constructed by children as they resorted to written language, music, graphic art, and social interaction in the classroom. Smagorinsky and Coppock (1994) assumed that "multiple intelligences" can invigorate most classroom settings, and they explored how students used sketching and dance to enhance the understanding and interpretation of literature.

The protocol research of Flower and Hayes (1984), based on expository, informative writing, led them to propose that writers have "multiple representations" of meaning, which helps to explain how writers draw upon various images, concepts, beliefs, feelings, and stories in conceiving and crafting a written statement. Seen in this way, the cognition of writing is "the cognition of constructing not just a text, but a rhetorical, adaptive representation of meaning, moving among the mind's many symbol systems, and anticipating how other minds might recreate that representation" (Flower & Greene, 1994, p. 201).

Short, Rowe, Smagorinsky (1995), and others (e.g., Harste, Woodward, & Burke, 1984) have thought about intertextuality as a semiotic process, what Siegel (1984) construed as the moment in reading when someone mediates the text, as object, and her stream of consciousness. Semiotics, especially from this Peircean perspective (Lemke, 1993), theorizes relationships between objects and signs, but always mediated by the "interpretant's" efforts toward signification. Witte (1992) argues that it is Peirce's semiotic theory that is most attractive to constructivists because Peirce's *semiosis*, or process of signification, allows for multiple meanings related to multiple interpretants (readers or writers), a web of meaning without boundaries similar to Bakhtin's heteroglossia. Witte (1992) also extended the idea of materiality in discursive practices by pointing out how reading,

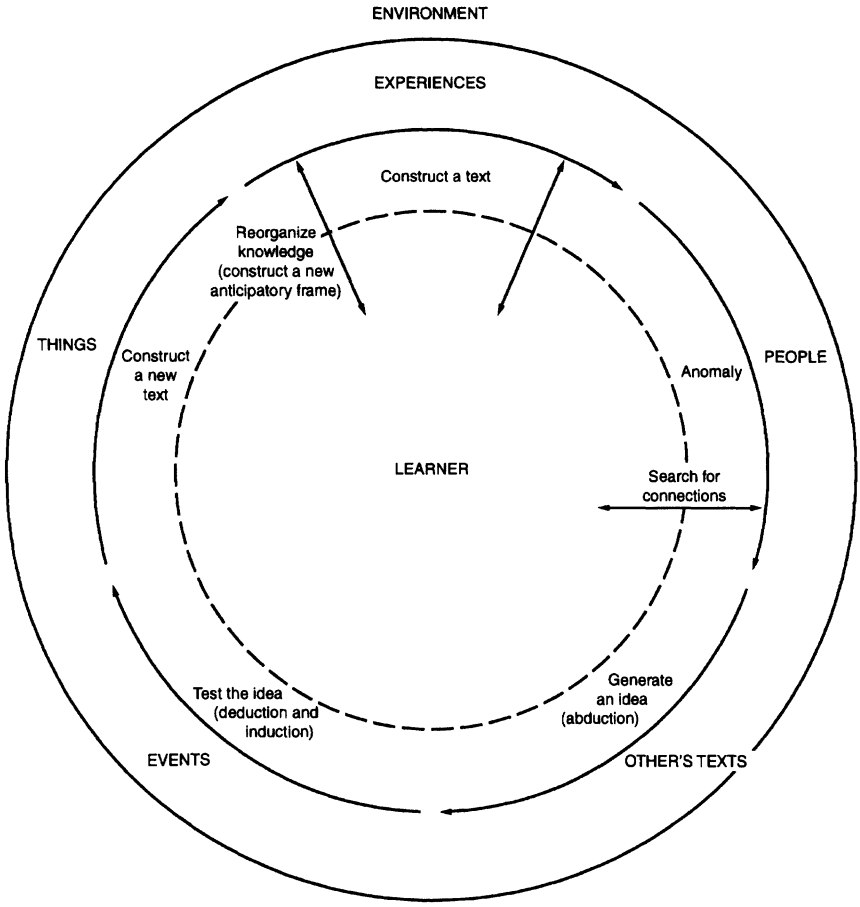

FIGURE 3. *The learning process*
Note. From *Literacy as a Collaborative Experience* (p. 412), by K. Short, 1984, unpublished doctoral dissertation, University of Indiana, Indianapolis. Reprinted with permission.

writing, and other acts of meaning carry an imprint of a social and cultural ecology. With an example as simple as a shopping list, Witte shows how such a list symbolically reflects prior cultural experiences (in a grocery store) and prefigures future engagements (a plan to shop). The linguistic and informational "coherence" in texts echoes the proximal and spatial relationships from built environments and their inhabitation (Ackerman & Oates, 1995; Chin, 1994).

Why Metaphors Travel Farther Than Theory

Early constructivist research on reading and writing primarily attended to issues in prior knowledge and task representation to build upon pioneering research that sought to develop psychological models of reading comprehension. Because of an

assumed interaction between the mind and the page, knowledge was generally construed as ideational (e.g., content, propositions, semantics). The constructivist metaphor often came to mean an effort after meaning that looked like an orderly transference of the information in a text to the representation or written product of the composer.

Our review of this research and other related studies revealed what we called a rhetorical dimension to cognitive and social perspectives on reading and writing. We found across a range of studies a need to (re)create a context, and that context took the form of models of texts, prior textual experience, social relationships, and even material and historical circumstances replete with nonlinguistic systems of meaning. Whether researchers examine the inventive ways students make sense of and enact reading and writing tasks or how those tasks invite and evidence recitational biases within learning institutions, the constructive moment is one of sense making in the context of authority (e.g., who has authority to speak?). Readers and writers engage efforts after meaning because of a sense of place, a sense of belonging and of participating in a community—even if that engagement and participation leads to miscommunication. Moreover, as Dyson (1993) explains, "the social interaction between composer and audience . . . takes place against a landscape of social and power relations." Thus, in performing academic work, students inevitably position themselves in relation to others "as members of certain social groups with particular values, authority structures, and language norms" (p. 190; see also Bakhtin, 1981).

With this review, we argue for pedagogical practices that (a) are flexible enough to recognize the rich resources that students draw upon in constructing meaning, (b) respect different conceptions of text sense, and (c) enable students to use language in different language communities. By widening the range of discourses that we teach, students will be in a better position to interact both in school and in their home communities (e.g., Heath, 1983). We also want to underscore the need to develop rhetorical and contextual research practices that are flexible enough to view "anomalous data," divergent interpretations, or culturally and situationally idiosyncratic behavior as normal and necessary. Contrary to the assumptions of Chinn and Brewer (1993), knowledge will never be the "total set of beliefs held by an individual" (p. 39) because those beliefs are always mediated by some kind of constructive activity between people and filtered by the tools and codes of value.

We advocate models, theories, and research that do a better job of articulating sociocultural knowledge and the interactive process whereby this knowledge—as experience, position, and ideology—is called into play. In advancing such a position we tend to disagree with conclusions, commonly drawn in similar reviews of literacy research, that the next generation of studies on reading and writing needs more consistent methods, variables, statistical validity, and replications (e.g., Tierney & Shanahan, 1991). A better job of normal science would improve some lines of research, but we view the constructivist metaphor as an opportunity for a different scholarly conversation.

We offer no end point for the discussion of constructivism in reading and writing research. Perhaps because constructivism is a metaphor and not a theory, we assume such a denouement will never occur. Therefore, we close this review by urging researchers and practitioners to articulate their assumptions, methods,

and findings always within the larger circle of alternative and competing views. Literacy is complex enough for each community of inquiry to consider any study or finding anomalous until it is articulated toward and against those who stand in disbelief.

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