
Running Backwards from the Finish Line: A New Concept for Bibliographic Instruction

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ABSTRACT

IN THIS ARTICLE, WE SUGGEST a means of developing a more secure foundation for a theory of bibliographic instruction (BI). Three forms of inquiry—research, reading, and writing—are presented as interdependent and inseparable. Up to now, BI's theoretical underpinnings have been too limited. This discussion argues that BI theory should incorporate schema theory, composition theory, and discipline-specific vocabularies. Attention is also given to the idea of the bibliographic citation as a concept symbol.

INTRODUCTION

Imagine, if you will, a three-legged stool. The label on the seat of the stool is *informed self-sufficiency* and the three legs are labeled, respectively, *reading*, *writing*, and *research*. Together these three activities form what might be called “the three Rs” of inquiry. Remove one leg and the stool falls.

Since scholarship comprises three interdependent processes—research, reading, and writing—we incorporate these three skills into our bibliographic instruction curriculum. Essentially through text analysis, a process is employed which appropriates concepts from critical thinking, cognitive psychology, composition theory, and the philosophy of science. This approach uses methods designed to help students visualize what the processes of writing a scholarly paper involve, acquaints them with the values and critical approaches of

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scholarship, and introduces them to the various genres of text. This new concept of BI is called "Running Backwards From the Finish Line." As an approach for bibliographic instruction, it works well in "writing-across-the-curriculum" settings, with librarians collaborating with classroom instructors, but it could be applied in any setting where students are expected to produce scholarly papers.

Of the three legs, research encompasses a much larger array of activities than the other two. Indeed, research is a sort of umbrella term under which the other two fall, along with other activities that are labeled *research*. Geologists, for example, conduct research by looking at rocks in the field, chemists conduct research with test tubes in the lab, and so on. By using this form of inquiry, they are gathering "data" (for an elaboration, see Webb, 1986, pp. 11-12; MacDonald, 1989). Reading is, of course, one of the main forms of inquiry. Reading is perhaps the most efficient method at our disposal for acquiring information. And writing, the third leg, is definitely also a form of inquiry. Writing is the means of making meaning out of the results of the research. Without writing out findings, communicating what is known from research is neither very meaningful nor lasting.

Originally, our approach was to concentrate primarily on a model paper from a discipline (in this case, a writing-intensive course concentrating on geography). However, after teaching a course in historical methods and analyses and team-teaching a course in the introduction to literary research, we have modified this approach to emphasize the processes of scholarship instead.

THE APPROACH

Briefly, we introduce students to three vocabularies they are expected to know, roughly corresponding to the three legs of the "informed self-sufficiency" stool mentioned earlier: (1) scholarship (research), (2) composition (writing), and (3) discipline-specific usage (reading). Various genres of texts are presented and, finally, we ask students to produce a scholarly product.

Before presenting these activities in detail, however, we need to point out how the approach developed based on principles grounded in text analysis, cognitive psychology, composition theory, and the philosophy of science. In our view, these areas of scholarship can contribute significantly to establishing a theoretical base for BI. While we do not deal with them directly in this article, implicit in the approach are the models of scholarly structures and processes drawn from the philosophy of science, which are elaborated on in other writing (McInnis, 1978; McInnis, 1982; McInnis, 1984; McInnis &

Symes, 1988). Primarily these models come from, among others, Thomas Kuhn, Eugene Garfield, Michael Polanyi, Henry Small, and Abraham Kaplan.

In 1978, we detected a shift in emphasis in learning, from *what* one learns to *how* one learns (McInnis, 1978). More evidence of this continued shift comes from George Posner et al. and Kenneth Bruffee. According to Posner et al. (1982), "inquiry and learning occur against the background of the learner's current concepts" (p. 212). This observation complements Bruffee's (1982) notion that in education, while some believe the purpose of education is to provide students with a world to understand, others believe that the purpose of education is to help students develop ways to understand the world" (pp. 96-97).

Learning, Bruffee points out, does not occur in isolation. To bolster his argument, he cites sociologists Kurt Lewin and Paul Grabbe's idea that "learning" involves shifting social and intellectual "allegiances." Thus, often it occurs not individually, but collaboratively, in groups or communities. Learning this way relieves "emotional stress involved in leaving one community and joining another." An analogy, for Bruffee (1982), comes from the "support groups" of the 1960s women's movement (pp. 105-06).

In addition to the advantages of learning collaboratively, cognitive psychologists provide concrete evidence of the advantages of incorporating "schema theory" into BI programs.

In 1982, as a mode of teaching/learning research strategies in academic libraries, we argued that more attention should be given to the heuristic qualities of *metaphor* (McInnis, 1982). In 1984, we argued that, like metaphor, more attention should be given to the heuristic qualities of *mental maps* (McInnis, 1984). Today, in 1991, in retrospect, what was needed for a more persuasive argument is familiarity with the concept of *schema theory*.

SCHEMA THEORY

Schema theory is not new. In 1781, Immanuel Kant observed that new information, new concepts, new ideas, can have meaning only when they can be related to something the individual already knows (Carrell & Eisterhold, 1983, p. 553). Friedrich Nietzsche is first to use *schema* when he describes metaphor as basic to the intellectual process used to establish meaning. "In *our* thought, the essential feature is fitting new material into old schemas." C. A. Bowers (1981), an educator, explains this "drive to name, to give meaning, to categorize, involves the use of metaphor, that is, the establishment of an identity between dissimilar things" (p. 272).

Today schema theory is confirmed by cognitive psychologists (Bazerman, 1988, chap. 8; Carrell & Eisterhold, 1983, pp. 553-73; Kucer, 1985; Hirsch, 1987, chap. 2). It concerns the way in which various types of background knowledge affect understanding and recall, including as stated earlier, metaphors, mental maps, advance organizers, and other cognitive devices that were used to recall or incorporate ideas. Current thought distinguishes two types of schemata—*formal* and *content* schemata—both of which are part of the repertoire of *cognitive skills*.

Formal schemata. Formal schemata deal with a text's rhetorical structure; these incorporate background knowledge of the formal, rhetorical, organizational structures of different types of texts. Readers are said to possess background knowledge about or expectations of such factors in texts as genre, structure, audience, and purpose. For example, an informed reader in the social sciences has internalized the four-part structure of empirical articles—introduction, method, discussion, conclusion. Until they learn about this structure, novices must struggle to understand where the article is going.

Content schemata. Content schemata deal with a text's knowledge content, primarily vocabulary, which is discussed in detail later; these schemata incorporate background knowledge of the content or subject matter of a text. Because many of the terms scholars employ in discourse have prescribed meanings, if they are adequately to comprehend the subject matter, readers need a command of the special meanings of these terms. For example, ordinary-language terms are given specialized definitions; think about how psychologists have given special meaning to "stimulus," "condition," and "fatigue" (Bazerman, 1987, p. 140).

Cognitive skills. Cognitive skills depend on formal and content schemata specific to a task at hand. Once we acquire the relevant knowledge, the skill follows. Experts perform better than novices not because they have more powerful and better oiled intellectual machinery, but because they have more relevant and quickly available information. What distinguishes good readers from poor ones is simply the possession of a lot of diverse, task-specific information.

IMPORTANCE OF VOCABULARY FOR MEANING

Studies on processes involved in reading and writing are beginning to show how, with language, individuals make meaning out of text. Readers bring both schemata to bear upon what they are reading. To achieve understanding, readers select the most

appropriate schemata for making sense of the incoming words. Meaning tends to break down at the word level. Less proficient students, who need vocabulary, struggle to comprehend word-by-word. If appropriate schemata are not quickly available at the third level of vocabulary (that is, vocabulary of the discipline), the reader is forced to struggle to make sense of words at the time of reading. The reader quickly reaches the limits of short-term memory, meaning he/she painfully restarts the process over and over. Particularly in connection with our third level vocabulary, we elaborate on this point later in this discussion.

ASPECTS OF TRADITIONAL BIBLIOGRAPHIC INSTRUCTION

In this article we focus essentially on innovative principles and techniques in BI; nevertheless, we do not neglect the traditional components of the BI curriculum. But prior to discussing these innovations, it should be specified what we want the students to learn—most fundamentally, to read and interpret bibliographic citations. Without this basic knowledge, students are not able to function as scholars. They cannot, for one, locate materials. The goal is to have students visualize bibliographic citations as central components of scholarly discourse, primarily because these permit writers to efficiently manipulate ideas. Moreover, bibliographic citations symbolically represent the thought that publications contain and are labels for intellectual property (McInnis, 1978; McInnis, 1982; McInnis, 1984; McInnis & Symes, 1988).

In introducing the vocabulary of scholarly research, we begin by defining and illustrating the types and functions of reference works. Using a library handout called “The Vocabulary of Scholarly Publishing,” we introduce students to such matters as the labels that identify publication formats, the purpose of scholarship, and the stages of knowledge production. Frequently we take time in class to elaborate on a particular point such as “risk,” “argument,” “persuasion.” At the same time that this exercise addresses these matters, it also addresses issues relating to reading and writing. Example: As soon as you put pencil to paper, you *risk* being challenged.

With this brief overview of schema theory and review of traditional aspects of BI in our program, we will present principles and examples which we find to be fundamental to inquiry:

- readers contribute more information to interpreting a text than the print on the page (Raimes, 1983);
- writers incorporate more into a text than print on the page (Hirsch, 1987);

- readers do not use all information provided by the text (Goodman, 1967);
- intellectual structures are built by the learner rather than taught by the teacher (Papert, 1980, p. 19).

INTERPRETING A TEXT

What people understand from the text occurs as they assign new evidence to membership with an appropriate group of concepts already stored in their memories. Cognitive psychologists argue that, to comprehend, we attach new ideas to old ones.¹

EXPECTATIONS OF GENRE

What "Audience" Does to a Text

In the class, we use an op-ed piece from the *New York Times* by New York Senator Daniel P. Moynihan (1987), which students are asked to read for the next class. The article attacks the Reagan policy toward the American budget deficit and the trade deficit, called by pundits the "twin towers." In addition, they receive a chart, adapted from composition theory, which they are to become familiar with. We show students that they come to the piece equipped with more information than they think they have.

We then present to them the issue of identifying one's audience. In doing this, we first discuss our chart containing such terms from composition theory as "purpose," "author," "reader," "audience," "evidence," and "authority." We try to get students to distinguish between the audience of the *New York Times* and those of scholarly articles with the idea that the audience dictates the nature of the text. For example, we convey to the students that, because of contextual differences in discourse, evidence serves a variety of purposes. Early in our education, we learn that primary sources are sources of fact, and that secondary sources are sources of authority. Later, with experience, we understand correctly that distinctions between these two elements depend upon context (McInnis, 1978, pp. 70-72). We then discuss the Moynihan piece and ask the students to fill the chart out according to what they assume about audience and the use of evidence from the *New York Times*. Through this exercise, students soon realize that they know a great deal about both audience and evidence.

What "Historical Perspective" Does to a Text

In the above exercise we attempt to demonstrate to students that they know more than they think they do. Historically, they view the world from the perspective of the late twentieth century. Carol

Schneider (1987), vice president, Association of American Colleges, points out, as teachers, we need to spend more time on assignments and less time on content; especially, we need to know more about how students make meaning.

In particular, we need to connect students' existing intellectual frameworks to what we teach. Her example: Students' twentieth century religious views help them understand medieval religion. Our example: Have students consult contemporary accounts of Oscar Wilde to help them understand that the Victorian moral code did not allow discussion of homosexuality.

INCORPORATING MORE INTO A TEXT THAN PRINT ON THE PAGE

In a certain sense, this principle mirrors the previous one. The elements writers incorporate into their text are almost too numerous to mention, but they include internalized structures and levels of formality, shorthand referents such as allusions and citations, vocabulary choice, and a vast storehouse of background information. As Ann Berthoff (1981, 1982) has persuasively argued: "It is in the context of writing where meaning is made." In addition, as mentioned earlier, writers employ, consciously and unconsciously, schema, rhetoric, and specific critical thinking skills. Writers make certain assumptions about what readers know, or, put another way, writers are aware of who their audience is.

NOT USING ALL THE INFORMATION PROVIDED

Kenneth Goodman (1967, 1971, 1973), for example, describes reading as a "psycholinguistic guessing game" (1967, p. 126) in which the "reader reconstructs, as best as he can, a message which has been encoded by a writer as a graphic display" (1971, p. 135). He views this act of construction of meaning as being "an ongoing, cyclical process of sampling from the input text, predicting, testing and confirming or revising those predictions" (1973, p. 164).

BUILDING THE LEARNER'S INTELLECTUAL STRUCTURES

Students need the opportunity of engaging actively in the processes of thinking that lead to the production of intellectual structures. They need help in experiencing "intuitive" hunches, in establishing, questioning, sharing, and interpreting. Without building the intellectual structures themselves, students tend to lump separate thinking processes together, unaware of the important role played by each process in the development of distinct intellectual configurations (Katz & Henry, 1988, p. 32).

SAMPLE ASSIGNMENTS

Assignment 1. We give graduate students in creative writing an assignment to outline a mystery plot in which they must consult resources in forensic medicine in Houston during the 1950s. They learn that they must become well acquainted with the particular historical period and at the same time learn enough of forensic pathology practiced during the same period to know the identifying evidence for a gunshot wound from a small caliber bullet. Telling them that medical information is organized in different ways from historical information does not provide the students with the same insight that they are able to achieve when they have grasped for themselves the differences in the ways of knowing in these two disciplines.

Assignment 2. In a history class on historical method and analysis, students work with "op-ed" articles. The object of this assignment is to show how we can change a newspaper article (or similar piece) into a scholarly one. Before we give the assignment, the students are taken through the process as a group. Basically, the assignment includes having students: (1) analyze paragraph content to determine organizational structure, (2) write a hypothetical introduction and conclusion, (3) note where sources should be cited or where supporting evidence is needed, and (4) locate in the library selected references cited.

THE MODEL PAPER

Once students become acquainted with such ideas as audience, purpose, and evidence, we can then ask them to transfer knowledge they have learned through analysis of the op-ed piece to actual scholarly discourse. We then introduce them to the concept of a scholarly paper by having them imagine that an op-ed piece is a scholarly article. We ask them to write a periodical's title such as *American Historical Review*, *American Economic Review*, or *Annals of the Association of American Geographers* in the second "Document's Name" box of the composition theory chart. Next we discuss how the scholarly "audience" is different from the *New York Times* "audience," an act that, as mentioned earlier, dictates significant changes in the nature of the text.

We find that the opportunities for discussion are almost limitless. For example, students discuss how a well-informed public reader differs from a specialized scholarly one. They discuss temporal issues such as the "immediate/topical" newspaper article versus the "longstanding/discursive" purpose of the scholarly article. They also discuss whether it is "informal/expository" or attempts to be "persuasive/argumentative."

We then begin a discussion of evidence/authority by asking what changes in the document might we expect to occur if footnotes were added. Each student in turn reads sentences from, for example, the Moynihan piece and indicates where footnotes should occur. (In one history class, students agreed on seventeen locations where citations could be expected.) In the process of indicating locations of citations, the students discuss adequacy of definition of terms and concepts, background information, and the "certainty" of statements.² In addition, in documenting the various types of evidence popular writers employ, citations are informal and general rather than formal and precise.

We emphasize that scholars also bring more to the text than print on the page. We stress, for example, that, before he became a New York senator, Moynihan was a Harvard University sociologist. When his material was published in the *American Sociological Review*, he follows the rhetorical conventions of the "audience"—that is, peers in the discipline. He writes like a sociologist, including employing the appropriate citation of references to material produced by others.

Once we have analyzed the op-ed piece, we then look at scholarly discourse in detail. First we introduce its structure and then the prescriptive nature of meaning in its vocabulary. Next we introduce the model paper which students are expected to emulate. It is broken into three analytical levels: (1) organizational structure, (2) appropriated evidence, and (3) research strategy; but, because of the inseparable nature of 2 and 3, these are treated together.

Organizational Structure

In the class, we discuss the three components of scholarly articles (introduction; body, or argument; summary and conclusion) with particular attention given to the introduction. (Earlier, we noted another genre of scholarly text, the empirical article, used for reporting scientific findings. Because it also discusses methodology employed, this type of article differs slightly from these three components.)

We point out to students that, according to rhetoricians and technical writers, different types of scholarly texts incorporate different types of rhetorical structures (Crookes, 1986, p. 58). Following these composition theorists, we suggest that a lack of familiarity with a text's rhetorical structure can hinder comprehension of it (Selinker, 1976, p. 281). "Presuppositional rhetorical information," or formal schemata, the inherent structure of the text, can be either explicit or implicit.

We also discuss how authors of scholarly texts assume readers possess certain background knowledge or content schemata. In our opinion, we can safely assume that similar elements exist in all forms of scholarly discourse. To us, as well as the research literature itself, scholarly discourse includes reference materials such as articles in dictionaries and encyclopedias, chapters in handbooks, and other review type publications. Even abstracts possess particular schemata. Thus, parallel with composition theorists, our experience shows that the organization and rhetorical structure of all scholarly texts should be directly taught (see especially Crookes, 1986).

Perhaps most interesting, and problematical is to teach students that rhetorical conventions also occur in "implicit" forms (Selinker, 1976, p. 281). Because introductions incorporate so many components important for subsequent development of the article, and that many of these elements are implicit, we devote considerable time to analyzing the major components of an introduction. Finally, we forewarn students that since the intent of scholarly discourse is to persuade, introductions need not conform to the models presented if they are sufficiently convincing without a more elaborate structure. Regardless, because it is believed that teaching the structure of introductions provides students with a good model, we find that this attention has a double payoff: they read better and they write better.

The Four-Part Scheme of Introductions

As part of the course work, we discuss with students regarding what constitutes an adequate introduction. Introductions: (1) tell readers the article's purpose; (2) review the current state of knowledge about the topic; (3) map out the article's organization; (4) suggest what conclusion will be drawn from the evidence; and (5) begin to define terms the article discusses.

In addition to our evidence, John Swales and other composition theorists have gathered empirical evidence that shows, through evolution, that introductions generally have a four-part scheme which is designed to: (1) establish a writer's credibility or authority, (2) review what is known in the field, (3) develop a justification for the present study by preparing for present research, and, finally, (4) introduce present research. That is, to demonstrate a command of the field, the author argues that this study adds new material to existing knowledge. Swales labels this activity "making space" (Swales, 1987a, 1987b; Crookes, 1986; Arrington & Rose, 1987).

To demonstrate the validity of this approach to analyzing the structure of introductions to scholarly papers, we take one preselected paper and analyze its introduction according to this four-part scheme to see whether it fits. For example, in geography, we use an article

by Michael Solot (1986). In this article, even though the "literature review" is minimal, it does fulfill the literature review function by summarizing selectively some relevant existing research. In addition, we show students how the "map" that the author provides in the introduction forecasts what he is going to cover in the text of the article.

Prescriptive Meaning in Scholarly Discourse

At this point, we introduce students to the notion that meaning tends to be prescriptive in scholarly discourse.³ That is, a concept has meaning only because scholars prescribe a meaning to it. And further, a particular concept's meaning is valid only if scholars in the same field agree to it having the same meaning. We show them how the American lexicographer, Sidney I. Landau (1984), helps single out distinctions between prescriptive and descriptive meanings to concepts as they are used in scholarly discourse when he speaks of meanings either "extracted" or meanings "imposed."

Using Landau's method, we distinguish between the way words are defined in lexical (that is, standard) dictionaries and how words such as labels for concepts are treated in "subject-field" (or specialized) dictionaries. We show them that, in lexical dictionaries, general words are defined on the basis of citations from specific texts that illustrate how particular words are used. The particular meanings of these words are extracted from the context in which they are employed in sentences, as in the *Oxford English Dictionary*. In subject-field dictionaries, on the other hand, students are shown that terms take on special meanings "imposed on the basis of expert advice" or are prescribed.

Using our own article as an example, we demonstrate how David Riesman develops prescriptive vocabulary in *The Lonely Crowd* (McInnis & Symes, 1988). We demonstrate that, as is the tradition in scholarship, a scholar's special definitions of particular terms are considered valid by other scholars when scholars employ these terms in their own discourse and attach the same meanings to them. As argued earlier about content schemata, in order to understand their assigned readings and successfully engage in scholarly inquiry, students need to be made aware of such matters. As an added benefit, using our own article helps students understand that the principles and procedures presented are apropos.

Appropriated Evidence and Research Strategy

At this point, we convey the idea that scholarship is an adventure, a matter which is elaborated on further in the discussion of writing as the third "R" of inquiry. But before we expect students to discover

how writing is a way of learning, they are walked through the process of writing by using our own texts as well as the other texts discussed. In fact, many composition theorists argue that in the act of composing, or writing, we make knowledge. This idea represents a fundamental shift in understanding how we learn to write.⁴

In doing this, we establish dialogue with students about these questions of the writer and the writing process: Since the writer has appropriated the work of others, what is original about this article? What would the writer do if the material appropriated was not available? What did the text look like from which the material was appropriated? How does the appropriated material help the writer's argument? How did the writer locate the material? To help students understand these processes, they must come to class with a question that they want to discuss concerning the evidence the writer has appropriated. Inevitably, this exercise reveals that students, often very bright ones, do not understand the basic conventions of scholarship. For example, we have had students who thought that since the writer did not use quote marks, an indented quote was plagiarized.

We also discuss the concept that evidence, including the bibliographic citation, the label that identifies evidence, functions both as a concept symbol and as a rhetorical convention (for elaboration of these points, see McInnis & Symes, 1988). This exercise obligates students to think critically about the material located and how the writer uses discourse to make meaning and knowledge.

WRITING AS INQUIRY

Writing, the third leg of our example, is, as we stated earlier, also a form of inquiry. Writing is a way of making meaning out of the results of research. We point out to students that, without writing down the findings, communicating what is known from research is neither very meaningful nor lasting. In this exercise, students have a framework with which to begin—that is, instead of starting “from scratch,” they build on the existing paragraphs of the op-ed piece. Although at this point writing is given special emphasis, we try to incorporate all three forms of inquiry. In the process, students discover more about how to conduct research and locate evidence in a library, how to read critically, and finally, how to compose scholarly text. The students gain incentive to engage more actively in the exercise from their oral presentations of their op-ed pieces. Students' texts are entered on a computer's hard disk and then projected on a screen. For a half hour each, students indicate what they did and why they did it. We find that the evidence is compelling that the students have benefited from the materials and principles presented throughout the course. As everyone knows, when

students have to explain their ideas to others, they must first clarify their ideas for themselves. Each student acquires an understanding and appreciation of why evidence is an essential component of discourse and how, depending on the anticipated audience, it is incorporated into a text.

CONCLUSION

In this article, grounded in our personal experience and the research of others, we suggest a means of developing a more secure foundation for a theory of bibliographic instruction. We present a three-legged framework that gives a more realistic picture of what inquiry comprises. That is, we view the three forms of inquiry—research, reading and writing—as interdependent and inseparable. Up to now, in our view, BI's theoretical underpinnings have been too limited. Instead, we argue that BI theory should incorporate the richness of schema theory, the empirical evidence from composition theory, and the vocabularies we expect students to know: (1) scholarship (research), (2) composition (writing), (3) discipline-specific usage (reading). We give particular attention to the ideas of the bibliographic citation as concept symbol and the prescriptive nature of meaning in scholarly discourse. Finally, we present various genres of texts, and students are asked to produce a scholarly product.

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NOTES

1. These observations owe much to the following discussions: Goodman, 1967, 1971, 1973; Carrell & Eisterhold, 1983; Hirsch, 1987; Kintsch & Van Dijk, 1978; Swales, 1987a, 1987b; Crookes, 1986.
2. Jeanne Fahnestock (1986), a composition theorist, argues "certainty of statement" is the means of "accommodating" scientific texts to a broader audience. She elaborates how these writers make more definite the highly qualified statements in scientific texts and change vocabulary to emphasize interest rather than technical accuracy. Because similar types of vocabulary, etc., are employed by writers of op-ed pieces, we assume how, in relation to scholarly texts, the same conclusions can be drawn about the certainty of statements in them.
3. We were in part inspired by Larry Selinker and others who study the difficulties speakers of English as a Second Language (ESL) encounter. They found that ESL students are often unable to comprehend content of scientific texts even when they know particular meanings of words, but we also discuss in McInnis and Symes (1988) how vital a knowledge of the prescriptive nature of meaning is to discourse.
4. For the beginnings of this important shift in focus, see Knoblauch & Brannon, 1980, 1983. For other views of the relationship of learning and composing, Knoblauch

and Brannon refer to Jerome Bruner (1967); George A. Kelly (1963); James Britton (1970); and Ann E. Berthoff (1981, 1982). Kucer (1985) and Spivey (1990) offer elaborate examinations of the parallel features of reading and writing.

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