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ABSTRACT

Approaching the study of literacy through the discourse perspective, this paper first considers some of the relations between discourse and social life. The paper then discusses the epistemological, rhetorical, community-maintaining, and ideological functions of discourse through examination of three types of discipline-based discourses, and outlines challenges to literacy development posed by the unfolding of these functions in the practices of schooling. In conclusion, some promising responses to those challenges are pointed out, grouped into categories corresponding loosely to the epistemological, rhetorical, community-maintaining, and ideological functions of discourse. A figure illustrating a mathematical proof is included. (Contains 90 references.) (RS)

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College of Education
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174 Children's Research Center
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Abstract

Examination of any discourse act reveals multiple functions. Although these functions may be described separately, they are just different aspects of the engagement in discourse. For example, the *epistemological* function is highlighted when we focus on knowledge construction or meaning making; the *rhetorical* function is highlighted when we think of that knowledge construction in a social context. The *community membership* function relates to how people are included in communities through discourse and the *ideological* function relates to power within communities and exclusion from communities. This report discusses these four discourse functions, relating them to the pedagogical challenges they present. It then discusses promising pedagogical responses to those challenges.

The Discourses of Inquiry: Pedagogical Challenges and Responses

A leading economist, speaking recently on the nation's prospects for recovery from the economic recession, said "the labor market will be the last to respond." This comment came in the midst of a discussion of other "markets," such as those for farm products, durable goods, and financial services. In that context, the relevant issues for the economist were demand and supply, dollar figures, and quantifiable trends. He neglected to mention that a lagging market for labor might be expressed by another as continuing unemployment, or that the consequences included millions of people being out of work, and many of those homeless, discouraged, emotionally stressed, alienated, and with shattered dreams and lives in disarray.

Further examination of this one simple statement would show that while the economist was expressing meaning through language, he was performing additional rhetorical acts, focusing the listener on certain issues and obscuring others, framing the discussion to shape and constrain the possible responses, and embedding a simple observation within a complex ideological system. Rhetorical acts of this sort have been extensively studied and defined within developmental studies (Britton, Burgess, Martin, McLeod, & Rosen, 1975), models of rhetoric or discourse (e.g., Freedman & Pringle, 1980; Kinneavy, 1971, 1980; Moffett, 1968), from the perspective of speech acts (e.g., Pratt, 1977), and in studies of the rhetoric of inquiry (Nelson, Megill, & McCloskey, 1987).

Beyond these rhetorical acts, the economist was also establishing, or solidifying his position within the community of economists. His terminology, his cadence, and his omissions mark him as a member of that community, with its own special set of values, beliefs, norms, and social practices. His ways of speaking, acting, and thinking also afford him a position of power in defining what is worth talking about and perhaps who else can speak with legitimate authority on the topic.

These functions--meaning-making (epistemological), persuasive (rhetorical), membership (community), and power (ideological)--are described separately, but it should be clear that they are just different aspects of the engagement in discourse. Meaning-making is highlighted when we focus on knowledge construction from the perspective of the individual, just as rhetoric is highlighted when we think of knowledge construction in a social context. This could be conceived as the internal and external sides of knowledge construction. Likewise, social relations functions have both inclusive and exclusive aspects. Inclusion is central when we think of maintaining community through discourse, just as exclusion relates to power and ideology.

Social meaning is established by communities through this engagement,[1] and how one interprets current experience is a process of negotiation among interpretations offered by one's current community, those of other communities, and prior interpretations. At the same time, what counts as acceptable and effective rhetoric is part of the definition of the community. Criteria for community membership and the allocation of power among those members intertwine with the construction of discourse.

Multiple functions for utterances arise because every utterance emerges from and then reconstitutes social practices defined through historical, social, cultural, institutional, and political processes. And to say "multiple functions" oversimplifies the case, because there are interdependencies among the

[1]This is an assumption shared by such diverse accounts of the relation between language and community as interpretive communities (Fish, 1980), discourse communities (Swales, 1988, 1990), speech communities (Hymes, 1974), and speech genres (Emerson & Holquist, 1987).

categories. For example, speaking from the standpoint of membership in an authoritative community supports the rhetorical function of persuasion.

In this report, I use the term *discourse* to refer to the social practices that emerge as these functions are realized in social life. Thus, in the example, we can identify the economist as participating in a form of economics discourse. Studies of economics talk as discourse can be useful in understanding what he says and how his statements are interpreted and used.

Although discourse studies can be useful for analyzing virtually all social practices, there is no area where the multiple functions of discourse become more salient than in the study of literacy development. This is especially the case if we consider being literate to involve more than mastery of the basic process of encoding and decoding symbols, encompassing instead the successful use of those symbols in institutionalized interaction with others. Acquiring a discourse means developing the ability to use language appropriately in some domain, and that is a large part of what it means to become literate in that domain.

This report approaches the study of literacy through the discourse perspective. It considers first some of the relations between discourse and social life. Then it discusses the epistemological, rhetorical, community-maintaining, and ideological functions of discourse through examination of three types of discipline-based discourses. Next it discusses challenges to literacy development posed by the unfolding of these functions in the practices of schooling. Finally, it points toward some promising responses to those challenges.

Discourse and Social Life

The study of connections among actions, language use, meaning, communities, teaching, and learning is, of course, not new. Indeed, many of the disciplines within the university engage in related studies. But the construct of discourse does provide productive ways of addressing some old questions and some new ways of understanding important educational problems.

Dewey's educational theory, for example, is built upon an articulation of the complex connections among community, communication, and education. He points out that people live in communities because they have things in common, and they create things in common through communication. They participate in a "common understanding" (Dewey, 1966). A community perpetuates itself by communicating habits of doing, thinking, and feeling from one generation to the next. Thus, social life is maintained through communication, and its long-term survival depends upon communication across generations. Literacy development is learning, not just a prerequisite for it. Dewey sees all communication as "educative," and thus virtually equates social life with education.

This conception of the relations among communication and learning is a generative one that has fostered extensive work in educational theory and practice. But in the generally optimistic tone in which Dewey presents it, it affords little room for examining the ways in which communication may falter. In particular, by not identifying historically and institutionally defined discourse as a phenomenon to be analyzed, it makes it difficult to examine how communication practices may come into conflict, or how utterances may have very different meanings for two individuals. For these purposes, it is helpful to identify characteristics of different discourses.

Gee (1990) suggests a definition of discourse that emphasizes the social element and the community-defining function:

> A *Discourse* is a socially accepted association among ways of using language, of thinking, feeling, believing, valuing, and of acting that can be used to identify oneself as a member of a socially meaningful group or "social network," or to signal (that one is playing) a socially meaningful "role." (p. 143)

Thus, a discourse is "a sort of 'identity kit' that comes complete with the appropriate costume and instructions on how to act and talk, and often write, so as to take on a particular social role that others will recognize" (Gee, 1990, p. 142). The power that Discourse theory promises is to link individual acts to larger sociocultural and historical processes, and thereby provide a framework for interpretations of those acts in relation to their social context. Implicit in Gee's definition is that every example of language use represents one or more discourses. The key is to see all specific acts and utterances--discourses with a lowercase *d*, as manifestations of institutionalized ways of acting--Discourses with an uppercase *D*.[2]

Under this definition, every one of us engages in various Discourses. As children acquiring language we learn much more than pronunciation, grammar, and vocabulary. We also learn how to use language to make sense of the world, to express our own interpretations of events, and to participate in complex and dynamic social relations. We learn these things, not by being taught directly, but by participating in "the reciprocal processes of family and community life that flow through communication," (Heath, 1989, p. 367). Through these processes we acquire a shared understanding of the values, beliefs, attitudes, and social norms of our own sociocultural groups.

For each of us, our home- and community-based language practices constitute our *primary Discourse*. But throughout life, each of us participates in a variety of other social groups and institutions, such as 4-H clubs, civic groups, churches, and work organizations. As we participate, we may learn new ways of using language that go beyond those of the home and thus become enculturated into new values, beliefs, attitudes, and social norms. The communities of practice that we enter are our *secondary Discourses*.

Enculturation in a secondary Discourse implies control over language use within it and moreover, a unique way of interacting with texts, objects, and other people. Consequently, it marks a person as a legitimate member of the corresponding sociocultural group, one who participates successfully in that group's culture. For this reason, acquisition of Discourses is an enculturation process, one which involves initially peripheral, and later, more complete participation in new communities.[3]

In school, we encounter many secondary Discourses, for which we need to acquire new language skills and knowledge. For each of these Discourses, we commonly speak of specific forms of literacy as representing successful acquisition of those language skills and knowledge. For example, *scientific literacy* means mastery of the skills and knowledge associated with scientific practice. Others have referred to quantitative, computer, historical, economic, and even visual literacies. These are not gratuitous extensions of an otherwise well-defined term; they seek instead to capture the fact that merely being able to read and write the words of a text means little if one cannot use that ability to participate

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[2]In the remainder of this report I will adhere to that distinction.

[3]Gee points out that the process of Discourse acquisition is thus much like that involved in learning a new language. By participating in a culture in which the language is used, one acquires facility with the language, at least as it is used in that culture. In addition to acquiring the grammar and vocabulary of the new language, one acquires knowledge of how to use the language appropriately in a variety of circumstances, eventually establishing oneself as a speaker of the language.

in a desired Discourse community. That participation depends upon developing competence in carrying out the various functions of the Discourse.

Functions of Discourse

Beginning perhaps with Plato, a major line of Western philosophy has called for a separation of rhetoric and inquiry, and thus, by implication, for a separation of the epistemological functions of Discourse from its other social functions, those relating to disciplinary practices, rhetoric, social group membership, and power relations. Aristotle makes a clear statement of this separation when he defines rhetoric as "the art of discovering the available means of persuasion." This tradition has not only separated rhetoric from inquiry, but relegated rhetoric, or the social functions, to a lesser role. The anti-rhetoric position has promoted dichotomies, such as: fact/value, truth/opinion, rigorous/intuitive, precise/vague, things/words, cognition/feeling, object/subject, observation/interpretation, report/argument, and findings/inferences, generally placing a higher value on the first term of each pair. The Discourse that expresses this line of thought is a familiar one that has embedded itself in both philosophical discussions and grade-school textbooks, which strive to place the dichotomies at the center of students' thinking.

Recently, though, the anti-rhetoric Discourse has been challenged by research in a wide assortment of disciplines. Writers such as Dewey (1929, 1966), Wittgenstein (1968), Rorty (1979), Gadamer (1976), and Habermas (1984) have called in various ways for a broader view of inquiry in which a narrow epistemology is replaced by an integration of theories of knowledge with rhetoric and social practices. In diverse fields such as economics (McCloskey, 1985), anthropology (Clifford & Marcus, 1986; Geertz, 1973; Pratt, 1977; Rosaldo, 1987), science (Bazerman, 1988; Feyerabend, 1978; Latour & Woolgar, 1986; Lynch, 1985), statistics (Gigerenzer & Murray, 1987), literary theory (Cavell, 1976; Eagleton, 1983; MacDonald, 1990; Scholes, 1985), history (Megill & McCloskey, 1987), theology (Klemm, 1987), and mathematics (Davis & Hersh, 1981; Lakatos, 1977), careful examination of discursive practices has shown that rhetorical functions and social relations are not superficial additions to inquiry, but intrinsic to the scholarly work of the discipline.

Despite the diversity of this work, there is a unity in the observation that all the rhetorical function pervades all fields of study. Moreover, there is a growing awareness of how Discourses define communities of interest and how social relations are played out through Discourses. This expanded view of the social functions of Discourses may provide the basis for understanding some of the pedagogical challenges facing us today.

The view of Discourse outlined in the previous section is one that places each Discourse at the center of a set of complex social relations and practices. One consequence is that we can no longer think of Discourse, or even a single discourse, as serving some unique function such as "transmitting meaning" or "persuading other people." Indeed, it is better to think of the functions of a Discourse as complementary aspects of a single process in which social meaning, practices, groups, and power are constituted and negotiated.

Using the construct of Discourse, we can examine forms of inquiry and learning in new ways. The interplay of the epistemological, rhetorical, community-maintaining, and ideological functions of Discourse is evident in the three examples to follow, which are drawn from the disciplines of economics, biochemistry, and mathematics. These fields could be viewed as operating within the realm of hard data--dollar figures, molecules, or theorems. One might infer then that rhetoric, community membership, and ideology would not be central to the meaning-making practices within the disciplines.

But as we shall see, the processes of meaning-making are inseparable from those of social practices of the discourse communities.

Economics Discourse

The functions of the economist's statement, "the labor market will be the last to respond," may be construed in two broad categories: the construction of meaning and social relations. For each of these, there is both an internal and an external orientation.

First of all, the statement contributes to the social construction of meaning, by participating in the historical dialogue of macroeconomic thought. As a statement about markets, recessions, and timing of "response," it reinforces, extends, and further articulates the ongoing economics Discourse. Defined in large part by the Discourse it represents, it also participates in the reconstitution of that Discourse. This can be viewed as the internal aspect of meaning making.

At the same time that it serves to construct meaning for the individual or within the Discourse, the statement also performs rhetorical functions, some of which have an external orientation. This should not be taken to say that there are two unrelated functions served by the same utterance, but rather that a rhetorical function such as persuading others to view phenomena in a certain way is intrinsic to the sense-making function. This is one reason why we cannot isolate the utterance's meaning from the social functions it serves.

The economist's statement also reflects and shapes social relations. Viewed from the internal orientation, it draws people together. This is the community-maintaining function, also called the centripetal force of language (Bakhtin, 1981, p. 272). A person's language reflects a Discourse community and simultaneously determines the person's acceptance within that or other communities. The economist's language use helps to define who belongs in this economics Discourse community, and in particular, to establish his own role in that community. Bruffee (1986) expresses this function as follows: "We use language primarily to join communities we do not yet belong to and to cement our membership in communities we already belong to" (p. 784).

When we view the economist's statement from an external orientation, we see its ideological functions, the ways in which it represents values about relationships between people and the distribution of social goods, such as money, power, and status. Control over economics Discourse can lead to social power and position within a politically important hierarchy. The ideological function of Discourse typically operates in a centrifugal fashion, emphasizing the boundaries between groups of people.

Biochemistry Discourse

A good example of the process of meaning-making through Discourse is described by Latour and Woolgar (1986) in their study of laboratory science practices. As a young French philosopher, Latour had gone to observe the Salk Institute for a two-year period starting in 1975. A non-scientist, he took field notes, made photographs, and collected artifacts in order to decipher the practices of what he called a "strange tribe" (p. 49). He saw how their written papers were not just reports of progress, but the actual products of the work. As a result, there was an "obsession with inscription":

> Even insecure bureaucrats and compulsive novelists are less obsessed by inscriptions than scientists. Between scientists and chaos, there is nothing but a wall of archives, labels, protocol books, figures, and papers. But this mass of documents provides the

> only means of creating more order and thus, like Maxwell's demon, of increasing the amount of information in one place. So it is easy to appreciate their obsession. Keeping track is the only way of seeing a pattern emerge out of disorder. (pp. 245-246)

Latour and Woolgar recount how these inscriptions eventually metamorphose into the journal article products of the enterprise. They trace the construction of biomedical facts through these processes, showing how what was originally a conjecture becomes a claim, then a qualified assertion, later an assertion, and finally is no longer stated once it is established as true. The transformation depends more upon the role the fact plays in the Discourse than upon specific new experimental results.

One part of the process is that in the successive stages of the creation of an article, and then a line of research, citations are added to the work of others. Some of the most effective citations are to "black boxes," areas of inquiry that are respected within the Discourse, but not well understood. For example, the enzyme chemists in the study, many of whom had little knowledge of mass spectrometry research and were unable to critique it effectively, were swayed by references to results from this "harder" science. Thus are created citation networks in which different groups mobilize allies to their position. Through the mobilization of powerful allies, the dismissal of contrary results, and the effective employment of rhetorical devices, the biochemists make meaning through their Discourse, while also building and maintaining their Discourse communities.

Mathematics Discourse

Even the genre of the mathematics proof exhibits rhetoric as an intrinsic part of the inquiry process. Davis and Hersh (1987) show this in their analysis of a proof presented in a textbook in the field of elementary set theory (Trudeau, 1987). The text they analyze contains *primitive terms*, *definitions*, *axioms*, a *theorem*, *statements*, and *reasons*. Its format suggests an unassailable rigor that transcends the rhetoric of ordinary discourse. For example, there are three axioms regarding a problem about committee membership:

1. Every person is a member of at least one committee.
2. For every pair of persons there is one and only one committee of which both are members.
3. For every committee there is one and only one disjoint committee. (p. 65)

Then there is a theorem to be proved: "Every person is a member of at least two committees" (p. 65). The proof proceeds by laying out *statements* with associated *reasons*. The student is apparently to learn that with the proper selection of statements and reasons, there is a logic leading from premises to conclusion. The inexorability of this logic is not at issue, but only learning how to produce such a proof. The textbook chapter goes to great lengths to emphasize that the *proof* exists through the formal structure. But because the proof structure may be unfamiliar, it also presents a diagram to illustrate the argument (Figure 1). The diagram or figure is explicitly not part of the proof.

[Insert Figure 1 about here.]

But the proof, like virtually all proofs in mathematics texts is really only a sketch of a proof. No one wants or needs to see every step, and doing so may be impossible in any case. As a result, the reader is supposed to be convinced by the elliptical logic of the proof. But in fact, the formal proof structure

is not compelling to most people. Few people are able to follow the proof easily, and even fewer are convinced by its logic.

But many people can look at the figure and see directly why the theorem has to be true. (In essence, the premises of the proof allow the reader to imagine a person, *p*, who is a member of some committee (C), and another person, *r*, who is a member of a *disjoint* committee (D). Since they must have a committee in common (E), each of these persons is necessarily a member of at least two committees.) The textbook encourages readers to look at the figure to convince themselves that the theorem holds if they do not understand the *proof*. Thus, the proof does not prove the theorem; what proves the theorem is the figure, which is not the proof!

The irony here is not restricted to a mathematics textbook and the mathematics learner. In fact, what constitutes proof in mathematics is problematic (see also Lakatos, 1977). The acceptability of a proof within the mathematics Discourse community is enhanced by extra-textual conditions: The proof makes use of a familiar idealization; it is plausible based on generally shared mathematical conceptions; the results fit in with other valued theorems; some crucial parts can be checked out; the author has a solid mathematical reputation; the journal in which the proof is published is considered reputable; familiar rhetorical devices, which are deemed acceptable within the mathematical community, are used effectively; and no one yet has found an error. Davis and Hersh (1987) note how the use of phrases such as, "it is easy to show that . . . ," "trivial," and "by an obvious generalization" help establish the social acceptability of a given mathematical argument. These conditions, which refer to the norms, values, beliefs, practices, and power relationships within the mathematics community, are quite similar to those for evaluating talk within other Discourses.

Pedagogical Challenges

The notion that a Discourse is a set of social practices that relates directly to one's membership in community, social values, and authority relationships, as well as to the more familiar function of expressing meaning has important consequences for how we interpret literacy development, particularly in school contexts. In this section, I want to look at some pedagogical challenges in light of Discourse theory. These challenges are categorized by the four functions of Discourse outlined above: epistemological, rhetorical, community-maintaining, and ideological.

Epistemological Challenges

Starting from many different home cultures, children come to a school culture that has its own distinctive values and norms. The school culture defines a set of literacy practices, including discipline-specific ways of associating meaning and text. Success in school means adopting these practices in various tasks and across disciplines in accordance with the norms, values, and expectations of the school culture.

Research on conceptual change in science (Driver, Guesne, & Tiberghien, 1985; Duckworth, 1987; Duckworth, Easley, Hawkins, & Henriques, 1990; Glynn, Yeany, & Britton, 1991; Hawkins, 1965; Osborne & Freyberg, 1985) has shown that students may construct elaborate models for phenomena that diverge from the conventionally accepted models for those phenomena. Moreover, they may present what they know using diverse discourse forms. Michaels and Bruce (1989) observed this in a study of explanations for seasonal change given by fourth-grade students.

Some students presented what they knew primarily in the form of narratives. In this style connectives such as "because" were used to indicate the evidence for an assertion rather than to mark a logical

connection (see Turn 8 below), and adverbs such as "when" were used in a temporal sense (note the use of the seasons references in Turn 14). Arguments and explanations for phenomena were supported by the recounting of personal experiences. This pattern can be seen in the interview segment below, in which a student was careful to provide experiential evidence for each of his statements (note especially Turns 8 and 14)[4]:

1. Chip: If you went south from here, south from Massachusetts/ would it get hotter or colder?//

2. Cornelius: Hotter//

3. Ch: And what if you went way far south?//

4. Co: Hotter, no um, colder//

5. Ch: [When--

6. Sarah: [After a while it would start--

7. Ch: When would it start getting colder? //

8. Co: When you get around, like (pause) South Carolina/ I been/ I never been there but I think it's cold there// [uh huh] 'Cause I always go to North Carolina// I never been to South// So I don't know//

9. Sarah: So you think it would get warmer if you went South?//

10. Co: No north// North is hot//

11. S: North is hot?//

12. Co: Yeah// N-- [interruption] North Carolina is hot//

13. Ch: So if you uh--

14. Co: Well / in the summer / I have never been in the winter//

In contrast, other students used "because" in a strictly causal sense (Turn 2 below). They also used temporal adverbs to describe the effects of a model, as well as in the purely temporal sense (e.g., "when the earth goes around . . ."). Rather than relying solely on experiential accounts to explain phenomena, they employed hypothetical reasoning. In the following example, the student Nicholas runs a simulation model using his hands to check out implications of his model (Turn 2). Note how he revises his account on the basis of his simulation:

1. Sarah: What -- what does having / what does being / close to the sun / have to do with / how long the day is? //

2. Nicholas: Because like if I'm / wicked like / this close to the sun /[yeah] the day is going to happen all day //. . . if I always have my--

[4]The interviewers are Sarah Michaels and the author.

like my face to it [uh huh] / but if I'm like / this far away from-- the sun it won't / reach me / . . . oh yeah / you're right //

3. S: What do you mean I am right? //

4. N: B-being far way or close doesn't make a difference / it's the spinning around part that counts //

Students who make and express meaning in these contrasting ways may be participating in different Discourse communities. The development of their scientific literacy will be shaped accordingly by this participation. They may hold different assumptions about conventional Discourse on astronomy or about their own potential role in the astronomical community. But their discourse may also reflect assumptions about the purpose of the clinical interview, assumptions that may, in turn, index differential participation in school-based Discourses. Whatever the case, their enculturation into different discourse practices is intimately connected to their literacy development.

Rhetorical Challenges

Individuals participate in many different Discourses and are frequently caught in the rhetorical contests among these Discourses. Nowhere is this more evident than in the process of preparing to become a teacher. Faced with conflicting Discourses, the prospective teacher may resolve the conflicts with creative solutions that may not be part of any of the Discourse communities that give rise to it. A revealing example of these conflicts can be seen in a university student's articulation of her experiences in a teacher education program (Clift, Meng, & Eggerding, 1992; Meng, 1992).

The student encounters two discordant Discourse communities, one centered on literary response and the other centered on content area reading. She had been asked to teach a reading lesson, videotape it, and write a justification of her teaching approach as part of her work for one university course. In the justification, the student referred to one of the readings she had encountered in another course:

> Allowing students to discover literature is one of the primary ideas presented in . . . Rosenblatt's *Literature as Exploration*.[5] She advocates personal and spontaneous student interaction with literature. In order to stimulate student curiosity and to allow the book to have direct meaning to the individual, Rosenblatt says that we should place no "screen" between student and book by imposing the teacher's point of view and critical attitude toward literature.

When the student presented the videotape of her lesson, she discovered a conflict between the approach she had chosen and the Discourse of the course. Writing in her journal, the student comments on her attempts to resolve what Clift et al. (1992) describe as "mixed messages":

> I inadvertently pointed out a dichotomy between Vacca's *Content Area Reading*[6] . . . and Rosenblatt.
>
> When we watched my pre-reading lesson on video in the class, [the professor] asked why I didn't make a more direct and explicit connection between soap operas and

[5]Rosenblatt (1983).

[6]Vacca & Vacca (1989).

> Master's view of small town life. I responded, at the time, that I wanted students to discover Master's vision on their own and that I didn't think the text was so difficult that they couldn't easily discover his "themes."

Within the Discourse of this classroom, the no-screen approach advocated by Rosenblatt was not valued as highly as the guided understanding approach advocated by Vacca. In her journal, the student describes how the professor interprets her work as being contrary to the textbook:

> Naturally [the professor] read my remarks in class as contrary to the ideas presented in Vacca. As a class we could not really reconcile this seeming dichotomy.
>
> [The professor] responded to my paper--"Perhaps we should discuss the seeming contradictions between Rosenblatt and *current notions* [my emphasis] about preparing kids to read by supplying a "set" or "frame."
>
> Who's current? Who's passé? Theoretical! Practical! Just when I think I'm getting a handle on a workable philosophy, someone else tells me the ideas aren't "current."

The readings this student was expected to master set forth different claims about teaching and learning, and they represent different values and attitudes. But more than that, they imply different communities of practice. For the student who is struggling to make sense of these ideas, entering into one community can mean feeling less a part of the other. These textual representations of the communities are augmented by the direct interpersonal interactions the student has with faculty, cooperating teachers, and fellow students. Unless she can remain at an unengaged level throughout her studies, the construction of her own theories about teaching and learning must be a conflicted and zigzag process.

Community Challenges

A related example, which highlights the diversity of Discourse communities for students, comes from Bartholomae's (1993) study of college student writing. He examined essays collected from classrooms using local-area computer networks in an experimental approach to writing instruction called ENFI (Bruce & Peyton, 1990; Peyton & Mackinson, 1989). In ENFI classrooms, students converse in writing. The premise is that they will develop writing fluency and more readily develop an understanding of writing as a form of communication.

Bartholomae found that the conversational nature of the network writing at one site, the University of Minnesota, did promote distinctively different styles in compositions. At this site, there were both ENFI and non-ENFI classrooms. In a traditional, or non-ENFI classroom, a basic writer produced this essay:[7]

> Child abuse is defined by the children have been deliberately inflicted with serious physical injury such as broken bones, burns, or internal injuries by their parents or caretakers. Child abuse has become one of our major social problems in the United States, It often occurs in the presence of three factors . . . .
>
> There are five needs parents must be able to meet . . . .

As Bartholomae points out, the author of this text is attempting to reproduce the Discourse of the academic essay. The text moves through a conceptual scheme, not a conversation with a reader. When

[7]The quotes in this section are excerpts from longer essays, but otherwise stand as written.

the author says "our major social problems," she doesn't expect to be questioned, nor is it convincing that she believes child abuse to be a major problem. The voice is impersonal; the reader is absent; and the author's persona is invisible. This text is thus exemplary of the traditional freshman composition.

In contrast, in an ENFI classroom at the University of Minnesota, a student wrote:

> I know this paper is going to be very negitive towards the women studies course, but don't get me wrong. I feel the course does enlighten women and their views of the world today. First, I would like to get my opinion of the Daily out of the way. This is because of the Daily's premature printing of Michael Olineck's articel without a response to it. The paper and it's one sided view on alot of articles it writes is extremely bad, and the University should do something about it.

Like other essays in the ENFI classrooms at that site, this one has a voice. We sense an author who in turn is aware of the reader ("I know this paper is going to be very negitive . . ."). The text engages us in a dialogue ("but don't get me wrong"). It is less predictable than the typical student essay; it uses colloquial expressions ("don't get me wrong"); it challenges other texts (the Daily's "premature printing" and "one sided view"); it incorporates the writer's personal experiences; and it is more likely to address the audience directly. As a result, this text and the other ENFI texts are more interesting to read.

In many ways these ENFI essays represented success for the approach. But as Bartholomae says, "the writing (and the values) encouraged by the network would also be seen as a nuisance by some teachers, even as a threat to academic values." This was true at other ENFI sites (Bruce & Peyton, 1990; Bruce, Peyton, & Batson, 1993). What distinguished the Minnesota site was that writing ordinarily acceptable only in a non-academic Discourse community was defined as acceptable within the academic one as well.

The conflict in values exhibited in these examples raises some troubling questions. The more vigorous and personal writing exhibited in the second essay may not be acceptable in other courses, particularly with professors who may be less supportive of writing as personal communication. Will the students, most of whom are basic writers who did not previously participate successfully in academic Discourse, soon acquire the Discourses by which they will be judged? What should be the goals for a basic writer course?

Ideological Challenges

Ways that home and school Discourses come into conflict can be seen most clearly when schooling interacts with children from subordinated cultures. A classic description of this is given by Scollon and Scollon (1981), and revised in Scollon (in press). The Scollons contrast typical Athabaskan Discourse with what they call American mainstream essayist prose.

According to the Scollons, Athabaskan Discourse has several characteristic features that may lead to conflicts with Western institutional Discourses. An Athabaskan is likely to avoid entering into a conversation with someone until his or her point of view is known. Talk with strangers is not sought out, and when it occurs is constrained more than is typical in American mainstream Discourse. A related feature is that those in a subordinate position, such as children, should not display in front of others. This contrasts with the situation in many American mainstream homes, and may conflict directly

with school activities such as the Show and Tell time. Similarly, it is not part of the Discourse to anticipate good luck or to speak ill of another. Riddles are a common feature, as is the use of narrative themes to express meaning.

Essayist prose has a contrasting set of distinctive features. References are more often intertextual than between the text and the world. Thus, essayist prose refers more often to itself and other texts. Making explicit the logic of an argument is highly valued. There is a fictionalization of both the audience and the author. It is clear that these characteristics of essayist prose represent a direct challenge to the Athabaskan Discourse.

On a personal level, learning to write in the essayist mode is a complex linguistic task. But more than that, as a Discourse, essayist prose embodies social values that may contradict deeply held values of other Discourses. Adopting the new values may require the denial of important aspects of the self. As the Scollons say, it may represent a crisis in ethnic identity. The issue is not just whether the Athabaskan can acquire the new Discourse, but whether he or she wants to do so. Adoption of the new Discourse requires him or her to abandon deeply embedded cultural values about relations to other people, presentation of one's self, and the nature of meaning. Not surprisingly, there is direct evidence of this crisis in the failure of traditional schooling practices to meet the needs of Athabaskan students and students from many other similarly situated groups (Ogbu, in press).

Pedagogical Responses

Challenges such as those just described are not likely to be resolved by new materials or instructional approaches. In some cases, the problems extend far beyond the school and cannot be alleviated by changing schools alone. Nevertheless, there are some promising responses, if not solutions, to these challenges. They are grouped below into categories corresponding loosely to the epistemological, rhetorical, community-maintaining, and ideological functions of Discourses.

Epistemological Challenges = > Meaningful Goals

The still-dominant school practice of focusing on the learning of isolated facts and skills is a Discourse, but one in which connections to workplace or discipline-based Discourses are obscured. One alternative is to ensure that students are engaged in working toward goals that are meaningful to them and their teachers. In the context of activities with clear purposes, students can begin to address the complex interactions of meaning making, rhetorical practices, communities, and ideologies. Situating learning within meaningful goal contexts is thus an important response to these challenges.

There are additional challenges deriving from the other discourse functions. These suggest different sorts of responses, which could supplement an overall emphasis on meaningful goal contexts. Because these other responses may be less familiar, I discuss them in more detail below.

Rhetorical Challenges = > Empowerment Through Critique

There is a recognition today that the appeal to objective authority and the denunciation of rhetoric is simply one of the most effective rhetorical strategies available. But whereas such practices are effective in terms of persuasion, they also serve to deny power to outsiders.

Ideally, schools are intended to facilitate the movement from outside to inside for a wide range of Discourses. Yet no textual form surpasses the typical school textbook in denying the use of rhetoric. And no Discourse community values acceptance of its own textual forms more than does schooling. A

consequence of this can be seen in a recent study by Wineburg (1991). He found that professional historians rated a passage from an American history textbook as the least trustworthy of eight documents, including an excerpt from Howard Fast's fictional work, *April Morning*. What makes this finding especially noteworthy is that a group of academically successful high school students rated the same passage as the most trustworthy of all the documents. The students had apparently been enculturated into a stance toward textbooks directly opposed to that of the associated academic discipline. The schooling Discourse community appears to value uncritical acceptance of its designated texts, precisely the opposite of the value of the corresponding discipline-based Discourse community. In response to problems such as this, as well as the problem of moving from a primary Discourse to school-based Discourses (which is an even larger and prior problem facing many students), there have been many proposals for supporting the development of a critical stance in students. EngestrÖm (1991) describes this move as establishing a context of criticism. In such a context, the student might be invited to evaluate as well as memorize the text. Alternate texts would be examined in terms of their value to the student for a specific purpose. Boomer (1989) proposes a similar idea when he calls for movement from being a "progressive" teacher to being a "radical" teacher. The radical teacher exposes the stage setting for learning and asks students to enter into a dialectic process in which all assumptions, values, and political agendas are fair to examine.

The recent focus on the quincentennial of Columbus's first transatlantic voyage provides an excellent opportunity for establishing a context of criticism. For example, a special issue of *Rethinking Schools*, entitled *Rethinking Columbus* (Bigelow, Miner, & Peterson, 1991), offers teachers and students diverse perspectives on the quincentennial. It includes diary entries, poetry, essays, articles, criticism, timetables, and other genres written by Native Americans and others. These texts challenge the dominant view that Columbus's voyages ought to be celebrated. The materials invite the adoption of a critical perspective, because they do not present a uniform set of assumptions and values. Moreover, by manifesting multiple Discourses, they encourage a critical examination of all Discourse forms and thus promote a more general literacy development.

Community Challenges => Learning Communities

The process of enculturation into a new Discourse is closely akin to enculturation through apprenticeship in work settings. Studies of apprenticeship (as described, for instance, by Lave & Wenger, 1991) show that in diverse activities throughout the world, including weaving, meat packing, ship navigation, nursing, and other occupations, apprentices successfully learn complex skills through the same sorts of social arrangements. Typically, there is very little didactic teaching. Instead, the new worker begins as an assistant to the expert or master worker. In the beginning, the assistant is not given responsibility for an entire task, but nevertheless participates with the master in accomplishing it. Thus, the apprentice sees how various parts of the work process fit together. He or she learns how to do pieces of the whole, without ever separating those pieces completely. Although the apprentice's participation is limited or peripheral, it is also legitimated. There is never a question that the apprentice belongs in the work setting, and information about the work is made freely available. Lave and Wenger describe these arrangements as *legitimate peripheral participation*.

If schools were to follow this legitimate peripheral participation model, they would presumably emphasize teacher support of learning and collaboration among students. There would be meaning-centered communication among students, or between students and those in the larger community. Learning would be tied to whole tasks, ideally those of the culture beyond school. Thus, the familiar options of individual seatwork or whole-class instruction would be replaced by forms of apprenticeship, in which the student masters new Discourses through observing and sharing in those of teachers, parents, and peers (Collins, Brown, & Newman, 1989; Rogoff, 1990). Such processes emphasize the value of what both master and apprentice bring to learning. Each participant plays an

active role in creating meaning. Apprenticeship and other forms of collaboration in learning have the potential to motivate students and provide a different kind of support to the learning process.

An extension of the idea of legitimizing participation in a Discourse community is to see the disparate communities within academia as part of larger communities. Thus, while the conflicts between Discourses do not disappear, students are legitimized in their attempts to make sense out of the conflicts. A number of practical ideas for integrating learning across courses and for building community at colleges and universities have been proposed (Carnegie Foundation for the Advancement of Teaching, 1990; Gabelnick, MacGregor, Matthews, & Smith, 1990). In a learning communities model, writing across the curriculum can become a way to learn not only within a course or subject area, but in the gaps and conflicts between areas.

Ideological Challenges = > Recognition of Contention

Children from some sociocultural groups bring to school ways of interacting and using language that are denied or ignored by school-based literacy practices, while other children bring ways that match well to school practices. Even when school activities fail to address all the mainstream societal needs, they do reflect the mainstream values and practices to the detriment of those whose cultures differ. This is the basis of the argument that the difficulty some children encounter in school is traceable in part to a mismatch of literacy practices. Unfortunately simple recognition of such a mismatch is of little help in designing better school practices. In many cases we need to recognize that we may not have easy solutions and to acknowledge more readily the dilemmas teachers face.

Consider the case for modifying school-based Discourses to incorporate more culturally appropriate practices. For example, Smitherman (1977) has suggested that the call-response pattern found in African-American churches could be adapted for use in schools. It would allow for more engagement of students than the all too familiar initiation-response-evaluation pattern (Cazden, 1988; Mehan, 1979) in which teachers do most of the talking. She argues that for many African-American students, the call-response form could provide a more familiar starting point for learning. In a similar way, Moll (1988, 1989, in press) has shown that building on community-based knowledge has the potential for enhancing literacy development by engaging students in thinking about the experiences and practices of their homes and communities.[8]

As promising as these efforts are, we must remember that school-based Discourses exemplify in many ways the values of the society-at-large. As such, they set the criteria for full acceptance and participation in that society. Thus, wholesale dismissal of traditional school-based Discourse practices can deny knowledge of the basis on which the larger society will judge them to the students who may need the most help (see Cazden, in press).

Another example can be seen if we were to reduce the conflicts reported by the Scollons to a mismatch account. Under such an account, the problem would be simply one of differences in the discourses of the Athabaskans and the school system. For example, some Athabaskans would be viewed as having academic difficulties because their culturally based language practices emphasized personalized writing, whereas the essayist literacy of the school values a more impersonal essay form.

Unfortunately, such an account all too easily leads to a deficit model--that if only the Athabaskans could remedy their lack of knowledge and their inappropriate language they would succeed in school. This

[8]In multicultural classrooms, the accommodation to culturally based Discourses becomes much more complex.

account would entirely miss the salient fact that it is the way the school system copes with difference that makes all the difference. Moreover, the mismatch account would not account for the dilemmas faced by both the Athabaskan students and their teachers. Failure to recognize the contention between Discourses could thus lead to a misrepresentation of the learning process. Recognizing contention alone does not solve these problems, but it may provide the basis for avoiding a simplistic approach to solving them.

Conclusion

A commonly held view is that a theory of learning undergirds and is prior to a theory of instruction; that is, after we can account for how an individual learns we can begin to determine how to alter the environment to facilitate learning, and thereby implement a theory of instruction. Thus, theories of cognition typically precede theories of social relations, just as theories of meaning have preceded theories of the social use of language. The Discourse perspective sketched here suggests that both theories of learning and theories of instruction are aspects of a larger theory of language use and meaning, which needs to take seriously the participation of people in communities and unequal distribution of power in society. Theories of learning and instruction cannot be interpreted adequately outside of this larger framework, whether it is explicitly articulated or not. To the extent that a theory of instruction coincides with this larger theory, it is not added on to a theory of learning, but effectively precedes it.

Such a larger theory should highlight the historical, social, political, institutional, and cultural dimensions of literacy, in and out of classrooms. Starting from this larger whole does not mean never analyzing the parts. It does mean considering the role of sense-making, social influence, communities, and power relations in the study of all learning. Such an approach allows us to see ways in which "direct instruction" is not as direct as some might wish, or that "open learning" is not always so open.

This report has examined how a Discourse perspective highlights some challenges for schooling, and examined some responses to those challenges: establishing meaningful goals, empowering through critique, building learning communities, and recognizing how contending Discourses affect students' experiences in and out of school. Although these responses should not be expected to provide the final answer to the problems of literacy development today, they may yet supply insights for understanding how literacy develops.

References

Bakhtin, M. M. (1981). Discourse in the novel. In M. Holquist (Ed.), *The dialogic imagination* (pp. 259-422). Austin: The University of Texas Press.

Bartholomae, D. (1993). "I'm talking about Alan Bloom": Writing on the network. In B. Bruce, J. K. Peyton, & T. W. Batson (Eds.), *Network-based classrooms: Promises and realities* (pp. 237-262). New York: Cambridge University Press.

Bazerman, C. (1988). *Shaping written knowledge: The genre and activity of the experimental article in science*. Madison: University of Wisconsin Press.

Bigelow, B., Miner, B., & Peterson, B. (Eds.). (1991). Rethinking Columbus: Teaching about the 500th anniversary of Columbus's arrival in America [special edition]. *Rethinking schools*.

Boomer, G. (1989). Literacy: The epic challenge beyond progressivism. *English in Australia*, No. 89, 4-17.

Britton, J. M., Burgess, T., Martin, N., McLeod, A., & Rosen, H. (1975). *The development of writing abilities* (pp. 11-18). Urbana, IL: National Council of Teachers of English.

Bruce, B., & Peyton, J. K. (1990). A new writing environment and an old culture: A situated evaluation of computer networking to teach writing. *Interactive Learning Environments, 1,* 171-191.

Bruce, B., Peyton, J. K., & Batson, T. W. (1993). *Network-based classrooms: Promises and realities*. New York: Cambridge University Press.

Bruffee, K. A. (1986). The Brooklyn plan: Attaining intellectual growth through peer-group tutoring. *Liberal Education, 64,* 447-468.

Carnegie Foundation for the Advancement of Teaching (1990). *Campus life: In search of community*. Princeton, NJ: Princeton University Press.

Cavell, S. (1976). *Must we mean what we say? A book of essays*. New York: Cambridge University Press.

Cazden, C. B. (1988). *Classroom discourse: The language of teaching and learning*. Portsmouth, NH: Heinemann.

Cazden, C. B. (in press). Writing about cats: Contrasting ideologies of writing instruction. In D. Keller-Cohen (Ed.), *Literacy: Interdisciplinary conversations*. Cresskill, NJ: Hampton.

Clifford, J., & Marcus, G. E. (Eds.) (1986). *Writing culture: The poetics and politics of ethnography*. Berkeley: University of California Press.

Clift, R., Meng, L., & Eggerding, S. (1992, April). *Mixed messages or What was happening to us?* Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Collins, A., Brown, J. S., & Newman, S. (1989). Cognitive apprenticeship: Teaching the craft of reading, writing, and mathematics. In L. B. Resnick (Ed.), *Knowing, learning, and instruction: Essays in honor of Robert Glaser* (pp. 454-494). Hillsdale, NJ: Erlbaum.

Davis, P. J., & Hersh, R. (1981). *The mathematical experience*. Boston: Houghton Mifflin.

Davis, P. J., & Hersh, R. (1987). Rhetoric and mathematics. In J. S. Nelson, A. Megill, & D. N. McCloskey (Eds.), *The rhetoric of the human sciences: Language and argument in scholarship and public affairs* (pp. 53-68). Madison: University of Wisconsin Press.

Dewey, J. (1929). *Experience and nature*. Chicago: Open Court.

Dewey, J. (1966). *Democracy and education*. New York: Macmillan. (Original work published 1916)

Driver, R., Guesne, E., & Tiberghien, A. (1985). *Children's ideas in science*. Milton Keynes: The Open University Press.

Duckworth, E. (1987). *The having of wonderful ideas and other essays on teaching and learning*. New York: Teachers College Press.

Duckworth, E., Easley, J., Hawkins, D., & Henriques, A. (1990). *Science education: A minds-on approach for the elementary years*. Hillsdale, NJ: Erlbaum.

Eagleton, T. (1983). *Literary theory: An introduction*. Minneapolis: University of Minnesota Press.

Emerson, C., & Hölquist, M. (Eds.). (1987). *M. M. Bakhtin: Speech genres and other late essays* (V. W. McGee, Trans.). Austin: University of Texas Press. (Original work published 1986)

EngestrÖm, Y. (1991). Non scholae sed vitae discimus: Toward overcoming the encapsulation of school learning. *Learning and Instruction, 1*, 243-259.

Feyerabend, P. (1978). *Against method: Outline of an anarchistic theory of knowledge*. London: Verso.

Fish, S. (1980). *Is there a text in this class?: The authority of interpretive communities*. Cambridge: Harvard University Press.

Freedman, A., & Pringle, I. (Eds.). (1980). *Reinventing the rhetorical tradition*. Ottawa, Ontario: Canadian Council of Teachers of English.

Gabelnick, F., MacGregor, J., Matthews, R. S., & Smith, B. L. (1990). *Learning communities: Creating connections among students, faculty, and disciplines*. San Francisco: Jossey-Bass.

Gadamer, H.-G. (Tran. & Ed., D. E. Linge). (1976). *Philosophical hermeneutics*. Berkeley: University of California Press.

Gee, J. (1990). *Social linguistics and literacy*. Philadelphia: Taylor & Francis.

Geertz, C. (1973). *The interpretation of cultures*. New York: Basic Books.

Gigerenzer, G., & Murray, D. J. (1987). *Cognition as intuitive statistics*. Hillsdale, NJ: Erlbaum.

Glynn, S. M., Yeany, R. H., & Britton, B. K. (Eds.). (1991). *The psychology of learning science*. Hillsdale, NJ: Erlbaum.

Habermas, J. (1984). *The theory of communicative action*. Boston: Beacon.

Hawkins, D. (1965, February). Messing about in science. *Science and Children, 2*, 5-9.

Heath, S. B. (1989). Oral and literate traditions among Black Americans living in poverty. *American Psychologist, 44*, 367-373.

Hymes, D. (1974). *Foundations in sociolinguistics: An ethnographic approach*. Philadelphia: University of Pennsylvania Press.

Kinneavy, J. L. (1971). *A theory of discourse*. Englewood Cliffs, NJ: Prentice-Hall.

Kinneavy, J. L. (1980). A pluralistic synthesis of four contemporary models for teaching composition. In A. Freedman & I. Pringle (Eds.), *Reinventing the rhetorical tradition* (pp. 38-52). Ottawa, Ontario: The Canadian Council of Teachers of English.

Klemm, D. E. (1987). The rhetoric of theological argument. In J. S. Nelson, A. Megill, & D. N. McCloskey, (Eds.), *The rhetoric of the human sciences: Language and argument in scholarship and public affairs* (pp. 276-297). Madison: University of Wisconsin Press.

Kuhn, T. S. (1962). *The structure of scientific revolutions*. Chicago: University of Chicago Press.

Lakatos, I. (1977). *Proofs and refutations*. New York: Cambridge University Press.

Latour, B., & Woolgar, S. (1986). *Laboratory life: The construction of scientific facts* (rev. ed.). Princeton, NJ: Princeton University Press.

Lave, J. & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York: Cambridge University Press.

Lynch, M. (1985). *Art and artifact in laboratory science: A study of shop work and shop talk in a research laboratory*. London: Routledge & Kegan Paul.

MacDonald, S. P. (1990). The literary argument and its discursive conventions. In W. Nash (Ed.), *The writing scholar: Studies in academic discourse* (pp. 31-62). Newbury Park, CA: Sage.

McCloskey, D. N. (1985). *The rhetoric of economics*. Madison: University of Wisconsin Press.

Megill, A., & McCloskey, D. N. (1987). The rhetoric of history. In J. S. Nelson, A. Megill, & D. N. McCloskey, (Eds.), *The rhetoric of the human sciences: Language and argument in scholarship and public affairs* (pp. 221-238). Madison: University of Wisconsin Press.

Mehan, H. (1979). *Learning lessons: Social organization in the classroom*. Cambridge, MA: Harvard University Press.

Meng, L. (1992). Unpublished student journal. University of Illinois at Urbana-Champaign.

Michaels, S., & Bruce, B. (1989, April). *Discourses on the seasons*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Moffett, J. (1968). *Teaching the universe of discourse*. Boston: Houghton Mifflin.

Moll, L. C. (1988). Key issues in teaching Latino students. *Language Arts, 65,* 465-472.

Moll, L. C. (1989). Teaching second-language students: A Vygotskian perspective. In D. Johnson & D. Roen (Eds.), *Richness in writing: Empowering ESL students* (pp. 55-69). New York: Longman.

Moll, L. C. (in press). Mediating knowledge between homes and classrooms. In D. Keller-Cohen (Ed.), *Literacy: Interdisciplinary conversations*. Cresskill, NJ: Hampton.

Nelson, J. S., Megill, A., & McCloskey, D. N. (Eds.). (1987). *The rhetoric of the human sciences: Language and argument in scholarship and public affairs*. Madison: University of Wisconsin Press.

Ogbu, J. (in press). Minority status, cultural frame of reference, and schooling. In D. Keller-Cohen (Ed.), *Literacy: Interdisciplinary conversations*. Cresskill, NJ: Hampton.

Osborne, R., & Freyberg, P. (1985). *Learning in science: The implications of children's science*. Birkenhead, Australia: Heinemann.

Peyton, J. K., & Mackinson, J. (1989). Writing and talking about writing: Computer networking with elementary students. In D. M. Johnson & D. H. Roen (Eds.), *Richness in writing: Empowering ESL students* (pp. 100-119). New York: Longman.

Pratt, M. L. (1977). *A speech act theory of literary discourse*. Bloomington: Indiana University Press.

Rogoff, B. (1990). *Apprenticeship in thinking: Cognitive development in social context*. New York: Oxford University Press.

Rorty, R. (1979). *Philosophy and the mirror of nature*. Princeton, NJ: Princeton University Press.

Rosaldo, R. (1987). Where objectivity lies: The rhetoric of anthropology. In J. S. Nelson, A. Megill, & D. N. McCloskey (Eds.), *The rhetoric of the human sciences: Language and argument in scholarship and public affairs* (pp. 87-110). Madison: University of Wisconsin Press.

Rosenblatt, L. M. (1983). *Literature as exploration*. Urbana, IL: National Council of Teachers of English.

Scholes, R. (1985). *Textual power: Literary theory and the teaching of English*. New Haven: Yale University Press.

Scollon, R. (in press). Cultural aspects of constructing the author. In D. Keller-Cohen (Ed.), *Literacy: Interdisciplinary conversations*. Cresskill, NJ: Hampton.

Scollon, R., & Scollon, S. B. K. (1981). *Narrative, literacy and face in interethnic communication*. Norwood, NJ: Ablex.

Smitherman, G. (1977). *Talkin' and testifyin'*. Boston: Houghton Mifflin.

Swales, J. M. (1988). Discourse communities, genres, and English as an international language. *World Englishes, 2,* 221-236.

Swales, J. M. (1990). *Genre analysis: English in academic and research settings*. New York: Cambridge University Press.

Trudeau, R. J. (1987). *The non-Euclidian revolution*. Cambridge: Birkhäuser Boston.

Vacca, R. T., & Vacca, J. A. L. (1989). *Content area reading*. Glenview, IL: Scott, Foresman.

Wineburg, S. S. (1991). On the reading of historical texts: Notes on the breach between school and academy. *American Educational Research Journal, 28*, 495-520.

Wittgenstein, L. (1968). *Philosophical investigations* (G. E. M. Anscombe, tran.). New York: Macmillan. (Original work published 1953)

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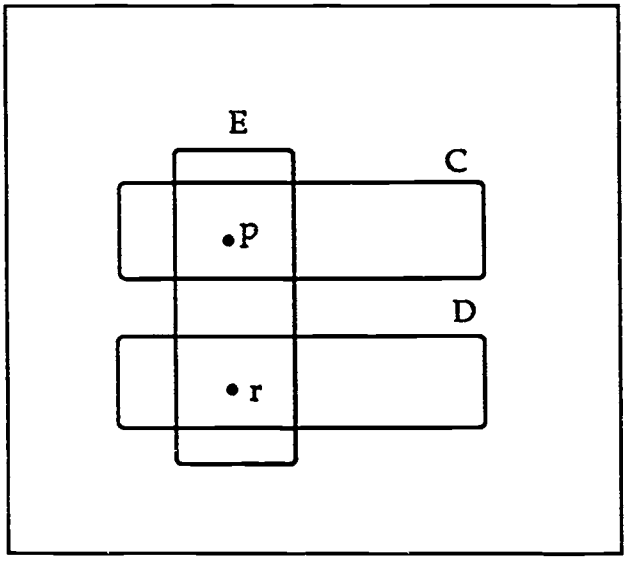

Figure 1. A diagram to illustrate a mathematical proof [Adapted from Davis & Hersh, 1987, p. 66].