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ABSTRACT

To explore how readers create textual meanings or interpretations from written materials, a study that investigated reading from a semiotic perspective was conducted. The study's design was based on the principle of prior ethnography and employed data collection techniques common to field studies: participant/intervention and interviewing. Fieldwork was conducted over a seven-month period in one fourth grade classroom. The primary heuristic was an instructional strategy lesson, introduced after a three-month period of prior ethnography, that called on readers to sketch their interpretations of materials read. The lessons and interviews were audio and video taped, detailed field notes were kept, and all sketches were collected. Data analysis was focused on three dimensions: the interrelationship of fieldworker and respondents, the contextual constraints and resources in operation during the lessons, and the drawings that were created. Findings suggested that the children's interpretations were influenced by their embedded theories of the social situation, their skills as artists, and the nature of the activity of sketching. Within-class friendships and interest also played major roles in the process of constructing meaning. Overall, results suggested that from the theoretical and methodological perspective of semiotics it is more efficacious to view reading as more than mere representation, that models of direct instruction be reconsidered, and that the potential that transmediation across sign systems holds for curriculum development be explored. (Author/CRH)

TOWARD AN UNDERSTANDING OF READING AS SIGNIFICATION

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Abstract

Within the framework of the doctrine of signs, or semiotics, the construction of meaning is a process of signification; yet reading is typically modeled and researched as if it entailed only the lesser cognitive/semiotic process of representation. This research conceptualized and investigated reading from a semiotic perspective in order to explore how readers create textual meanings, that is, interpretations of written materials.

The study's design was based on the principle of prior ethnography and employed data collection techniques common to field studies: participant/intervention and interviewing. Fieldwork was conducted over a seven month period in one fourth grade classroom. The primary heuristic was an instructional strategy lesson, introduced after a three month period of prior ethnography, that called on readers to sketch their interpretations of materials read. The lessons and interviews were audio- and video-taped, detailed field notes were kept, and all sketches were collected.

Data analysis emerged in the course of the study and focused on three dimensions: the inter-relationship of fieldworker and respondents, the contextual constraints and resources in operation during the lessons, and the drawings that were created. Findings suggest the children's interpretations were influenced by their embedded theories of the social situation, their skills as artists, and the nature of the activity of sketching. Within-class friendships and interest also played major roles in the process of constructing meaning.

From the theoretical and methodological perspective of semiotics it is more efficacious to view reading as more than mere representation. This calls for a reconsideration of models of direct instruction and the continued exploration of the potential which transmediation across sign systems holds for curriculum development.

Introduction

Reading researchers have followed the currents of academic psychology ever since Huey (1908) and Thorndike (1917) published their ground-breaking studies in the early part of the twentieth century. In the last ten years this link has been all but cemented. Research activity in the seventies was characterized by attention of the cognitive and linguistic factors affecting the reading process and comprehension emerged as the central object of inquiry. It was during this period that the perspective afforded by cognitive psychology came to shape the way comprehension is conceptualized today.

An understanding of what cognitive psychologists mean by 'comprehension' begins with a consideration of the reading models that currently dominate the profession. The term that most clearly captures the basic design of these models is 'interactive.' Theorists positing interactive reading models (e.g. Adams and Collins, 1979; Goodman, 1967, 1978; Kintsch and van Dijk, 1978; Rumelhart, 1976) assume that comprehension results from the interplay between a reader's knowledge (i.e. orthographic, syntactic, semantic, and world knowledge) and the linguistic organization of the text. The dyadic nature of this design can be observed in the way analytic techniques are applied to recall and summary protocols, two heuristics commonly used in comprehension research. Protocols are parsed into meaning units (e.g. propositions [Turner and Greene, 1977]) and then coded according to the source of that unit (either the reader or the text). The fact that some propositions are coded as "errors" (Kintsch and van Dijk, 1978) or "intrusions" (Hansen, 1981) suggests

that, within the framework of interactive models, duplication of the text is a measure of comprehension.

There can be no question that reading research conducted under the purview of cognitive psychology has made a significant contribution to our understanding of the reading process. Still, there exist a number of fundamental problems with interactive models that result from the subject/object inherent in psychological conceptions of cognition. When reading is defined as a transaction this dualism falls away and new insights into comprehension are possible.

To date, few studies have been grounded in transactional models of the reading process and none have adopted an ethnographic perspective. There is a need, then, for ethnographic studies of the reading process so as to clarify the nature of reading transactions as they occur in social settings. The research reported in this paper was undertaken in order to meet this need. Fieldwork was carried out over a seven month period in one fourth grade classroom and utilized data collection techniques common to ethnographies: participant-observation and interviewing. An instructional strategy that calls on readers to draw their interpretations of materials read silently served as the primary heuristic procedure. These data were informed by information about classroom life and knowledge of the inquirer/respondent relationship. This approach not only allowed transactions to be studied in the process of use but from the perspective of the participants. Ethnography thus provided a vantage point from which to observe how readers arrive at an understanding of written discourse.

Theoretical Foundations

Transactional models of the reading process (Carey and Harste, in press; Eco, 1979; Iser, 1980; Rosenblatt, 1978) are based on a set of assumptions that stand in marked contrast to those upon which interactive models rest. Briefly, transactional models assume that:

1. the text is less an object than a potential that is actualized during the act of reading;
2. understanding arises out of the compenetration of reader and text and is thus something unique to that event;
3. text is an open system and therefore variation in interpretation is the expected response.

Transactional models are given their most elegant exposition in the writings of Louise Rosenblatt (1978). In an effort to dissolve the subject/object dualism that pervades the reading literature, she draws on the transactional terminology of Dewey and Bentley who "sought to counteract the dualistic phrasing of phenomena as an 'interaction' between different factors, because it implies separate, self-contained, and already defined entities acting on one another" (p. 17). She proposes 'transaction' as a more suitable descriptor of the act of reading and defines it as "an on-going process in which elements or factors are . . . aspects of a total situation, each conditioned by and conditioning the other" (p. 17). Rosenblatt's account of what happens when reader meets text is thus very different from that given by interactionists. Out of this encounter something new - the poem - arises which cannot be partialled out to either the reader or the text alone. She writes:

> The poem . . . must be thought of as an event in time. It is not an object or ideal entity. It happens during a coming-together, a compenetration, of a reader and a text. The

> reader brings to the text his past experience and present personality. Under the magnetism of the ordered symbols of the text, he marshals his resources and crystallizes out from the stuff of memory, thought, and feeling a new order, a new experience, which he sees as the poem. This becomes part of the ongoing stream of his experience, to be reflected on from any angle important to him as a human being. (p. 12)

In short, the reader establishes a proportion between him/herself and the text and in so doing creates a poem. The poem, then, is the relation between subject and object and has the capacity to be taken as an object of thought.

This view of the reading process inspires a program of research that differs significantly from that pursued by interactionists. Although both focus on the mental operations used to achieve understanding, the transactionist's goal is to explain the range of interpretations readers are likely to evoke from a single text (Culler, 1981). Hence, transactionists reject template matching procedures on the grounds that they privilege the researcher's interpretation of the piece and presuppose uniformity of interpretation. From a transactional perspective, then, what counts as evidence of comprehension is necessarily different from that accepted by interactionists. Evidence that the reader has duplicated the author's message is abandoned in favor of evidence that the reader has duplicated the author's creative role (Rosenblatt, 1978).

Semiotics, which studies semiosis (or sign-functioning) provides a useful vantage point from which to specify the nature of comprehension. Semiotic doctrine is most closely associated with two names: Ferdinand de Sausurre, the Swiss linguist, and Charles Sanders Peirce, the American pragmatist. The discussion that follows is rooted in Peirce's semiotic

for, contrary to the conventional wisdom, Peirce was not a taxonomist (cf. Merrell, 1979). That he is known chiefly for his classification of signs into indices, icons, and symbols is probably due to the fact that Peirce never completed the book that was to be his major opus. It was to be called A System of Logic, considered as Semiotic (Fisch, 1977), a title that reveals the underlying principle of all Peirce's work, namely, the development of a system of logic that would account for human reasoning. What is relevant to the explication of the term 'comprehension,' however, is Peirce's discussion of semiosis.

Peirce proposed semiosis as the process whereby objects and actions are taken as signs and thus attain meaning. So stated, semiosis is coextensive with cognition (Deely, 1982), if by cognition we mean the way in which humans come to know the world. Central to an understanding of semiosis is the notion that a sign only becomes meaningful when a triadic relationship is established among the elements of the sign. This criterion is evident in Peirce's definition of a sign.

> A sign, or representamen, is something which stands to to somebody for something in some respect or capacity. It addresses somebody, that is, it creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the interpretant of the first sign. The sign stands for something, its object. It stands for that object, not in all respects, but in reference to a sort of idea, which I have sometimes called the ground of the representamen. (cited in Eco, 1979, p. 180)

The technical terms representamen, object, interpretant, and ground are themselves rich with insights into sign-functioning, but for the present we can say that the representamen is the sign-vehicle, the object is a cultural construct and not a physical referent, and an interpretant

is another sign. The term ground suggests that during any particular instance of sign functioning only that aspect of the object relevant to the context participates in semiosis. A representamen cannot stand for an object; it can only represent it. To become known, or understood, the relation between representamen and object must become an object of thought and this action requires the mediating influence of a third element, the interpretant. Until the interpretant is introduced we have no understanding of the object, just the experience of perception. At the point of perception the representamen does not stand for anything as it is not yet connected to something already known. It remains the function of the interpretant to weld this connection and generate meaning.

Implicit in this explanation of semiosis is the distinction between representation and signification, which is critical to the task of defining comprehension. This distinction was first made explicit by a seventeenth century Iberian philosopher, Poinsot, in his Treatise on Signs (1632). Deely (1982) explicates Poinsot's treatment of representation and signification in this way:

> What is essential in our experience to the being and functioning of a sign is not that it be something perceived but that it bring something other than itself into the awareness of an organism, which is exactly how ideas function within the mind - to bring something other than themselves into awareness. (p. 60)

A sign-vehicle (or representamen) can represent an object such that it will be perceived but it can only be said to signify when the relation is detached from the given moment of perception. Signification, or understanding, requires that the relation between representamen and object become an independent consideration, available for further

evaluation and development. The thought becomes an object in itself in signification; in representation it remains embedded in experience.

Interactive reading models obscure the meaning of 'comprehension' by confounding representation and signification. The assumption that the role of the reader is to duplicate the author's message leads interactionsists to reduce signification to representation. Those propositions that do not match the researcher's template are designated "errors" rather than indices of understanding. The corollary, of course, is that representation is interpreted as understanding when, in fact, there may be no evidence in the recall or summary protocol that something other than the reader's representation of the text was brought to mind. By rejecting a dualistic rendering of the reading process, transactional models attain explanatory power in that they have the potential to explain signification or understanding as it related to written discourse. Comprehension is no longer equated with a reader's representation of a text but rather with the meanings that arise out of the proportioning of reader to text (cf. Iser, 1980). The implication is that a reader's interpretation cannot be explained by reference to the reader or the text alone; the social situation must be taken into consideration for the relation of text to context (Halliday and Hasan, 1980) plays a role in shaping the poem evoked during the transaction. To summarize, semiotic doctrine offers a conceptual distinction between representation and signification that lends clarity to the meaning of comprehension. Methodologically, this perspective suggests that if researchers are committed to modeling reading as signification, they must leave the

laboratory and enter the field. The sections that follow present a report of an ethnography designed to explore reading as signification.

Methodological Overview

This study was conducted in order to generate data that would inform our understanding of the reading transaction. To that end children in one fourth grade classroom participaed in a strategy lesson known as "sketch to stretch" (Harste and Burke, 1979) in the course of a seven month field study. An ethnographic perspective was adopted so as to capture the "whole cloth" of the reading transaction from the participant's point-of-view. Signification entails the relation of text to context and therefore necessitates a mode of inquiry that situates the reading event in a cultural or subcultural setting. Moreover, the attitude engendered by ethnography is open-ended. Hypotheses are not formulated a priori but instead are generated and revised in the course of fieldwork. The assumption is that this stance will enable the ethnographer to explain the entire range of data and not just those that hover around the central tendency. Anomolies, those data that seem not to "fit," thus play an important role in the ethnographic enterprise; rather than being thrown out as "outliers" these data force the ethnographer to rethink initial hypotheses. In this way ethnography builds a self-correcting feedback loop into the inquiry process. This is an important attitude to adopt given the exploratory nature of this study; however, it does not mean that I[1] entered the field as a blank slate. Fieldwork was initiated with a general theoretical framework in mind yet I had no preconceived notions as to how that perspective would be played out.

The sketching strategy was employed so as to avoid the verbocentrism (Eco, 1976) that has characterized much of reading research. The almost exclusive reliance on linguistic measures of comprehension implicitly reduces thought to language and thus stands in the way of investigating reading as signification. Asking students to draw their interpretations of stories and articles admitted the possibility that some meanings would be communicated that would not be made public if language were the sole sign system used. Sketching was also selected as the primary heuristic device because it necessarily entails signification, that is, it requires students to take the experience of reading as an object of thought. In order to draw what they thought the story meant or what they thought the article was trying to teach them, students had to reflect on what they'd read and draw what that experience brought to mind. Recall and summarization tasks, on the other hand, direct the read to record the way the discourse has been represented in memory.

The sketching lessons consisted of three phases: initiating, experiencing, and communicating. The initiating phase functioned as a demonstration (Smith, 1981) of the lesson's potential, that is, it focused on the ways ideas could be integrated by moving to another communication system. The experiencing phase provided an opportunity for the students to select and read one of several stories and articles. Once the materials had been read, everyone was asked to draw a picture of what they thought the piece meant. When everyone had completed their sketches students were asked to explain them to the rest of the group; this constituted the communicating phase of the lesson. With the

exception of the first two lessons, which were viewed as opportunities for students to become familiar with the activity of sketching, the remaining nine lessons were organized in three week units. Each unit centered on a concept drawn from either science, social studies, or children's literature and employed a set of conceptually related materials. Conceptually related materails are sets of reading materials that cohere around a single concept. The goal in organizing the lessons in this way was to promote continuity across the various lessons and to shift the lessons' focus from the activity of sketching itself to the meanings generated in the process of reading these materials. The final lesson in the series of 12 called for the creation of a meta-sketch, a sketch about sketching, so as to gain some insight into the children's interpretation of the experience.

Interviews were conducted during the final two weeks of fieldwork. The purpose of these interviews was to gain access to the children's embedded theories of both the lesson as a whole and the particular nature of sketching. Although some questions were developed in advance, the interviews were open-ended. This allowed me to follow the children's lead and in this way gain further insights into their point-of-view.

The study's design was guided by the principle of "prior ethnography" (Corsaro, 1980), a construct originally articulated to address problems of validity and reliability that arise when audio-visual data are recorded. In this study, the construct was expanded to include not only the introduction of audio-visual equipment but the introduction of the sketching lessons. The interpretation employed here in probably best explained

an examination of the kinds of data collected and how they stand in relation to one another. Primary data are data that capture the phenomenon of interest; in this study the sketching lessons generated data on the nature of the reading transaction. These lessons were recorded on audio- and video-tape and all sketches were collected. Background data, on the other hand, provide information on the setting in which the phenomenon is found and thus act as both a validity check and an interpretative framework for primary data. Background data for this study, gathered through participant-observation and interviewing, consisted of information on classroom life. These data were recorded in field notes and on video-tape, respectively.

It is important to note that the term 'prior' is to be taken literally, that is, the world of the classroom was entered before the sketching lessons were introduced. Specifically, field entry began in October and was accomplished in part, through non-participant observation. Observations were made one day a week until January when observation (and by then participation) was increased to three consecutive days a week. The sketching lesson was initiated at the beginning of February and continued until the end of May. Once this lesson became part of the class' weekly schedule, however, background data were not ignored; instead, "prior ethnography" became "contiguous ethnography."

A brief discussion of the weekly class schedule will clarify this point. The sketching lesson was scheduled for one hour on each of the three days I was present. This arrangement allowed me to work with each of the three groups. Two of the groups met with me during their

regularly scheduled math class whereas the third group met during the class period devoted to spelling. With the exception of that one hour block of time I was present in the classroom the entire day and continued to gather background data through participant-observation. It is in this sense that the collection of background data was contiguous ethnography.

Like prior ethnography, participant-observation took on a broader meaning than usually accorded. Traditionally, participant-observation is defined as the process of becoming a "marginal native" (Freilich, 1970) of the group being studied, but in this study it was expanded to include the process whereby the fieldworker introduces something new into the setting. The difference between these two interpretations of participant-observation can be viewed as one of degree rather than kind, particularly when the character of traditional participant-observation is examined. Fieldworkers by their very presence alter the setting under investigation and create a new social context. They can never stand outside that setting and take a "picture" for they are always "in the text" (Herzfeld, 1981), creating it in transaction with the participants themselves. For this reason, participant-intervention seems a felicitous way to describe the fieldwork experience.

The decision to insert the sketching lesson into the curriculum was the result of a trade-off between theoretical and practical constraints. The intent of the study was to explore the nature of the reading process from a transactional perspective; the only site available, however, was one in which reading was implicitly defined as an interaction. This decision does not represent a retreat from methodological purity,

though; it is merely an example of what happens when an educational ethnographer chooses to explore the potential for learning rather than describe the learning that is in place. Traditional educational ethnographers have sought to describe the interface between schools and culture and are reluctant to attach valuations to the nature of that interface. But education is a value-laden enterprise (Eisner, 1982) that must deal with issues related to the quality of the arranged environment vis-a-vis learning. For this reason, ethnographies designed to explore how a student "can become what he not yet is" (Leontiev, cited in Bronfenbrenner, 1977) issues this challenge in tones that are more anthropological in flavor:

> The ethnography of Malinowski and most other classic ethnography does not address such questions as "How can we make this canoe better?" Thus classic ethnographers have been unable to learn what can only be learned when one gets involved in the action and picks up one's own end of the log. (p. 186).

His conclusion is that "if we really want our work as scholars to be used in educational practice, more of us must somehow join with teachers and administrators in their daily work and in the transformation of it" (p. 186).

To summarize, prior ethnography was the central design feature of this study. It provided a means for maximizing the validity of the data collected without jeapordizing the emergent nature of ethnography. The collection of primary data was planned in advance but with the understanding that these plans would be altered in accordance with the exigencies operating in the research site. With the exception of the sketching lessons and some general field entry strategies, decisions regarding

data collection procedures could not be mapped out ahead of time since the site was identified after the general plan of research had been drawn up. Even in cases where the fieldworkers has been able to gather background information prior to field entry; strategies that are rightly prepackaged are likely to fail. Fieldwork takes place in dynamic and not static settings; one of ethnography's strengths is that it does not try to hold time constant but instead charts the changes that take place. Fieldworkers must thus be flexible and take advantage of rather than bemoan the changing nature of those settings. This is ultimately a more productive, if somewhat risky, stance to take for it builds a self-correcting feedback loop into the inquiry process. The payoff is that self-correction can occur while the study is in progress. If data collection procedures are too rigidly conceived, the fieldworker will limit him/herself to data that are already anticipated; unanticipated data will be ignored as irrelevant, leaving the researcher's initial perspectives unaltered. In this situation, the fieldworker will experience self-confirmation at the expense of self-correction.

Data Analysis

Data analysis, like reading, is a meaning-making process and as such represents another instance of semiosis. This statement implies that hypotheses put forth as explanations of data do not simply "emerge" from the data but arise out of the transaction between those data and the researcher. The constant-comparative method, a technique developed to generate grounded theory (Glaser and Strauss, 1967), can stand as an illustration of the need to rethink the way ethnographers describe the analysis

of data. To ground hypotheses in the data the researcher is instructed to continually compare one datum to another on the assumption that this sorting task will yield categories that can be related to form hypotheses. The problem with this strategy is that comparing one datum to another presupposes a common metric upon which to base the comparison. This amounts to saying that in order for this technique to work the researcher must already have an hypothesis. And so the question of how hypotheses are generated remains unanswered.

Peirce's concept of retroduction may be of service here. According to Peirce, retroduction is the only form of logic capable of starting new ideas; it involves reasoning backwards from a case to a rule that might explain that case. This rule stands as an hypothesis until subjected to the test of induction, the movement whereby hypotheses are confirmed or rejected with reference to sensory data (Deely, 1982; Sebeok and Umiker-Sebeok, 1981; Skagestad, 1981). If hypotheses are formed by making a leap from data to an idea that recommends itself by virtue of its economy, irrespective of its initial plausibility, then a mechanistic data sorting task cannot in and of itself be expected to turn up hypotheses. It is more appropriate to say that ethnographers begin to generate hypotheses the moment they enter the field and try to make sense of their experiences. Thus, when ethnographers suggest that "to begin to learn the ropes . . . is to begin analysis" (Kleinman, 1980, p. 175) they are explicitly referring to retroduction. Some enthnographers do employ more explicit analytic procedures in the course of data analysis but my point is that the formality of these techniques neither privileges them nor eleminates the researcher's.

role. In short, hypotheses are no more "in the data" than meaning is "in the text."

Data analysis, then, began on the first day of fieldwork in that I continually sought to interpret my fieldwork experiences, but it would be misleading to suggest that when I left the field I had a clear understanding of what those experiences meant. It was not until I'd made multiple viewings of the videotapes of the lessons and the children's interviews, as well as the sketches themselves, that explanatory themes were articulated.

The presentation that is to follow thus belies the character of hypothesis formation in that reconstructed logic is foregrounded at the expense of logic in use. Space limitations necessitate this rhetorical decision.[2] Each hypothesis will be stated and then supported through the triangulation of data drawn from observations of classroom life, the children's interviews, their actions during the sketching lesson, and the sketches themselves.

Results and Discussion

Sketching as Recess

One of the anomalies that remained a puzzle throughout the course of fieldwork was the fact that the children's behavior during the sketching lessons was not representative of their behavior during their regular class lessons. I had assumed that the children would treat sketching like any other lesson; the period of prior ethnography was to have been the means through which their cooperation was ensured. Indeed my initial assumption was that prior ethnography would allow me to establish a role as a resource person, someone who helped out in the classroom and occasionally

taught a lesson. In other words, I'd assumed it would be possible to become a member of the subculture. Eventually I was forced to abandon this naive view of doing fieldwork. As the year progressed it became clear that developing a role was more akin to negotiation and that total acceptance was unattainable. My role took shape as I helped the children with their work, listened to their stories, heard their problems and complaints, and monitored their behavior. In so doing, I became a tutor, a sounding board, a friend and a monitor. The following exchange, drawn from field notes, provides the best summary of my role and status in the room:

> 4/14/82: Several of the girls came in from recess saying "You're our aunt." They explained that the teacher was their mother and her boyfriend was their father and that I was their aunt. A. called me "Aunt Siegel" at one point during the day.

It was as if they had developed a kinship structure for the class and my place in that structure was that of aunt, a person who is a friend and helpmate, but who has only marginal authority.

The children's behavior during the sketching lessons was not due to my status and role alone; the fact that the sketches weren't graded (all of their regular class assignments were graded) and that they were excused from either math or spelling class also contributed to the recess-like tone of the lesson. Interview data confirmed these hunches. Children referred to the sketching lessons as a "break" from school, an in-class "recess" where they didn't have to do "work" (quotation marks indicate terms used by respondents). When I probed to find out the features of

"work" I discovered that it was something assigned and graded by the teacher. Consider, for example, the children's comments on sketching:

- Kids think it's less important than math.
- It's different because we read stories and draw what we think. In our room we get an assignment and it's graded and we don't share it. We don't do our own ideas - we do that special thing.
- In sketching there's no wrong answer so they don't think it's really hard work.
- There's no real teacher in sketching - no one to boss you around.
- If you do bad in here and good in there, you're still gonna pass.

In short, the children defined the sketching lessons as a "creative recess." Estimating the representativeness of their behavior during the lessons thus required that the yardstick against which to measure representativeness be their actions during recess and not their actions during school lessons. The two most salient features of recess were (1) children could elect to play by themselves or with friends; and (2) children could participate in activities of interest to them. It should not have been surprising, then, to realize that friendship and interest were important themes that ran through the data and explained much of what was initially thought to be "disruptive behavior."

Friendship and Sketching

The theme of friendship was played out in a number of ways during the lessons. Friends often selected the same reading materials and sometimes created similar sketches. Friends also served as colleagues during the activity of sketching, helping each other decide not only what to draw and how to draw it but at times actually drawing part of a friend's sketch

for him/her. (Later I termed this phenomenon "sub-contracting.") Finally, friends often served as collaborators during the communicating portion of the lesson. Although I'd originally conceptualized sharing time as a series of monologues in which each child explained his/her sketch, the children negotiated this task such that it became a series of dialogues (and sometimes a polylogue). In other words, the children frequently collaborated on explanations, helping one another communicate their intentions to the rest of the group. Thus, friends acted as mediators, assisting the artist in the translation of private thoughts into public statements.

It is conceivable that relying on friends was a way to avoid making decisions and/or avoid full engagement in the activity, but I think a more compelling explanation lies in the fact that the organizing principle of childhood culture is doing things together (Corsaro, 1983). Corsaro's (1977) study of face-to-face interaction in a pre-school found that children were willing to work with their peers to create a shared meaning-world which, in turn, signified their status as joint participants in an event. Given the social prowess of 3 year olds, it should not have been surprising that the fourth graders in this study placed a high value on friendship. Helping each other decide what to read, what to draw, how to draw it, and how to explain it allowed the children to demonstrate to one another that they were doing something together; in effect, it allowed them to make a collective comment on their intersubjectivity.

Interest and Sketching

The third theme that emerged was that of interest, that is, interest

guided the children's participation in sketching. The children reported that they selected reading materials on the basis of interest; humor, relevance, and novelty were the features that distinguished an interesting piece of material from a boring one. For instance, one boy wrote the following statement on his meta-sketch:

> This story is awful. I don't like it so I won't make a good sketch.

Moreover, the extent to which the children were interested in their reading materials affected the creation of sketches. Some children claimed that if the story was interesting they wanted to "take the point out" or "highlight" a particular part of the story. Other chidren illustrated the relationship between interest and sketching by literally drawing themselves into the sketches; some of the most popular stories were the very ones that resulted in personalized sketches. Finally, a few children indicated that sharing time was more interesting when new rather than given information was presented. In other words, they expected sharing time to be an authentic communicative event and when two children read the same story they sometimes interrupted each other with comments like "Don't tell it all. Save some for me." Interruptions such as these served to keep given information to a minimum and thus make the event more interesting to the participants.

Interest exerted its most powerful influence in a way that was at once more general and more subtle, and, more importantly, operated by default. Briefly put, the children were interested in the lessons because they were excused from either a math or a spelling class. One child summed it up this way:

> At first the kids thought - this is really dumb, but then it was getting fun 'cause I think - they were getting away from class. Everybody actually hates math and so they say - oh wow - we get a break today. They're having fun 'cause they can do something else like read and they can do the sketches. They can decide what to do. Instead of a teacher telling them what to do, they tell themselves what to do.

In summary, friendship and interest not only affected the creation of sketches but appeared to facilitate the learning process. This hypothesis is explored in the section that follows.

Thin versus Thick Descriptions of Learning

The hypothesis that learning might take place when children "tell themselves what to do" does not support the conceptualization of the teaching-learning process that is starting to dominate the literature. Some researchers, led by Rosenshine and Berliner (1978) argue that the critical variable in the learning process is "academic engaged time" or time on task. Academic engaged time is the amount of time a student attends to content of moderate difficulty and thus may not be related to the time allocated to a particular school subject. In their review of research on teaching, Rosenshine and Berliner cite study after study in which significant positive correlations were found between academic engaged time and student achievement. Among the conclusions drawn from these studies are the following:

1. successful teachers are those who occupy the center of attention and direct activities without giving students choices;
2. students do not engage in on-task behavior unless a teacher monitors their attention;
3. classrooms that allow students to choose their activities result in less teacher supervision, making it difficult for them to stay on task.

Future research, they suggest, should investigate both the amount of academic engaged time necessary for achievement gains and the ways teachers can manage classrooms so as to increase the amount of academic engaged time.

Acceptance of the conclusions cited above depends on the extent to which academic engaged time is a valid index of learning. In the previous section I argued that what at first glance seemed to be disruptive behavior was in fact an index of the children's engagement in the event. Thus, a measure of learning that relies on behavioral descriptions such as "gazing intently in the right direction, answering a question, or speaking on the topic under discussion" (Au and Mason, 1982, p. 130) offers a "thin description" (Geertz, 1973) of the conditions under which learning occurs. There is no reason to believe that gazing at a book constitutes actual engagement in the activity. Children can appear to be engaged when they are not, and, conversely, appear to be distracted when they are in fact engaged. At the very least, then, a valid index of learning must take the learner's perspective into account. After Geertz, such an index would be considered "thick."

Smith (1981) posits a model of learning that holds promise for the development of a thick description of the learning process. Three things are deemed basic to that process: demonstrations, engagement, and sensitivity. Demonstrations reflect the environment in which learning takes place; they show a potential learner how something is done. It is possible, though, that learners can demonstrate to themselves how something is done. But demonstrations do not ensure learning; the interaction of the brain with a demonstration, which Smith calls engagement, is necessary if learning

is to occur. This sense of engagement is very different from the one Rosenshine and Berliner employ as it implies a "meshing of gears" that results in the transformation of an observed demonstration into an experienced demonstration. The third factor in learning is sensitivity. A model of learning must account for failure as well as success in learning. A thin description suggests that the difference between success and failure is academic engaged time. A thick description, on the other hand, proposes that discrepancies in learning have another source, namely, sensitivity. Sensitivity is "the absence of any expectation that learning will not take place or that it will be difficult" (p. 111). In sum, the key factor in learning is the learner's interpretation of the situation and not the amount of time engaged in a task.

Self-regulation, the very thing models of direct instruction eleminates from the teaching-learning process, facilitated the children's engagement in sketching. They formulated their own rules for the activity which precluded the possibility of failure, except by their own standards. What allowed the children to take the lead was not simply the availability of a demonstration but the fact that it was impossible to fail. In Smith's terms I would posit that the student's engagement was ensured by their sensitivity, the absence of any expectation that sketching would be difficult. From this perspective, the fact that sketching was defined as a recess takes on new significance for it implies that play is better metaphor for learning than work.

The Relationship Between Self as Artist and Transmediation

Up to this point I have argued that the children defined sketching lessons as recess and hence learning became more play than work, an attitude that legitimized risk-taking. Early in the study it became clear that one thing served as a roadblock to risk-taking and that was the children's definitions of themselves as artists. During the first two lessons one-fourth of the children traced either some or all of their sketch, a clear indication that they felt they couldn't draw (although at the time I thought tracing was a strategy for creating a "correct" sketch; I was wrong).

Data to support the hypothesis that the children's definition of themselves as artists influenced their performance during sketching come from four sources: actions observed during the lessons, disclaimers offered up during sharing time, direct statements made during the lessons and interviews, and the sketches. The most intriguing phenomenon was "sub-contracting." As previously mentioned, the children would often ask a friend to draw part of their sketch for them, demonstrating that they viewed themselves as inadequate artists. This definition was also evident during sharing time. It was not uncommon for a child to begin his/her explanation with a disclaimer as to the quality of the art (e.g. "This is a bad picture." "Mine's horrible - don't look at that.") The ubiquity of sub-contracting and disclaimers suggests another interpretation, though, for both were strategies for increasing the chances of successful communication. Data to support this hypothesis come from the sketches themselves. Of the 325 sketches produced only 117 used art alone; 201 sketches employed language and seven made use of "keys" or "decoders." In short, the children

proved to be astute semioticians for they understood that pictorial signs cannot be interpreted in the absence of a shared code.

Finally, children made direct statements as to their inadequacy as artists. In fact, one child reported that her perception of herself as an artist placed enormous constaints on her participation in the event. She said "I'm not too good at sketching so I can't really sketch what I'm really thinking."

The relationship between the children's definitions of themselves as artists and the act of sketching is of theoretic import because sketching involves the process of transmediation across sign systems, that is, a movement from language to art. One way to explain transmediation is through Eco's (1976) theory of sign-functioning. He posits that meaning arises out of the correlation of a content plane (the conveyed system) and an expression plane (the conveying system). This perspective is commensurate with the description of semiosis offered earlier in that the content plane may be thought of as the object in the semiotic triad whereas the expression plane corresponds roughly to the representamen or sign-vehicle. In transmediation, the actor does not simply correlate a content plane and an expression plane; he/she must take the meanings that arise from the correlation of content to expression in one sign system as an object of thought. Moreover, he/she must segment the expression plane of the new sign system such that it correlates with that object of thought, which functions as the content to be conveyed. What differentiates transmediation from other instances of semiosis, then, is the fact that the entire triad (the actor's

interpretation) becomes an object of thought to be conveyed through a new expression plane.

Segmenting a new expression plane is not as straightforward as it first appears for the relation of content to expression must be invented as it does not exist prior to the act itself. Herein lies the significance of the children's definitions of themselves as artists. If children see themselves as inadequate artists they will be less willing to do the kind of experimentation that segmentation of a new expression plane requires. Stated another way, transmediation demands risk-taking, or, in Smith's terms, sensitivity. The price to be paid when the expression plane remains unexplored is worth considering for I have come to the conclusion that sketching's potential as a learning strategy rests on the fact that segmentation of the expression plane affords a reorganization of the content plane. The self-focusing nature of sketching permits a reconsideration of the reader's initial meaning-world. So, in addition to functioning as a way to engage students in the process of signification rather than representation, transmediation presents students with an opportunity to step back and rethink what they've made of the reading experience.

From the perspective of semiotics, transmediation is a process of knowledge-making. Peirce called what I have described as transmediation, retroduction for it involves a kind of reasoning backwards that takes place below the level of consciousness. Anomolies are thought to be significant factors in retroduction as they create the feeling of doubt that motivates the search for resolution and understanding. The doubt the

children experienced when asked to draw their interpretations was thus a productive sensation and ultimately responsible for the insights they gleaned. Still, too much doubt can be disabling; it is possible that children who will sketch only what they feel capable of rendering in art may forfeit an opportunity to learn.

The Invention of Sketches

As noted earlier, a transactional model of reading considers the phenomenon of interest to be the range of interpretations that arise from the reading experience. Furthermore, this model assumes that such variation is tied to both the reader and the social situation in which the event is embedded. The findings of this study suggest that the children's sketches were influenced by their definition of the lesson as a whole, their friendships, their interests, and their perceptions of themselves as artists. The final question be be addressed is how the process of transmediation was accomplished.

Transmediation involves the segmentation of an expression plane that has not yet been segmented for the purpose of conveying a content. As such, transmediation is a process of code-invention; a link, or a code, must be forged between content and expression if the sketch is to attain significatory potential. Eco proposed a typology of sign-production that served as a heuristic for gaining insights into the way the children invented their sketches. He claims that the correlation of a content plane and an expression plane may be accomplished in a variety of ways and the children used many of the coding conventions he puts forth; in fact, the only coding

conventions to be described are those that are reflective of the children's definitions for the activity of sketching. Specifically, their interpretations were correlated to the expression plane of art by means of examples, samples, projections, graphs, stylizations, and programmed stimuli. A brief discussion of each of these categories may clarify the manner in which sketches were invented.

One of the ways the children defined sketching was as a process of creating examples. When an object is selected as a whole to express its class Eco calls it an example - a member for its class. Sketches generated by example typically showed a scene that stood as an example of the child's interpretation of the material read. Sketches in this category appear very static until the children talk about them and then it becomes clear that the scene illustrates an example of the child's understanding. As one child said "You figure out what to do when sketching by reading the story, then thinking about it for a minute or so, then trying to act them out - what they're doing."

A second definition of a sketch was a sample, produced when part of an object is selected to express the entire object and thus the class. The children produced samples in three ways: (1) by drawing an incident from a story or "fact" from an article; (2) by drawing the characters from a story; or (3) by drawing an object that stood for a topic fo the article. In each case they linked content to expression through a part-whole relation.

Projections, Eco claims, are produced when points on the space of the expression plane correspond to points on the content plane when the

content has spatial features. Thus, the content determines to some extent the spatial properties of the expression. This definition had to be expanded to include the possibility of projecting temporal features of the content into the expression plane in order to account for what the children did when they sketched their ideas. By projecting selected sptial and temporal features of the content plane onto the expression plane the children were able to signify the plot of a story of the "facts" included in an article. Unlike examples and samples, which took the form of a single picture, projections were made up of a series of pictures. Interview data provide support for the claim that some children defined sketching in this way. For example, two girls, who frequently helped each other, reported that they often discussed "which way [of making a sketch] we thought would be the best." They explained the various "ways" in the following statement:

> Like we discuss if it should be one big picture or different little scenes or if we should make one part of the story or the other part or which part we liked the most.

These comments not only present an inventory of the various ways sketches were created but highlight the role interest played in this processs. In short, projections were sketches that included the events of a story so as to signify "how it happened." When an expository piece was sketched, projections were a way to "get in all the ideas."

Graphs are produced when spatial points on the expression plane correspond to points on the content plane when the content does not contain spatial features. In other words, a graph is a spatially organized expression that displays information about a relation that is not itself spatial.

The children produced sketches that were graphs in order to explain "the lesson" of a story of the "main idea" of an article. One of the best examples of a graph was created by a boy who'd read Ira Sleeps Over by B. Waber. At the top of his paper he drew a picture of a boy, then a plus sign, a teddy bear, another plus sign, another boy, a plus sign, another teddy bear, an equal sign, and finally a picture of two boys. He explained his "addition problem" this way: "This is the kid plus his teddy bear plus another kid plus his teddy bear equals two friends. That's what it's trying to teach me." The addition problem was thus a way to spatially organize an idea that was not itself spatial.

Sketches were also created through the use of stylizations. In the case of stylizations expressions appear iconic because they resemble the content expressed but in fact are the result of a coding convention, which, in turn, permits their recognition. One example of a stylization is the Queen of Hearts on a playing card. This design is not taken as a sign because it looks like a woman but because it contains previously coded features that could be replicated. The children's sketches relied heavily on stylizations. The hearts, rainbows, speech balloons, and so on that the children included in their sketches were potentially meaningful because they relied on a coding convention shared by the cultural community.

There was one final code employed in the generation of sketches and that was programmed stimuli. Programmed stimuli are produced when the sender of a message inserts some stimuli into the discourse in order to

pull the receiver toward an emotional state. The use of a throbbing voice in a persuasive speech is one example. The children used color and size to produce similar effects. For example, one girl traced over the word 'luxury' with a turquoise crayon because it was a luxurious color; another girl drew a gigantic thumb to show what happened when a character sucked her thumb. Color and size do not in and of themselves convey meaning; it is only when they are culturally coded to a content plane and intertwined with other codes that they have the potential to signify.

At this point is should be clear that sketches were created by intertwining various codes; they were never the result of using a single code. The complexity of sign production can be understood if the distinction between moderate and radical inventions is considered. Eco distinguishes between these two processes in terms of the role played by convention. Moderate inventions rely on a pre-existing code, that is, the sign is invented through the use of such things as stylizations, examples, programmed stimuli, and so on. It is because code-making is a communicative activity that these conventions are employed. In any act of communication the sender of a message attempts to communicate his/her intentions, and conventions increase the chances of this happening. Codes that are assumed to be shared or conventionalized thus provide a meeting ground for the participants, although the use of these conventions does not guarantee successful communication since codes aren't always shared.

In the case of radical inventions no such means for presenting that intention exists prior to the act of invention; rather, it is created

in the act itself. As such, radical inventions are rare because they are risky. Their success or failure as communicative events depends on the willingness of a receiver to collaborate in the process. If it succeeds, a new convention arises and is available for future use. But the potential for failure abounds.

The distinction between moderate and radical inventions may help explain much of what occurred in the sketching lessons. Sketching required that the children draw their interpretations; yet there was no established code for doing this and so for this reason sketching may be conceptualized as a process of invention. Sketching had another dimension that figured into the process of invention and that was communication. In order for their sketches to succeed as communicative acts they had to rely on shared codes; examples, samples, projections, graphs, stylizations, and programmed stimuli served this purpose. By intertwining these codes there was a better chance that a sketch would be understood as the child intended than if a completely new code were proposed. The idea that it is possible to posit a completely new code, that is, to create a radical invention, is misleading, though, for codes never arise from nothing. Eco (1976) writes:

> In fact, no one ever really witnesses cases of total radical invention, more indeed of total moderate invention, since texts are maze-like structures combining inventions, replicas, stylizations, ostentions and so on. Semiosis never arises ex novo and ex nihilo. No new culture can ever come into being except against a background of an old one....Man is continually making and remaking codes, but only insofar as other codes already exist. In the semiotic universe there

> are neither single protagonists nor charismatic prophets. Even prophets have to be socially accepted in order to be right; if not they are wrong. (p. 256)

Conclusion

The purpose of this study was to explore the nature of the reading transaction. My conclusion at this point is that the children's embedded theories of the lesson, their skills as artists, their interests, and their within-class friendships were inextricably intertwined with the invention of interpretations. In short, this study provides empirical support for the efficacy of viewing reading as signification. The children's interpretations could not be explained in terms of the reader or the text, alone; instead, they required a consideration of the total reading event. In addition, the study's findings suggest that thick descriptions of learning have more explanatory power vis-a-vis the data than descriptions of the learning process that are at base thin. This calls for a reconsideration of models of direct instruction. Finally, the study hints at the potential that transmediation across sign systems holds for curriculum development. Providing opportunities for students to move between language and art, drama and language, music and art, and so on may increase their learning potentials. The hope, of course, is that if we can engage students in significatory processing without fear of failure, we may be able to unleash human potential within school walls.

Footnotes

[1] I will employ first person usage through the rest of this paper so as to highlight the intertextuality of ethnographic fieldwork.

[2] Not only is it difficult to describe the evolution of the hypotheses in a paper of this length, it is impossible to aggregate ethnographic data in such a way as to make the plausibility of the hypotheses easy to assess.

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