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Three children viewing and reading: Transactions with illustrations and print in informational books

Kerper, Richard Michael, Ph.D.
The Ohio State University, 1994

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THREE CHILDREN VIEWING AND READING: 
TRANSACTIONS WITH ILLUSTRATIONS AND PRINT 
IN INFORMATIONAL BOOKS 

DISSERTATION 

Presented in Partial Fulfillment of the Requirements for 
the Degree Doctor of Philosophy in the Graduate 
School of The Ohio State University 

By 

Richard Michael Kerper 

* * * * * 

The Ohio State University 
1994 

Dissertation Committee: 
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Adviser 
College of Education 
Department of Educational Theory and Practice
To Wendi and Alyssa
ACKNOWLEDGMENTS

I shall be telling this with a sigh
Somewhere ages and ages hence:
Two roads diverged in a wood, and I--
I took the one less traveled by,
And that has made all the difference.

from "The Road Not Taken"
Robert Frost

I extend sincere gratitude to Dr. Janet Hickman, my adviser, for her unwavering faith in my ability to travel this road and for the opportunity to explore the fields and streams along the way; to Dr. Marilyn Johnston for sharing her vision and for providing support, counsel, and friendship throughout my travels; to Dr. Evelyn Freeman and Dr. Barbara Lehman, committee members, for their enthusiasm for and encouragement during this leg of the journey; and to Dr. Carol Lyons and Dr. Anna Soter for the intellectual sustenance that kept me going during my studies.

To the children and teachers who shared their lives with me I am forever grateful. Each one taught me where and how to look along the path.

To the National Council of Teachers of English and to Longman Publishers USA for permission to reprint figures in the Literature Review, thank you. Each one made the tale of my journey clearer.
To my friends, JoAnn and Susi whose encouraging words bolstered me when the path was rocky, I am indebted. Your friendship and support helped me traverse unmarked terrain.

To my wife, Wendi, and daughter, Alyssa, whose love helped me to look down the road and to travel it even when the path seemed uncertain, I will forever be grateful. Your unfailing faith, love, and support made this a journey worth completing.
**VITA**

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CHAPTER I

OVERVIEW OF THE STUDY

animo autem videmus, animo cernimus; oculi ceu vasa quaedam visibilem eius partem accipiunt atque tramittunt.

The mind is the real instrument of sight and observation, the eyes act as a sort of vessel receiving and transmitting the visible portion of the consciousness.

Pliny the Elder, 77/1938, p. 522-523

Introduction

In 1657 Johannes Amos Comenius published in Latin and High Dutch what is reputed to be the first illustrated, informational text for children, Orbis Sensualium Pictus: Hoc Est Omnium Principalium In Mundo Rerum, Et In Vita Actionum, Pictura & Nomenclatura (Visible World: or A Nomenclature, and Pictures of All the Chief Things That Are in the World, and of Men's Employments Therein). The copper cuts, containing numbered icons illustrating correspondingly numbered parts of the text, set it apart from other published school books and guaranteed it immediate attention (Littlefield, 1904/1965). For over a century it sold widely in Europe, being
translated into fourteen languages including English, and grew in importance within the educational arena (Johnson, 1904/1963). The final English edition appeared in 1777 and was reprinted in America in 1810 (Littlefield, 1904/1965). Despite its prominence for more than one hundred and fifty years, textbooks rarely included illustrations until the 1830's and even then appeared most commonly in elementary texts (Johnson, 1904/1963).

Today, over three centuries later, the inclusion of illustrations in textbooks as well as informational trade books (e.g., literature, library books) is an accepted and valued practice. Recently, the pictorial component of trade books has been changing. Informational books have "emerged as an exciting, attractive and popular genre" (Dowd, 1992, p. 34). Unusual formats such as acetate overlays allow readers, for instance, to remove an airplane's shell to see the interior compartments. Movable books provide three-dimensional views of skyscrapers and spiders. They contain tabs to pull and flaps to lift. For the young child these features help to bridge the concrete world and the abstract world of printed text (Abrahamson & Stewart, 1982; Dowd, 1992; National Association for the Education of Young Children, 1986). The use of fictional techniques takes readers on fantastic journeys inside the human body where anatomy is explored or back in time to experience medieval life, blurring the lines between genre (Leal, 1993b; Pappas, Kiefer, & Levstik, 1990). The inclusion of color photography and lavish illustrations speaks to a society in which technology has increased children and adults' visual orientation (Giblin, 1987). Close-ups and unusual perspectives are central to the meanings constructed from the
books. In some cases photographs have assumed a dominant position "with the words forming a backdrop to the pictures much like a voice-over on television" (Elleman, 1987, p. 10). Extensive use of carefully captioned and labeled illustrations and of minimal running text have made sophisticated topics, particularly in science, accessible to younger children. Narrowly focused books with tightly written texts and revealing illustrations, generating their own interest, present highly specialized topics such as animals' eyes (Dowd, 1992; Huck, Hepler, & Hickman, 1992). With the inclusion of these innovative and creative approaches to bookmaking, it is not surprising that the popularity of informational books has risen.

Informational picture books, "books intended for young children which communicate information . . . are unlike any other form of verbal or visual art. Both the pictures and the texts in these books are different from and communicate differently from pictures and texts in other circumstances" (Nodelman, 1988, p. vii). Informational picture books depend on a partnership between the text and the visual material. Generally, neither the pictures nor the words stand alone. Each is circumscribed by the other. Together they convey information, create a mood, and reveal a perspective. The reading of an informational book is, as Bacon (1981) describes, "an eye/mind experience that endows the subject with a kind of tangible life" (p. 11).

How do children make sense of this paired sign system (i.e., words and pictures)? They are "given no guidance in how to read, interpret, and critically evaluate the images and information that they are exposed to" (Considine, 1987, p. 635). This study explores an aspect of this issue. It is an
investigation of the nature of children's meaning-making with the illustrations and associated text in informational picture books.

Statement of Need

Travers and Alvarado (1970) note that the technology for reproducing illustrations existed long before an analysis of their impact on readers' understanding. Research on the influence that illustration in text has on reading has increased over the past twenty-five years. Since Samuels (1970) concluded "that pictures when used as adjuncts to the printed text, do not facilitate comprehension" (p. 405), reviews of text-illustration studies have proliferated (Alesandrini, 1982, 1984; Levie & Lentz, 1982; Levin & Lesgold, 1978; Peeck, 1987; Readence & Moore, 1981; Schallert, 1980). These studies have focused on the words and pictures in instructional text. Many of the studies included in these reviews have explored the effects of illustrations on the retention of text (Anglin, 1986, 1987; Haring & Fry, 1979; Levin & Berry, 1980; Peng & Levin, 1979). Considerable empirical evidence indicates that pictures contribute to the recall of prose. In a review of 46 studies of the effect of text illustrations, Levie and Lentz (1982) indicate an overwhelming advantage in learning information in illustrated text. Other studies, but far fewer, have investigated the effect of illustration on affective and motivational factors associated with reading (Bryant, Brown, Silberberg & Elliott, 1981; Lichter & Johnson, 1969; Paradowski, 1967; Parish, Bryant & Prawat, 1977; Peeck, 1987; Vernon, 1953).
In a review of research on the role of illustrations in processing text, Peeck (1987) calls for greater variety in assessment procedures. He reported that most studies have determined retention or influences on affect and motivation through "verbal multiple choice or cued recall measures, or, with short passages, free recall" (p. 144). Most of the research explores the effect of illustration immediately following the reading (Digdon, Pressley, & Levin, 1985; Jahoda, Cheyne, Deregowski, Sinha, & Collingbourne, 1976; Levin, Bender, & Pressley, 1979; Rusted & Coltheart, 1979; Samuels, Biesbrock, & Terry, 1974; Vernon, 1953). Much less is known about the long-term impact of illustration (Anglin, 1986, 1987; Haring & Fry, 1979; Levin & Berry, 1980; Peeck & Goud, 1985; Peng & Levin, 1979). Likewise, little is known about the influences of illustration during the reading of a text.

Many studies suffer from problems of ecological validity. Experimental research and classroom practice differ in the types and quantities of pictures used; the length, type, and content of texts used; and the presentational formats employed (Brody, 1981). "More important than these differences may be the fact that not much is known, either in research studies or in real-life settings, about what subjects do [italics in original] with illustrated text, that is, how and when (or indeed whether at all) they use pictures" (Peeck, 1987). As Peeck's observation indicates, many questions about children's use of illustrations in making meaning of text remain to be explored.

Today, as many teachers adopt an integrated approach to curriculum and instruction (Crook & Lehman, 1991; Fogarty, 1991; Jardine, 1990; Mansfield, 1989; McGarry, 1986; Pappas, Kiefer & Levstik, 1990; Swenson,
1991; Workman & Anziano, 1993), they de-emphasize the use of textbooks for language and content area instruction. Instead trade books, which provide a rich and varied source of pleasure and information, become a primary resource for teachers' instruction and for children's exploration. Informational books take their place beside fictional material as a mainstay of the academic program (Kobrin, 1988). As a result, more children are reading and responding to more informational books. This increase in usage further emphasizes the need for educators to understand how children make meaning from books created through a pairing of sign systems, namely words and pictures.

Not all nonfiction books used in integrated instruction or read for pleasure are considered informational books. As used in this research, "informational book" refers to literature, in contrast to textbooks, that is used to gain information on a topic and that depends, in part, on pictures for creating the potential for an aesthetic response, for the acquisition of information or for a blend of the two stances (Iser, 1980; Rosenblatt, 1978, 1986). These books may possess expository or narrative text structures. Authors and illustrators of these works marry words and pictures to convey information. The pictures and text may be redundant, extend one another, be interdependent, or be independent (Bishop & Hickman, 1992; Levie & Lentz, 1982). Generally, these books focus on one topic that is identified by the title (Pappas, 1986), for example, *Spring* (Hirshi, 1990) or *Animals Born Alive and Well* (Heller, 1982). In this study I used the term, "informational book", in the same way that classroom teachers, authors of a prominent children's literature textbook (Huck, Hepler & Hickman, 1992), and another researcher

**Purpose of the Research**

In spite of the increased interest in informational books (Bacon, 1981; Carr, 1982; Carter & Abrahamson, 1990; Fisher, 1972; Freeman, 1991; Freeman & Person, 1992; Giblin, 1987; Kobrin, 1988; Leal, 1993a, 1993b; Meltzer, 1976; Moss, 1991; Pappas, 1986, 1987, 1990, 1991; Vardell, 1991; Young & Vardell, 1993), there is little research on children's response to informational picture books in classrooms (Arrowsmith, 1992; Harvey, 1993; Holland & Shaw, 1993; Leal, 1991). The existing literature focuses primarily on textual response, but the transactions with illustrations are not foregrounded. There is also little research on response to literature during literacy events in schools clearly defined as urban and in classrooms where engagement with the genre of interest is not long-standing and widespread.

This study will break new ground in research on literary response by examining first grade students' transactions with the illustrative and associated textual aspects of informational picture books during quiet reading time and one-on-one sessions with the researcher. These events represent a bounded unit of interaction which recurs. They are distinguishable from the background of classroom activity by both observers and participants. As such, they fall within the frame established by Gumperz (1986) for a literacy event.
Within this study the term, "transaction," refers to the joint construction of meaning in which a text invites a reader to participate, what Barthes refers to as co-authorship (Olsen, 1990) and Rosenblatt calls transaction (1978, 1994). As a reader response critic, Rosenblatt (1978) frames meaning constructed from text as a "live-circuit" between reader and text. The resulting literary evocation is "the process in which the reader selects out ideas, sensations, feelings, and images drawn from his past linguistic, literary, and life experience, and synthesizes them into a new experience (Rosenblatt, 1985, p. 40). This transactional theory of reading, based on the philosophical distinction between interaction and transaction posed by Dewey and Bentley (1949), assumes that the knower (i.e., the reader), the knowing (i.e., the reading), and the known (i.e., the text) are part of a mutually shaping process. Within this research report the terms "transaction," "meaning-making," "construction of meaning," "understanding," and "comprehension" are used interchangeably.

Research Questions

The overarching question which framed this study is:

What is the nature of children's transactions with the visual and textual aspects of informational picture books in a classroom setting?

Other questions that provided more specific foci for the research are:

1. How do children use aspects of informational picture books to make meaning, specifically
2. What visual and textual characteristics of informational picture books influence the meaning made by children?
3. What stances do children display toward informational picture books?
4. How do informational picture books afford children the opportunity to make meaning?

Approach to the Study

An interpretive approach to human science research (Gadamer, 1976; Linge, 1976; Manen, 1990) framed this study. The methodology developed out of the naturalistic paradigm (Bogdan & Biklen, 1992; Guba & Lincoln, 1989; Patton, 1990). Since the embedded nature of the construction of meaning in human experience is emphasized in this world view, it’s congruency with the purpose of the research made the selection of this paradigm most appropriate. It accounts for the influence of one’s history, one’s culture, and one’s perspective.

The purpose of this study was to describe the nature of first-graders’ reading/viewing transactions with informational picture books. Interpretive case studies focused on their interpretations and actions. They represent what Manen (1990) refers to as a ‘validating circle of inquiry.’ “A good phenomenological description is collected by lived experience and
recollects lived experience—is validated by lived experience and it validates lived experience" (p. 27). Each case study is part of the inquiry circle.

**Scope and Limits of the Study**

The study focused on two literacy events, quiet reading time at a table where informational books were available and one-on-one reading with an adult. The quiet reading time provided a natural social context involving a group of children where simultaneous interaction with books and peers was possible. The one-on-one sessions provided a different social context for a child to explore an informational picture book with the researcher. Each became a recognizable literacy event during the study. Neither had previously been a part of the classroom context although quiet reading time had been a daily event since early in the school year.

Even though the teacher occasionally read informational picture books to the children during thematic studies, these events were not included in the analysis. During these times the children followed the teacher's directions to sit in their own space, to keep their bodies still, and to do nothing more than listen except when asked to answer a literal question about the text. Adherence to these rules severely restricted the usefulness of the event as a window to children's transactions with the books.

Further, this study did not focus on children's transactions during reading instructional group time. The exclusion of informational literature from the body of text used for reading instruction made this literacy event an inappropriate source of information for this study.
The interpretive case study design of this social research, which involved the iterative process of focused exploration, selective observation and data analysis in one first grade classroom and with five focal children (three children included in final analysis; see Chapter III for explanation), uses a social scientific view of generalizability. Donmoyer (1990) states, "Cronbach has concluded that human action is constructed, not caused, and that to expect Newton-like generalizations describing human action, as Thorndike did, is to engage in a process akin to ‘waiting for Godot’ “ (p. 178). Unlike physical scientists, social scientists are interested in single cases. Teachers, counselors, and social workers focus on individual students and clients. Case records (Stenhouse, 1984) provide vicarious experiences with individuals (Stake, 1978). Thick narrative description (Denzin, 1989) mediates a virtual reality (Langer, 1953) or a lived-in or lived through experience (Mann, 1969; Rosenblatt, 1978; Vallence, 1977). The vicarious experience of reading a case record makes the unexperienced accessible, provides perspectives beyond one’s own, and decreases defensiveness to that which is uncomfortable or unsettling (Donmoyer, 1990). Although the sample size, research design, and narrative case record of this study may be seen by some as a limitation, they can also be viewed as boundaries which frame the research and which enable readers to form external interpretations (Lincoln & Guba, 1985).

Since interpretations are historically situated and are socially and linguistically constructed, researchers in different, similar, or the same contexts will inevitably construct different meanings. Reality is socially constructed in the ongoing interactions within a community (Gadamer,
1976). The context contributes to the meaning created (Cook-Gumperz, 1986; Gumperz, 1986). Although some may see the interpretive nature of this study as a limitation, it can also be viewed as an acknowledgement of the "prejudices" inherent in all viewpoints. Gadamer (1976) asserts that these biases are the conditions through which we experience the world. When they create dissonance between experience and the object of interpretation, the discord creates opportunities for new understanding. Within this research "triangulation serves . . . to clarify meaning by identifying different ways the phenomenon is being seen" (Stake, 1993, p. 7).

Significance of the Study

This study is one of only a few studies (Arrowsmith, 1992; Harvey, 1993; Holland & Shaw, 1993; Leal, 1991) that considers children's transactions with informational picture books. Unlike the other studies this investigation inquires about children's use of paired sign systems (i.e., illustrations and text) in their transactions with the literature. It focuses on the influence of illustrative and textual characteristics, on children's reading/viewing stances and on the books' affordances.

A limited amount of professional literature on children's response to informational literature (Gaines, 1992; Leal, 1993a, 1993b; Vardell & Copeland, 1992) exists to inform teachers' classroom practice. None of it helps teachers to understand how children use the paired systems of illustration and text to construct meaning. This study fills that void by providing thick description of three children's transactions with the paired
sign systems in informational picture books. For those readers who find similarities between the cases described and their own contexts, this study can assist teachers as they develop curricula and provide instruction which includes informational picture books as a learning resource. It can assist them in making sense of their kid-watching (Goodman, 1978) and in providing instructional experiences based on the conclusions drawn from it.

**Organization of the Study**

This chapter framed the present study of children's transactions with informational picture books. It presented research questions which emerged during the study and the approach taken to the research. It also offered the significance of the study.

Three bodies of knowledge provided the background for the study: (1) reading as a transactional process, (2) visual literacy, and (3) the social nature of language learning. Chapter II elaborates upon each one as the most relevant theory and research is surveyed. Chapter III discusses the research methodology including an explanation of the theoretical perspective and a description of the data collection and analysis procedures. Chapter IV presents the results of analysis, three case studies, and an analysis across the cases. Each case study portrays a child’s transactions with informational picture books. Finally, Chapter V summarizes the findings, provides their educational implications, and delineates recommendations for further research.
The review of literature examines three topics related to the investigation of children making meaning: transactional reading; visual literacy; and the social nature of making meaning. Each section provides an overview of the theory and research within the domain and indicates its relationship to this study. The chapter is not intended to be a comprehensive review of the relevant literature. Instead, the literature presented represents the "webs of significance" (Geertz, 1973, p. 5) that I constructed to provide a theoretical foundation for this research.

My webs of significance developed out of an ecological view of the nature of meaning-making. They exist within a world view that rejects subject-object dualism and objective reality. Instead, it embraces a constructed reality in which the knower and the known mutually shape one another (Dewey & Bentley, 1949). In relation to this study of young children making meaning with informational picture books, this world view and the research questions addressed necessitated a review of literature relevant to the transactional nature of reading. This focus eliminated literature predicated on the assumption that meaning is a permanent, unchanging feature of a text. The purpose of the study also demanded a survey of literature that focused on the reading or viewing of illustrations, a vital part
of informational picture books. And finally, the inseparable nature of meaning-making from the social context in which it occurs required a review of the literature on the social transactive nature of constructing meaning.

Reading as Transaction

Geertz (1973) defines culture as “a historically transmitted pattern of meaning embodied in symbols, a system of inherited conceptions expressed in symbolic forms by means of which men [sic] communicate, perpetuate, and develop their knowledge about and attitudes toward life” (p. 89). Culture is constitutive of human life and mind. It is constituted by human existence (Bruner, 1990; Geertz, 1973). Through a transactive process a human being and his or her culture shape one another. Culture is not, however, an individual’s creation. It is learned and socially negotiated (Bruner, 1990; Peacock, 1986).

Human beings construct meaning in the process of making sense of the world around them (Bruner, 1990; Donaldson, 1978; Vygotsky, 1978). Meaning making is a culturally mediated, transactive process that “depends upon the prior existence of a shared symbol system” (Bruner, 1990, p. 69) or, in other words, a language. This system of signs with an arbitrary relationship to its referent is a cultural tool. It is part of a sociosemiotic system which includes, but is not limited to, art, music, movement, drama, and mathematics. These sign systems are embedded within a social context, a socially constructed reality, which infuses them with meaning (Halliday,
1975/1986). Each expands human potential to mean. Each serves as a tool for learning (Rowe, Harste & Short, 1988). As tools for verbally mediating performance in the world, written language and art become means of learning the sociocultural system from which they emanate.

Frameworks of the Mind

As human beings experience the world, they create socioculturally determined perspectives of reality. They form data structures in the mind that represent the concepts stored there. These concepts, instantiated through typical objects, situations, events, or actions, represent a person's constructed meanings. The webs of these instantiations are referred to as schemata (Bartlett, 1932; Rumelhart, 1980), cognitive structures (Thorndyke, 1977), or scripts (Ausubel, 1968; Nelson, 1977) and are essential elements in cognitive activity. They are active processes that evaluate the degree to which existing schemata fit current experience (Rumelhart, 1980).

Drawing on Piaget's work, schema theorists assert that compatible schemata lead to assimilation of new experiences while anomalies result in accommodation of schemata. As Rumelhart and Norman (1978) point out, schemata are always changing. Continued experiences in the world result in the "tuning" of existing schemata. These experiences elaborate and refine conceptual understanding. In contrast, novel experiences can induce a "restructuring" of schemata. They lead to the creation of new concepts. In total, the set of schemata constitute the individual's "private theory of the nature of reality" (Rumelhart, 1980, p. 37). Since they are constructed through what George Herbert Mead and Herbert Blumer described as symbolic, social interactions (Nisbet, 1970), they represent a culturally
determined view of the world. These schemata become a means of interpreting experiences within it.

"The schemata that are brought to bear on a text depend upon the reader's age, sex, race, religion, nationality, occupation—in short, it depends upon the reader's culture" (Anderson, 1985, pp. 374-375). In a cross-cultural investigation Steffensen, Joag-Dev, and Anderson (1979) had natives of India and the United States read letters about an American and an Indian wedding. Participants read the letter describing native practices more rapidly and recalled more ideas from it than from the letter describing culturally unfamiliar events. The results suggest that the ideational scaffolding provided by existing cultural schemata enabled readers to read the letter describing culturally familiar practices more rapidly. They also indicate that culturally appropriate schemata may have facilitated readers' recall or may have made the information more accessible during memory searches. The results from another part of the study showed that participants rated ideas, identified as significant by other members of the culture, as most important. Americans rated propositions dealing with rituals and ceremony as most important whereas the Indians rated those dealing with financial and social status as most significant, regardless of the text read. These findings support the schema-theoretic notion that text representing ideas important within the schema have a greater tendency to be learned and, therefore, remembered (Anderson, 1985; Anderson & Pearson, 1984).

In a series of studies of parallel cultures within the same country, Reynolds, Taylor, Steffensen, Shirey, and Anderson (1981) asked participants to interpret a passage involving "sounding." Sounding, an activity from the
African-American community, involves verbally besting other participants in a volley of insults (Labov, 1972). African-American teenagers interpreted the event as a friendly exchange whereas the Caucasian teenagers saw it as an ugly confrontation that could involve physical violence. This study demonstrated the influence of culturally determined schema upon the construction of meaning.

In making meaning readers selectively attend to discourse elements (Anderson & Pearson, 1984; James, 1890/1950), which are relevant to the schema derived from their unique cultural perspectives. Anderson and Pearson state that "extra attention is invested in important propositions in a text in order to connect these propositions with the overall representation that is being constructed" (p. 277). A study conducted by Goetz, Schallert, Reynolds, and Radin (1983) supports their theory. Investigating the effects of readers' perspectives on the allocation of attention, researchers instructed police officers, in-training real estate agents, and college students to assume the perspective of a burglar or a prospective home buyer or to assume no particular perspective. Each subject read a story that ostensibly reported two truant boys' activities at one boy's home during the school day. Individuals assuming the perspective of a burglar were more likely to recall the location of valuables. Those people assuming the perspective of a home buyer were more likely to recall spatial characteristics. The results confirmed previous research establishing the influence of a reader's perspective on information recalled from the reading (Anderson & Pichert, 1978; Grabe, 1979; Pichert & Anderson, 1977).
Two additional findings were important in this study. First, the research showed that subjects spent more time reading sentences containing information important to the schema activated by the assumed perspective. Second, the reader's background influenced the amount of time spent on particular sentences. For example police officers spent more time reading sentences important to burglars than other subjects did. These results confirm previous findings (Anderson, Reynolds, Schallert, Goetz, 1977) that indicate a reader’s existing schemata and personal background influence the allocation of attention while reading.

The research on the sociocultural formation of background knowledge informs my study in three ways. First, it provides a basis for understanding the cognitive processes which contribute to children’s construction of meaning. Second, it offers a perspective on the influence that cultural background has upon making meaning in a multicultural setting. And, finally, it demonstrates the influence which personal perspectives have upon children’s attention to specific aspects of a text and upon their understanding and memory.

Frameworks of the Written Text

Cognitive structures are not the only ones which influence meaning making. Discourse structures do also. Halliday and Hasan (1989) describe text as a semantic unit consisting of meanings coded in words and structures. They view it as a product and as a process. It is a cultural object which possesses a systematic structure at the same time that it is a social exchange of meanings in a particular context. Borrowing the concepts of “context of
culture" and "context of situation" from the work of Malinowski, Firth, and Hymes, Halliday and Hasan argue that the construction of meaning is intimately tied to general cultural and specific situational contexts.

The potential meanings available to a community, its semiotic potential, define a culture. Within it situational contexts influence how language functions. Changes in register, or language function, produce variations in textual structure and texture (Halliday, 1975/1986; Halliday & Hasan, 1989). The categories of text created represent different genre. Each is a conventional way of meaning, a recognized way of using language that possesses characteristic patterns making it a stable and predictable unit. At the same time, each genre accommodates variations leading to novel and creative texts (Pappas, Kiefer & Levstik, 1990). As elements of one genre are incorporated into another, genre evolve. This process results in a blurring of genre boundaries (Geertz, 1983; Leal, 1991, 1993b; Pappas, 1987, Pappas, Kiefer & Levstik, 1990).

Textual Structure

Using the analytic scheme developed by Hasan, Pappas (1986, 1987, 1990) examined over 100 selections from the information book genre for characteristics that distinguish it from the storybook genre. She identified patterns of global structure, identifiable elements forming the text, and patterns of texture, semantic relationships between individual messages.

Pappas (1991) enumerated Hasan's elements of the global structure of stories, identifying obligatory and optional elements. She identified the Initiating Event, the Sequent Event, and the Final Event as necessary
elements of the grammar of story. She listed the Placement, the Finale, and the Moral as optional aspects of the grammar. Within this global framework some elements are fixed in their relative placement while others are flexible. The Initiating Event, the Sequent Event, and the Final Event always appear in this order. If a storybook includes the Placement, its position is fixed. It always precedes the Initiating Event. When the Moral appears, it must follow the Final Event. If the text includes the Finale, it may be the final element or it may separate the Final Event and the Moral (Pappas, Kiefer & Levstik, 1990). Pappas' analysis of Brian Wildsmith's storybook, *The Owl*

<table>
<thead>
<tr>
<th>Description of Global Elements</th>
<th>Examples from The Owl and the Woodpecker</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Placement</strong> — an author may introduce or “place characters” on “stage” in the story, provide time or locale information, relate what characters habitually do, or talk about certain attributes of characters, and so on. (optional)</td>
<td>“Once upon a time” information, as well as something about the locale “in a forest, far away”—and about the habitual behavior of the woodpecker character—“lived in a tree in which he slept all night and worked all day”—are included.</td>
</tr>
<tr>
<td><strong>Initiating Event</strong> — conflict or problem of the story emerges.</td>
<td>The owl, who has the sleeping and working habits that are the opposite of those of the woodpecker, moves into a nearby tree. The woodpecker’s daily tapping keeps the owl awake, and he becomes so bad-tempered that something has to be done.</td>
</tr>
<tr>
<td><strong>Sequent Event</strong> — a recount of characters’ attempts to resolve the problem or conflict.</td>
<td>Other animals in the forest have a meeting and decide that the owl has to leave, since the woodpecker was there first. They try one night, while the owl is out hunting, to push down his tree, but have no success.</td>
</tr>
<tr>
<td><strong>Final Event</strong> — resolution of the problem/conflict.</td>
<td>The tree is blown down by a terrible storm. However, fortunately, the owl, who had been sound asleep and was not aware that he was in danger, is saved by the woodpecker’s tapping before the tree crashes to the ground.</td>
</tr>
<tr>
<td><strong>Finale</strong> — a restoration of the habitual or normal state of affairs. (optional)</td>
<td>The woodpecker helps the owl find a new home/tree in another part of the forest so that the owl is not disturbed by the woodpecker’s tapping, and the owl and woodpecker remain “good friends all the rest of their lives.”</td>
</tr>
<tr>
<td><strong>Moral</strong> — a moral statement or claim is made. (optional)</td>
<td>Not realized in this book. Can you think of a story in which it is included?</td>
</tr>
</tbody>
</table>


**Figure 1.** Descriptions and examples of global elements of the storybook genre.
and the Woodpecker, clarifies these elements through definition and example (see Figure 1).

Like the storybook, Pappas (1986) noted that the information book has obligatory and optional elements of its grammar. The Presentation of Topic, Description of Attributes, and Characteristic Events are necessary components of the information book's global structure. Category Comparison, the Final Summary, and the Afterword are elements which may or may not appear. Pappas' analysis of Gail Gibbon's information book, Tunnels, provides definitions and examples of these grammar characteristics (see Figure 2).

Within the generic structure of an information book there is consistency and variance. The order of some of the global elements is static

<table>
<thead>
<tr>
<th>Description of Global Elements</th>
<th>Examples from Tunnels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic Presentation</strong> —the topic of the text is presented or introduced.</td>
<td>The topic, tunnels, is presented.</td>
</tr>
<tr>
<td><strong>Description of Attributes</strong> —a description of the attributes of the class or topic the book is about.</td>
<td>That tunnels are long and short, that they are underground or under water holes, and so on are described.</td>
</tr>
<tr>
<td><strong>Characteristic Events</strong> —characteristic or habitual or typical processes/events are expressed.</td>
<td>How tunnels are built or made by digging, by blasting through rock, and so on and how tunnels are used—to walk through, to drive through, and the like.</td>
</tr>
<tr>
<td><strong>Category Comparison</strong> —compares or discusses different members of the class or topic that a book is about. (common, but optional)</td>
<td>Different types of tunnels—tunnels made by animals and people, or the rock, soft ground, underwater, and cut-and-cover tunnels, and so on—are explained.</td>
</tr>
<tr>
<td><strong>Final Summary</strong> —summary statements are made about the information covered in a book. (common, but optional)</td>
<td>Animals and people have many uses for tunnels</td>
</tr>
<tr>
<td><strong>Afterword</strong> —extra information about the topic is included. (optional)</td>
<td>Extra specific details about tunnels are added—for example, the fact that cavemen dug tunnels to connect their caves, facts about the first manmade tunnel in the United States, the Seikan Tunnel in Japan, the five tunnels that go through the Alps, and so on.</td>
</tr>
</tbody>
</table>


**Figure 2.** Descriptions and examples of global elements of the information book genre.
while the order of other elements changes. The Topic Presentation is always the first element. The order of the Description of Attributes, Characteristic Events, and Category Comparison is variable. The Final Summary, when provided, always follows these three features. If an Afterword is included, it always appears at the end of the text. The unity of some elements varies too. The Topic Presentation can be interspersed in the Description of Attributes, Characteristic Events, or Category Comparison. Any of these three elements can be interspersed in the others. Unlike these global features, the Final Summary and the Afterword are always discrete chunks of the text (Pappas, Kiefer & Levstik, 1990).

In addition to the structural differences between the information book genre and the storybook genre, Pappas (1991) identifies differences in linguistic patterns. She observes three textural differences between the genre. First, she notes that stories contain pronouns such as he, his, she, her, you, my and I in addition to the construction “the + (noun)” to create identity or co-referentiality chains between references to the same characters, objects, places, et cetera. These words create threads of meaning throughout the text. For the same purpose, the information book genre contains co-classification chains. Since information books are about a class of living things, objects, places, et cetera, pronouns such as he, his, and it refer to the class and create threads of meaning within the text. Next, Pappas contrasts the verb tenses found in the two genre. She observes that, except in quoted dialogue, the storybook contains past tense verbs while the information book has present tense verbs. Finally, she notes a difference in the degree to which descriptive constructions (i.e., relational processes) are included in the two
types of text. Information books contain far more constructions that establish possessive processes (e.g., "And these have scales and spikes like nails . . ."
(Heller, 1982, unpaged) ) and attributive processes (e.g., "They look like big and cuddly Teddy bears . . ." or "They seem friendly, and harmless, and even a little helpless at times." (Wexo, 1989, p. 6) ) than storybooks do.

**Textual Structure and Schemata**

Learning to construct meaning from written text, whether a storybook or an informational book, requires social experience. It demands familiarity with the typical character of the mode of discourse (Halliday & Hasan, 1989, Pappas, 1990). Out of these experiences with text, readers form concepts of genre and construct schemata. Of the many schemata stored in the mind those representing the global structure of text, or what some researchers refer to as a textual grammar or sense (Gates, 1947; Rumelhart, 1975; Stein & Glenn, 1979), are critical to a person’s understanding of written discourse. Some books, however, are outliers existing on the boundaries between genre. They do not exhibit the typical generic structure of a genre (Leal, 1991, 1993b; Pappas, 1987; Pappas, Kiefer & Levstik, 1990). They combine features from different global structures. This linguistic complexity necessitates ongoing tuning and restructuring of existing schemata (Rumelhart & Norman, 1978) as readers attempt to construct meaning through what is alternately referred to as a reduction of uncertainty (Smith, 1982), hypothesis testing (Spiro, Bruce & Brewer, 1980), and a psycholinguistic guessing game (Goodman, 1967).
The research on the generic structure of informational books informs this study by providing a view of the print portion of the genre with which the participants engaged. At the same time that the literature defines the genre, it also demonstrates the complexity of distinguishing it from other genre (e.g., the storybook). In addition, the literature offers a perspective on the impact which social experience with a genre has upon schema formation and children's construction of meaning.

**Writers' and Readers' Transactions**

A written text is a product and a process of a particular interpretive or discourse community, a specific sociocultural environment (Faigley, 1985; Fish, 1980; Halliday, 1975/1986). A writer and a reader play reciprocal (Nystrand, 1989) or collaborative (Tierney & Pearson, 1983) roles in its creation. The writer creates a textual framework and the reader creates a cognitive structure as they collaborate on meaning, a social construct negotiated within this dyadic, relationship (Nystrand, 1990). The text represents a unique configuration of the pair's respective purposes (Nystrand, 1989). In this process the writer and the reader mutually shape one another through their individual transactions with the text (Goodman, 1994; Nystrand, 1989; Rosenblatt, 1989). Thus, as Tompkins (1980) suggests, reading and writing are "distinguishable only as two names for the same activity" (p. x).
Writers’ Construction of Meaning

Composing is a process of elaborating text. It requires the negotiation of meaning between writer and reader (Tierney, Leys & Rogers, 1984). A text is more than the expression of a writer’s purpose, it is an elaboration of ideas based upon assumptions about the reader’s knowledge and expectations (Nystrand, 1989). It exists on the boundary between the two (Bakhtin, 1981).

A writer begins a text by establishing common ground. Based on assumptions about the reader’s familiarity with a topic and expectations about the genre of written discourse, the writer creates what Rommetveit (1974) calls a “temporarily shared social reality.” The ease with which this can be done is in part dependent upon the degree to which a writer and a reader share a language and similar sociocultural environments. The writer attempts to insure that initial reciprocity exists by creating a mutual frame of reference. As the discourse progresses, the writer modifies and expands this shared reality. When new information that threatens reciprocity is introduced, the writer contextualizes it through elaboration (e.g., explication, amplification, exemplification, or definition) (Nystrand, 1989). In this way the writer creates a continuing series of new, temporarily shared, social realities and contributes to the creation of shared meaning.

A writer conveys the purpose for producing a text primarily through the adoption of a stance along what Rosenblatt (1978) refers to as the efferent-aesthetic continuum. “The dominant stance [is] determined by how much of public and private aspects of sense in the linguistic-experiential reservoir [is] included in the scope of the writer’s attention” (Rosenblatt, 1989, p. 164). The writer’s sense of what needs to be conveyed and sense of the factors
influencing its reception guide what James (1890/1950) termed "selective attention" (p. 284). The degree to which a writer selectively attends to public aspects of a topic (i.e., public information) versus private aspects (i.e., personal lived experience) determines the adopted stance (i.e., efferent or aesthetic) and signals the writer's purpose (Rosenblatt, 1989).

Within the constraints of cultural norms, personal values, and life experiences, and of the schemata formed out of them, a writer produces text. It is a reflection of what the writer is as well as the writer's purpose in communicating. "Any text is very much what the writer has made it. The writer is engaged in a living transaction with the text being created" (Goodman, 1994, p. 1105). Within these constraints a writer has the ability to rethink, reconstruct and polish a text before the audience receives it. In this way the writer can produce a text which suits the purpose, the audience, the situation, and the culture.

Readers' Construction of Meaning

"Written communication is a fiduciary act for both writers and readers in which they continuously seek to orient themselves to a projected state of convergence between them [italics in original]" (Nystrand, 1989, p. 75). Like writers, readers engage in a process of elaborating text. They make predictions based upon the assumed purposes of the writer and their own background knowledge (Goodman, 1994). They fill in gaps left by the text or flesh out the sense of the text (Iser, 1980) based upon assumptions about the writer's intentions or premises (Nystrand, 1989; Rommetveit, 1974). This process involves the ongoing arousal of expectations and the fulfillment or
frustration of them. Out of this process of prediction and inference, readers construct meaning (Goodman, 1994; Rosenblatt, 1989).

Readers possess a wide range of purposes for their reading. Some purposes focus on the information derived from the reading experience (e.g., environmental reading, occupational reading). Others center on the lived experience of the evocation (e.g., recreational reading). Each one determines a reader's stance along the efferent-aesthetic continuum. While reading or rereading a text, a reader's stance may change as the individual's reading purpose shifts (Rosenblatt, 1978). The resulting change in a reader's selective attention to particular aspects of the text pushes other aspects into the fringes of attention (James, 1890/1950). As a result, a reader draws upon different aspects of the socioculturally determined, background knowledge and creates new meaning. Just as a reader brings life experience to textual interpretation, he or she also relates textual experience to interpretations of the world (Cochran-Smith, 1984). Thus, in two ways reading is a dialectic. First, it involves the transactions in a specific context of a reader and a text, encoded by a writer. Secondly, it encompasses a reader's transactions with the world-at-large.

Rosenblatt (1938/1991) describes the reader's part in the reciprocal construction of meaning as "a live circuit set up between reader and text" (p. 25). Expanding upon her experiential theory of response to text, Rosenblatt writes:

Through the medium of words, the text brings into the reader's consciousness certain concepts, certain sensuous experiences, certain images of things, people, actions, scenes. The special meanings and, more particularly, the submerged associations that these words and images have for the individual reader will largely determine what the work communicates to him [sic;
The reader brings to the work personality traits, memories of past events, present needs and preoccupations, a particular mood of the moment, and a particular physical condition. These and many other elements in a never-to-be-duplicated combination determine his [sic] response to the particular contribution of the text. (pp. 30-31)

In this way the reader and the text mutually shape one another. They create a communicative transaction (Dewey & Bentley, 1949; Rosenblatt, 1978). The reader assimilates and accommodates new knowledge and experience leading to changes in schemata and values. The text, although unchanged in its published form, is a different text for each reader each time it is read. The reader evokes a new text out of the inferences drawn from the schemata brought to the transaction. As a result, a transformation of the reader and the text occurs (Goodman, 1994).

Like the writer, the reader engages in a living transaction with the text. The text is a reflection of who the reader is as well as the reader's stance during the evocation. It is a construct of the reader's transaction which changes as the schemata determined by the reader's cultural norms, personal values, and life experiences are tuned or restructured. In this way each new reading of a text involves a unique construction of meaning within a specific sociocultural, often educational, community (Bleich, 1975; Fish, 1980; Hepler, 1982; Hickman, 1981).

The transactional perspective of reading and writing contributes to an understanding of the meaning made by children reading informational picture books in this study. The literature clarifies the impact that a sense of audience has upon the writer's text and the impact that a sense of authorial purpose has upon the reader's text. It develops the concept of the reciprocal
relationship in which children participate as they encounter the printed word. Thus, it frames the act of reading that this study investigates.

Readers' Stances

During a reading event a reader makes choices related to the purpose for the reading. These choices involve a changing attentional focus, a chosen manner of engaging with a text. Different conceptions of these choices or stances adopted by a reader have been offered over the years. Britton (1970) and Harding (1937) use the terms "participant" and "spectator" to discuss the stances that language users assume. They distinguish the two stances based upon the way users involve themselves with texts and the point at which they make evaluative judgments about it. As applied to readers, Britton describes the participant as a person whose attentional focus is on how the text will be of assistance in participating in the outside world (i.e., in completing tasks in the real world). "This reader-as-participant constructs and orders a mental representation of the text according to external demands and criteria, processing the piece selectively, agreeing with some points, arguing with others, and ignoring the rest" (Cox, 1992). In contrast, Britton views the spectator as one who resides within the inner world of a story. The reader as spectator observes within the virtual world of the text rather than participating in the world's affairs.

Harding (1937, 1962, 1968) relates a reader's response to text to the onlooker's response to actual events in the world. He views the reader's relationship to the text as non-participatory but sees the reader as an active evaluator of it. This detached evaluative stance frees the reader to consider a
text based upon a personal set of beliefs, values, and background experiences.
The detached, yet active, stance of the reader permits the realization of the potential power of a text.

The events at which we are "mere onlookers" come to have, cumulatively, a deep and extensive influence on our systems of value. They may in certain ways be even more formative than events in which we take part. Detached and distanced evaluation is sometimes sharper for avoiding the blurrings and buffetings that participant action brings, and the spectator often sees the event in a broader context than the participant can tolerate. To obliterate the effects on a man of the occasions on which he was only an onlooker would be profoundly to change his outlook and values. (Harding, 1962, p. 136)

In contrast to Harding and Britton, Rosenblatt (1978, 1980, 1985, 1986, 1989, 1994) describes a reader's stance as efferent or aesthetic. It is an indication of the reader's attentional focus during the evocation of a text. An efferent stance indicates the reader's directing of attention toward the information that is to be taken away from the reading event when it is terminated. For example, immediately following a child's ingestion of pills, a parent's reading of a label on a medicine bottle for the details of its contents represents the adoption of an efferent stance. An aesthetic stance points to the reader's attention to the experiences evoked during the reading. "The aesthetic reader experiences and savors the qualities of the structured ideas, situations, scenes, personalities, and emotions that are called forth and participates in the tensions, conflicts, and resolutions as they unfold" (Rosenblatt, 1989, p. 159). While the adoption of an aesthetic stance results in the reader's fulfillment of purpose throughout a reading, an efferent stance often delays the achievement of purpose until after the reading is complete.
Rosenblatt rejects a dichotomous view of stance. She describes it as a continuum. While only two points along the continuum (i.e., the ends) represent purely efferent or purely aesthetic stances, all others are partly efferent and partly aesthetic. Rosenblatt asserts that most readings fall near the middle but do possess a predominant orientation. All types of text, narrative or exposition, fiction or nonfiction, can be read from a stance that is predominantly efferent or predominantly aesthetic. The dominance of any stance may change or fluctuate in degree throughout a reading or across readings as the reader's purpose changes.

Britton sees compatibility between his participant-spectator dichotomy and Rosenblatt's efferent-aesthetic continuum. He believes that "the reader-as-spectator who uses language to construct and manipulate an inner storyworld is engaging in aesthetic reading; the reader-as-participant who uses language to get things done in the world outside the text is engaging in efferent reading" (Cox, 1992, p. 13). Rosenblatt (1985) disagrees with Britton's equating of the two conceptions of stance. She contends that the spectator role is an inherently passive one unlike the active role of the reader responding aesthetically.

According to Britton (1970) assuming a spectator stance permits a reader "to evaluate more broadly, to savour [sic] feelings, and to contemplate forms" (italics in original; p. 121). Galda (1990) conducted a longitudinal and cross-sectional study of the impact of age and genre on the spectator stances of fourth through eighth grade students. Basing her research on the developmental stages of literary evaluation identified by Applebee (1978), Galda studied students' responses to their evocations rather than the
evocations themselves (Rosenblatt, 1978). Through the analysis of transcribed book discussions and student interviews, she found that maturational, textual, and contextual factors influenced readers' spectator stances. Younger readers' evaluations of the texts were categoric (i.e., linked to attribute labels—"adventurous and exciting"; p. 263) and were strongly tied to their stated reading preferences and personal experiences. Older readers' evaluations were more analytic (i.e., focused on structural aspects of text—plot, problems, characters, climax, point of view, theme). This movement from categoric to analytic responses paralleled the modes of interpretation that were valued in the interpretive communities within the students' classrooms (Fish, 1980). Galda also found that readers depended on the more solidly developed categoric strategies when dealing with a difficult genre (i.e., fantasy) and utilized developing analytic strategies when reading an easier genre (i.e., realism).

Other literary theorists and researchers have also considered the reader's relationship to the object of interpretation or to the reading event. Vipond, Hunt, Jewett, and Reither (1990) suggest a reader's stance depends on the interplay of the reader's purpose for reading a text, the affordances (Gibson, 1979; see Social Affordance subsection of this chapter) offered by the text, and the constraints of the situational context. They contend that readers adopt one of three stances toward text: information-driven, story-driven, or point-driven. An information-driven stance is one in which the reader's primary goal is to acquire information (e.g., reading a bus schedule; reading a medicine bottle). A story-driven stance involves the reader's immersion in the story-world, a focus on characters, events, and settings. And finally, a
point-driven stance is an "inherently social activity" involving attempted collaboration with the writer. (Vipond & Hunt, 1987, p. 134). It involves attempts to account for the writer's employment of particular words, phrases, and events in the dialogic composing of meaning (Hunt & Vipond, 1986). Reading from a point-driven stance recognizes a text as an artifact with an implied author and a narrator and involves a transactional construction of meaning. Generally speaking then, Hunt & Vipond's information-driven stance is analogous to Rosenblatt's (1978) efferent stance. However, they divide Rosenblatt's aesthetic stance into two modes: story-driven and point-driven.

Reflecting on Hunt and Vipond's three stances, Corcoran (1992) contends that an initial reading of a text focuses as much on the facts as it does on "the picturing, imaging, associating, engaging, and projecting activities associated with an aesthetic/imaginative encounter" (p. 64). During rereading less attention needs to be paid to constructing the story world. Although Corcoran believes the potential for an aesthetic reading is greater during rereading, he asserts that it is at this stage of a reader's relationship with a text that Hunt and Vipond's point-driven stance is most likely to be adopted.

J. Langer (1990b) views reading as a process of "envisionment-building." She uses the term envisionment "to refer to the understanding a reader has about a text--what the reader understands at a particular point in time, the questions she has, as well as her hunches about how the piece will unfold" (p. 812). She discusses both local envisionments and final envisionments. Local envisionments represent the reader's partial
understanding, assumptions, and images to a certain point in a text. Final envisionments represent the reader’s evolving sense of a whole including what’s understood, what’s not, and what is being questioned when the text has been completed. "The final envisionment is . . . subject to change with time, as the result of conversations with others, the reading of other works, or pondering and reflection" (p. 812).

In her research Langer (1990a) enumerated four recursive stances common to adolescents’ reading of fiction, poetry and discursive text for literary and informative purposes. She described the first as "being out and stepping into an envisionment" (p. 238). In this stance readers attempted to connect background knowledge with specifics of the text in order to build a local envisionment. The creation of a context for reading occurred at the beginning of a text but also recurred as unfamiliar or unexpected words, events, or ideas appeared. Langer referred to the second stance as "being in and moving through an envisionment" (p. 241). In this stance readers, already immersed in their local envisionment, continued to connect the constructed envisionment, their background knowledge, and the text being encountered in order to further their understanding. Langer labelled the third stance "stepping back and rethinking what one knows" (p. 244) which she later changed to "being in and stepping out" (1990b, p. 813). In this stance readers reconsidered their prior knowledge based upon their reading of the text. They used their envisionments to reflect on life experience. Langer identified the final stance as "stepping out and objectifying the experience" (1990a, p. 245). In this stance readers mentally distanced themselves from their envisionments, reflecting on and responding to the reading experience,
textual content, and textual qualities. They made critical judgments about
the text and drew intertextual and extratextual connections (Cairney, 1990;
Corcoran, 1992; Reid, 1990), that is, connections to other texts and to other
experiences.

Basing their work on Rosenblatt's concepts of stance and transactional
reading, Cox and Many (Cox, 1991; Cox & Many, 1992; Many, 1991) conducted
studies of kindergarten through eighth graders' stances toward realistic
narratives in print and in film. They identified categories of efferent and
aesthetic responses that emerged from their data (Cox & Many, 1992). They
found that readers assuming an efferent stance focused on analysis and story
content. These readers analyzed a text using a system or judged it against a
standard. They used an analytic style similar to the school's approach to
literary criticism. Their comments relied on literary terminology as they
made judgments about characters, plot or setting. They also judged a text
against its verisimilitude with their sense of reality. These readers also
retold stories in a manner similar to the plot summaries of traditional book
reports. Their focus was on the information contained in the story.

Cox and Many also found that readers assuming an aesthetic stance
focused on an aspect or part of the text; visualizations; hypotheses,
extensions or retrospection; and dramatization. These readers indicated
preferences for events, characters, and qualities of the text. At times these
choices led readers to express more about their experiencing of the text.
These readers also revealed the mental images or pictures that they
constructed during the reading. At times readers adopting an efferent stance
expressed hypotheses about characters or events in the story; extended their
thinking beyond the limits of the narrative and connected it to real life; and retrospectively considered the impact of plot changes to the story's outcome, the story's implications for their lives, or considered their process for anticipating events and results. The younger readers also displayed an aesthetic stance by using dramatic forms of expression. They talked to characters, talked as characters, displayed an action, produced sound effects, and pantomimed situations. Hickman (1979, 1981, 1983) also observed this "acting out" among readers in the primary grades.

Cox and Many (1992) suggest that in a classroom teacher practice influences the stances that students assume. Holland & Shaw (1993) investigated how one teacher, reading an informational trade book to second and third grade students over a four day period, signaled the predominant efferent stance and how the secondary aesthetic stance occurred. They found that the teacher used three identifiable components (i.e., illustrated riddle, diagram, paragraph description) of the repetitive illustrated text structure to establish clear reading/viewing contexts. The consistent procedural display (Bloome, 1986) used with each component enabled students to determine an appropriate stance. The teachers' oral reading of the riddle without displaying the illustration, encouragement to solve the riddle with a rhyming word, and acceptance and use of laughter in the process encouraged an aesthetic stance in this reading event. The focusing of students' attention on the labelled body parts and on the interpretation of symbols and the teachers' scaffolding and raising of the ante by asking more difficult questions (Bruner, 1983; see the Social Learning of Language subsection of this chapter) marked the diagram as a context calling for an efferent stance.
And, the teachers' reading of part of the paragraph description supported by (1) comments on the information, (2) definition of terms, (3) elaboration of information, (4) answers to student questions, and (5) acceptance of student comments signalled the appropriateness of an efferent stance. Holland and Shaw also found that an emphasis on representational language (i.e., conveying information) and heuristic language (i.e., inquiring) functions (Halliday, 1975/1986) in the teacher's talk encouraged the assumption of an efferent stance.

Throughout the teacher's reading and after it, children assumed an aesthetic stance. Like Cox and Many (Cox, 1991; Cox & Many, 1992; Many, 1991) and Hickman (1979, 1981, 1983), Holland and Shaw found that students expressed their feelings about the book through body movement. Often single utterances (e.g., "Ugh!", "Yuck!", "Wow!", "Cool!") accompanied movement toward the book, recoiling from it, or pantomiming. Children also used oral language to express feelings or convey personal experiences. As Cochran-Smith (1984) found, children demonstrated an aesthetic stance by connecting "life to text" as they told personal narratives. Children also borrowed ideas from the book as they wrote (Hickman, 1979, 1981). Personal language (i.e., language to express individuality, feeling, and opinions; Halliday, 1975/1986) was the primary language function within the aesthetic stance.

The concept of a reader's stance expands the view of transactional reading and writing. Within this study it contributes to an understanding of the reading/viewing modes assumed by children engaging with informational picture books. The literature elaborates on the specific ways in
which readers approach print and illustration and on the influence that it has on the meaning made from it. It also ties these specific responses to theoretical views of stance that help to frame this study.

Summary

Children’s construction of meaning is a transactive process. It is mediated by the symbol systems, such as language, shared by members of a culture. Experiencing the world leads to the formation of cognitive structures. Cultural norms, personal perspectives, and genre experiences influence the creation of children’s schemata. Through a “live circuit” (Rosenblatt, 1938/1991) created between reader and writer via the text, child readers selectively attend to aspects of the text, shape textual meaning out of these cognitive structures and, therefore, shape writers. Likewise, writers shape textual meaning and, therefore, shape readers. In this sense the construction of meaning, whether through writing or reading, is a transactive process, one in which the knower and the known mutually shape one another (Dewey & Bentley, 1949).

Visual Literacy

At the first convention of the International Visual Literacy Association, John Debes (1970) stated that a visually literate person can understand “the visual actions, objects and/or symbols, natural or man-made, that he encounters in his environment” (p. 14). This definition of visual literacy includes the abilities to interpret written language, artwork,
and gesture, all of which are perceived visually. Because of the focus on the sensory modality of vision, Levie (1978) challenged Debes' definition. He contends that

the type of stimuli of central concern to the study of visual literacy is pictures. This is not because pictures are visual (can be seen) but because pictures are symbols and, more specifically, symbols that are neither words nor some other kind of digital symbol. Thus it is symbolic behavior, not sensory behavior, that is of most interest to those in the visual literacy movement. (p. 26)

Levie's view of visual communication provides half of the frame for this study of informational picture books, a medium which unites two sign systems: words and pictures. The previous section of this chapter addressed the construction of meaning from words. This section will focus on the construction of meaning from pictures.

**Symbolic Communication**

Communicators, whether writers or artists, can convey information through signs in propositional, orthographic form (e.g., words and numbers) or in presentational, iconographic form (e.g., painting and photography). These two means of display comprise our communication system (Doblin, 1980; Langer, 1957). For S. Langer (1957) the significance of a symbol, whether part of the discursive sign system or the presentational sign system, rests in its meaning. Each symbolic mode is capable of presenting numerous ideas in complex combination. Each is dependent upon a rule system that dictates the ways in which its components (i.e., words vs. line, color, perspective, etc.) can be combined. The syntax of language permits amorphous ideas and experience to be expressed sequentially as propositions. However, part of
experience defies expression in discursive form and is more easily represented through a visual, presentational form (Goldsmith, 1986; Langer, 1957; Levie, 1978). The combination of components of this form are socioculturally determined (Worth, 1974).

S. Langer (1957) asserts that unlike the propositional sign system, the presentational system communicates relationships among its components simultaneously rather than sequentially. Like words, elements of the visual, presentational system (e.g., line, color, etc.) lack independent meaning. Their meaning depends upon the context in which they are used. The apperception of the entire visual form defines the themes and elements within it. Since the mind apprehends the form holistically, complexity does not encumber the construction of meaning from visuals as it does from discourse. The sequential nature of propositional forms limits complexity to the amount that the mind can perceive from the beginning to the end of a verbal experience (Hunter, Crismore & Pearson, 1987).

Each mode of symbolic communication has its advantages and its limitations. The deliberate and exacting nature of written language makes expression explicit and specific. However, it can be difficult to convert the linear descriptions of some relationships into the nonlinear ideas or experiences that written language represents. Although visuals may aid readers in more successfully reconstructing simultaneous relationships, they may lack precision, distinction, completeness, and an appropriate level of abstraction (Hunter, Crismore & Pearson, 1987). While the discursive system represents ideas and experience temporally through the sequential display of print, the presentational system represents it spatially through the
juxtaposition of signs. Arnheim (1956) claims that this difference provides the visual system with the advantage of a symbolic, third dimension for communicating relationships. But, readers do not need to be limited by the individual characteristics of propositional and presentational forms. Book creators frequently combine both systems to communicate with adult and child audiences individually through separate publications and simultaneously in a single book (Shavit, 1986).

Theories of Pictorial Perception

A fundamental question within the domain of visual literacy addresses the means by which readers make sense of pictures, both their representational and their expressive aspects. This question has intrigued artists and philosophers for centuries. Recent thought is divided into three schools: direct registration theory, constructivist theory, and gestalt theory. Each attempts to explain human perception of the environment and of pictures, attributing varying degrees of influence to sensory experience and schematized knowledge.

Pictorial Representation

Registration theory (Gibson, 1971, 1979) suggests that the human optic system provides veridical perception by picking up and directly registering, with the nervous system, information contained in light from the environment. In his early work Gibson proposed that realistic pictures emitted light with the same wave length and intensity as light given off by the natural environment. As a result, he contended that a picture and the
environmental scene matched perfectly. However, abnormal viewing conditions in his experimental work and the inability of the theory to account for the recognizability of black and white line drawings and caricatures made his theory untenable (Winner, 1982).

In his later work Gibson (1971, 1979) abandoned the idea of one-to-one correspondence between a picture and the environment. Instead, he claimed that a realistic picture preserved only higher order, invariant features (i.e., texture gradients, object boundaries, etc.) from the represented object or scene. He believed that viewing conditions, such as changes in the amount of illumination, the angle of viewing and the stretching of forms as in caricature, would not affect picture perception. His revised theory posited veridical perception from the information contained in the light without any supplementation by the perceiver. However, this theory failed to account for the unnecessary and insufficient nature of texture gradients in accounting for depth in line drawings and could not account for size constancy in objects varying in distance and registering different space on the retina. These problems suggest that in some way the perceiver reads into or transforms information contained in the light (Kennedy, 1974; Winner, 1982). As Winner (1982) states, “If all the information were out there simply to be registered, there would be no reason for perceptions to go astray” (p. 101). Visual illusions in pictorial or environmental perception would not occur.

In contrast to Gibson’s theory of direct registration, constructivist theorists contend that “the information supplied to our senses is fundamentally ambiguous and thus must be supplemented by the beholder”
(Winner, 1982, p. 89). For them perception is not a matter of detection but instead a matter of construction (see Figure 3). Based on the work of the nineteenth century German physicist and physiologist, Hermann von Helmholtz, constructivists hold that perceivers supplement two-dimensional retinal images of three-dimensional objects through "unconscious inference." By combining prior knowledge of the world with these images, perception appears immediate and unconscious as though provided by the information in the light (Winner, 1982).

Gombrich (1969) applies the concept of unconscious inference to picture perception in his classical constructivist stance. He suggests that pictures would be perceived as two-dimensional, nonrepresentational splashes of color and line if perceivers did not actively read into pictures for the purpose of object and depth recognition. Just as Iser (1980) perceives gaps in text that the reader must fill, Gombrich contends that pictures contain limited information, making it necessary for perceivers to apply, what he calls, "the etc. principle." This concept suggests that through projection based upon knowledge of the world, a perceiver uses an artist’s cues and projects meaning into the depiction. The specific context of the gap guides the perceiver’s process. So, in Gombrich’s view picture perception is dependent
upon the “beholder’s share,” upon prior experience, knowledge, and expectations. It is rooted in cognition.

Another constructivist viewpoint proposes an arbitrary relationship between a picture and a pictured object. The conventionalist stance adopted by Goodman (1968) posits that the recognition of realism depends upon knowledge of the conventions used to represent the natural world.

Realism is relative, determined by the system of representation standard for a given culture or person at a given time. Newer or older or alien systems are accounted artificial or unskilled. For a Fifth-Dynasty Egyptian the straightforward way of representing something is not the same as for an eighteenth-century Japanese; and neither way is the same as for an early twentieth-century Englishman. Each would to some extent have to learn how to read a picture in either of the other styles. This relativity is obscured by our tendency to omit specifying a frame of reference when it is our own. “Realism” thus often comes to be used as the name for a particular style or system of representation. Just as on this planet we usually think of objects as fixed if they are at a constant position in relation to the earth, so in this period and place we usually think of painting as literal or realistic if they are in a traditional European style of representation. But such egocentric ellipsis must not tempt us to infer that these objects (or any others) are absolutely fixed, or that such pictures (or any others) are absolutely realistic. (p. 37)

Thus, in contrast to Gombrich’s emphasis on the importance of familiarity with the object or scene depicted, Goodman points out that no degree of familiarity with them can compensate for lack of understanding of pictorial convention. “That a picture looks like nature often means only that it looks the way nature is usually painted” (Goodman, 1968, p. 39). Picture perception from the conventionalist point of view is culturally determined.

Wartofsky (1980) views visual perception as a cultural-historical construct. He states that
it is not the "mental set" that shapes our visual perception, but rather a certain form of visual praxis, based on the making of pictorial representation and on the visual posture that such representations require or command, as appropriate to viewing such pictures, that gives rise to the mental set, or the cognitive framework which then shapes our visual perception beyond the range of the pictorial artifact. (p. 140)

Wartofsky contends that, like mimetic art, pictorial art possesses a set of rules for normal viewing that he labels "the visual scenario." The proscenium arch stage and the rectangular canvas or paper each impose their own viewing position: a fixed point in front of the arch framing the performance and a point within a limited range of distance and angle from the center of the presentational plane, respectively. Viewers assume a detached "visual posture," determined by the medium, that transforms them from perceivers to an audience composed of "spectators." This posture influences vision, influences the constructions made. In turn, this influences future vision. Wartofsky (1980) states,

> We create and transform the human visual system by means of the making of representational artifacts: We make ourselves as what we are by virtue of the ways in which we make things and use them. We transform ourselves in the course of transforming nature to suit ourselves. We may thus say, aphoristically, that the human eye is the product of art. . . . The human visual system is thus both a condition and a product of human praxis. (p. 133)

Along the continuum of perceptual theories, gestalt theory falls between registration and constructivist views. It uses tenets of both theoretical stances. Like direct registration theory, gestalt theory postulates that light contains all of the information needed for perception. Inference is not needed. But, like constructivist theory, it maintains that the perceiver acts upon sensations. Gestalt theory contends that the "simplicity principle"
of perception transforms information coming to the perceiver. According to this principle, the light captured by the retina produces a pattern in the brain that is organized for simplicity of storage and retrieval (Winner, 1982). Arnheim (1974) uses this theory in explicating his viewpoint on picture perception. He contends that the perceiver transforms the information contained in light to achieve simplicity, that is, to create order, redundancy, and "good form" (Perkins & Cooper, 1980).

Evidence that perception of pictorial representation involves more than the registration of information is limited. The previous discussion of Gibson's theories provides indications. In distinguishing between constructionist and gestalt explanations of the transformation of the information contained in light, evidence is also scarce. Constructivist theory and gestalt theory each explain aspects of the perception of representation. And, in many cases they provide identical predictions about perception. However, the gestalt principle of simplicity provides a more cogent explanation of depth perception and the constructionist emphasis on prior knowledge is more useful in explaining the recognition of objects (Winner, 1982).

In many cases where simplicity and expectations about what is seen could operate in the perception of depth, the reduction of a pattern to its simplest form dominates perception based upon expectation. For example (see Figure 4), familiarity with cubes and the expectation that a cube will be seen still make it difficult to hold on to this perception. It tends to revert to a simpler form, a two-dimensional hexagon. The same tendency exists in photographs. For example, the unfortunate juxtaposition of the setting sun
behind the roof of a house may look like a glowing ball sitting on the roof. In this case, seeing the image as one continuous contour is simpler than the perception of three dimensions. The simplicity principle of good continuation overrides knowledge of the sun's distance. However, research involving perception of three-dimensional rooms with irregular shapes demonstrates that knowledge sometimes overrides simplicity (Kilpatrick, 1954; Weiner, 1956).

Figure 4. Two perspectives of a cube.

Pictorial Expression

In addition to the representational aspect of pictures, theories of pictorial perception deal with expression. All artistic form, even the simplest line, is expressive and, therefore, symbolic (Arnheim, 1974). Explanations of expression account for the perception of mood and nonvisual sensory
characteristics of pictures. These properties exist independent of pictorial content and of the artist or the perceiver's emotional condition. Perceivers refer to them in metaphorical terms. Thus, a picture of a summer desert landscape can be cold. A sad artist can create a joyful painting. And, a frenzied painting need not make perceivers feel frenzied in order for them to perceive it as frenzied (Winner, 1982).

Two views of pictorial expression dominate theories of picture perception (see Figure 5): the gestalt-iconic view and the constructionist-conventional view (Winner, 1982). Arnheim (1974), a proponent of the

\[ \text{Low} \leftarrow \cdots \cdots \cdots \text{Level of Schematized Knowledge} \rightarrow \cdots \cdots \cdots \text{High} \]

\[ \text{Gestalt-iconic} \quad \text{Constructionist-conventional} \]

\[ \text{High} \leftarrow \cdots \cdots \cdots \text{Level of Sensory Experience} \rightarrow \cdots \cdots \cdots \text{Low} \]

Figure 5. Continuum of theories of pictorial expression.

The gestalt-iconic view, argues that pictures derive their expression from the resemblance that their elements (i.e., line, color, etc.) have to nonvisual features. A weeping willow expresses sadness "because the shape, direction, and flexibility of the branches convey passive hanging, a comparison with the structurally similar state of mind and body that we call sadness" (p. 452). Nodelman (1988) describes this view in relation to picture books.

It is the emotional connotations that most influence the mood of picture books—the connections between blue and melancholy, yellow and happiness, red and warmth, which appear to derive directly for our basic perceptions of water and sunlight and fire. (p. 60)
According to gestalt theory, moods and perceptual patterns are isomorphic. Perceiving them is not learned. It is automatic due to their structural similarity. Therefore, the expressive character of a picture is likely to dominate the formal features in the perceiver’s mind. For example, viewers are more likely to perceive a zephyr as calm and a gale as violent than they are to perceive the artistic elements used to represent them. Unlike expression, the formal elements of art lack inherent meaning. They are dependent on the context in which they are found (Langer, 1957; Winner, 1982).

In contrast to the iconic view, the conventionalist stance assumed by Goodman (1968) posits that pictorial expression depends upon cultural conventions. For example, in many Western cultures “black expresses evil or gloom and white expresses purity, innocence, and light-heartedness. But [in Chinese culture], actors paint their faces black to indicate a sound, honest, upright character; white faces express craftiness and cunning” (Winner, 1982, p. 109). According to Nodelman (1988), within picture books these culture-specific codes lend visual weight and meaning to objects in pictures whereas colors resembling feelings influence the mood of a book.

Reports of research on pictorial expression are very limited and are conflicting (Winner, 1982). While the iconic view suggests that reading expression is an innate ability rooted in the perception of similarity, the conventionalist view suggests that it is learned through experience with cultural norms. If the former position is correct, agreement about a picture’s expression should be high across and within cultures. If the later is correct,
conflicting views of a picture's expression should exist across cultures, and perhaps across parallel cultures within the same country.

Studies of expression carried out within a culture report high levels of agreement among perceivers (Arnheim, 1949; Hochberg, 1978; Murray & Deabler, 1957; Peters & Merrifield, 1958; Poffenberger & Barrows, 1924; Springbett, 1960). Lundholm (1921) found that adults were consistent in their use of lines to express emotions. They used straight lines and angles to visualize “exciting,” “furious,” “hard,” and “powerful” while they used curved lines to express “sad,” “quiet,” “lazy,” and “merry.” They used lines with positive or upward slopes to express “strength,” “energy,” and “force” and lines with negative or downward slopes to express “weakness” and “depression.” Although these studies do demonstrate agreement among people within a culture about the expressive quality of artistic elements, they do not necessarily support the iconic view. Since these studies included adults exclusively, it is possible that each person had learned the culture’s conventions for pictorial expression (Winner, 1982).

Studies across cultures have shown some agreement about the expression of simple patterns (Jakobits, 1969; Osgood, 1960; Werner & Kaplan, 1963). However, these results are not consistent with experience, which shows that some cultures differ in how they express specific moods (Winner, 1982). Other evidence, although limited, is clearer about the innate nature of perception. While Carothers and Gardner (1979) reported that children demonstrate sensitivity to expressed moods beginning in elementary school, Gardner (1974) found that even preschoolers perceive certain expressed moods when shown isolated lines and patches of color. On the basis of
minimal evidence and conflicting cross-cultural information, it is reasonable
to conclude tentatively that from birth human beings possess the ability to perceive expression (Winner, 1982).

But culture writes on top of what is given at birth, and the particular culture into which a person is born may reinforce as well as override these innately given connections. In cases where a culture overrides them, disagreement across cultures, as well as between child and adult, will be found. (Winner, 1982 p. 110)

The difference between the gestalt and constructivist views of the expressive nature of pictures parallels the difference in their view of representation. Gestalt theory views perception of representation and expression as immediate. It does not require the perceiver to possess any knowledge. Representation occurs on the basis of the simplicity principle and expression is based on the isomorphic relationship between perceptual patterns and nonvisual conditions. On the other hand, constructivist theory views knowledge of the world and of cultural convention as foundational to reading representation or expression in pictures.

Visual Displays

Book creators may present information in orthographic displays, iconographic displays, or displays that combine both forms. While concepts presented in orthographic form use an alphanumeric system, those presented through spatial images utilize ideographic, diagrammatic, and isogrammatic sign systems. Ideogrammatic information consists of signs that are intended to communicate a single message. International road signs fit into this category. Diagrammatic information juxtaposes signs to express
relationships among ideas. Charts, graphs, maps, diagrams, and tables are examples of visual displays that fall into this category. Finally, isogrammatic information consists of signs that are intended to represent reality. Photographs, drawings, and paintings exemplify this category (Doblin, 1980). Although Doblin describes the three iconographic forms as distinct, Hunter, Crismore and Pearson (1987) place each along a continuum of “referential representationality” (see Figure 6). This diagrammatic display shows an icon’s comparative degree of abstraction from its referent. A high degree of abstraction indicates a low level of representationality; a low degree of abstraction indicates a high level of representationality. Informational picture books for young children contain visual images that predominantly fall at the high representationality end of the continuum while visuals in informational books for older readers have a greater tendency to be scattered along the entire range.

![Figure 6. Continuum of referential representationality for visual displays of information.](image)

Goldsmith (1984, 1986, 1987) developed an analytical model for thinking and talking about the design of isogrammatic visual displays, or in other words, illustrations. The model explains the interaction of visual factors with semiotic levels in pictures that support text. The model is not
intended to apply to pictures that extend beyond the limits established by interpretation of the written word. Thus, this model is most applicable to trade books that Leal (1991,1993b) refers to as informational versus those she labels informational storybooks. Within the model Goldsmith includes four visual factors:

1. **Unity** - the parts of a picture that have separate identities. The degree of separate identity of these images depends upon the purpose of the illustration and the viewer's intent. For example, in a still life a wine bottle could be a single image, but in a picture of a wine bottle the cork or the label could be a single image. Each is a sign. Components of a sign such as a line or a dot do not have separate identities (Morris, 1946).

2. **Location** - the spatial relationship between images in a picture. Techniques for depicting pictorial depth, including gradients of texture, size, clarity, tone, etc. (Gibson, 1950), distance up the picture plane, and overlap, indicate spatial relationships.

3. **Emphasis** - the hierarchical relationship between images. Techniques for creating emphasis, including size, color, contrast, isolation, extended arms, arrows, eye gaze, etc., direct a viewer's attention.

4. **Text Parallels** - the relationship between text and illustration. The translation of text into picture may be shown directly or suggested indirectly. Some textual elements may not be translatable. This factor does not include pictures that extended the text beyond the limits of inference.
Goldsmith (1987) draws upon Morris's theory of signs in designating three levels of communication through which illustrations mean:

1. **Syntactic** - detection of images (Deregowski, 1968), but no presumption of recognition or identification.


3. **Pragmatic** - viewer interpretation of a pictorial sign (Morris, 1946) based on culture, gender, age, interests, education, etc.

Figure 7 presents the interactions of each visual factor with each semiotic level. The relative importance of each interaction varies with the use of illustration in transmitting information.

Factors such as quantity, quality, and degree and type of iconicity of the illustrations themselves can be multiplied by the context in which they are placed (medium, readership, extent of supervision, and so on); so that although in principle all the elements of the model can be identified in virtually every supportive illustration, in practice the relative importance attached to each element will change with the context. (Goldsmith, 1987, p. 56)

Reviewing a substantial amount of research from a wide range of disciplines and organizing it according to elements of the model, Goldsmith (1987) drew important conclusions for this study's consideration of children making meaning in informational picture books. First, she inferred that "unity" and "location" do not affect experienced viewers' meaning-making but may create problems for young children in pictorially oriented environments and people in environments where pictures are rare. While experience with pictorial conventions and styles and with objects in the environment generally permits detection and recognition of images and of spatial
### Figure 7. Interaction of visual factors and semiotic levels in Goldsmith's analytical model of illustration.

Relationships among them, especially in pictorially oriented cultures (Fussell & Haaland, 1978; Spencer, Harrison & Darvizeh, 1980), lack of experience may create difficulty in recognition for inexperienced viewers (Amen, 1941; Deregowski, 1968; Deregowski, Muldrow & Muldrow, 1972; Kennedy & Ross, 1975; Mundy-Castle, 1966).

This difficulty may be especially true at the pragmatic level due to the socioculturally determined experience that children bring to an illustration (Ellis, Deregowski & Shepherd, 1975; Friedman & Stevenson, 1975). For example, Goldsmith (1984) summarizes a comprehensive study of image
identification conducted by Shaw in 1969. Shaw studied the responses of 1123 Kenyans from urban areas and 377 from rural areas, falling predominantly in the 8-15 age group. The researcher asked subjects to identify images of human beings, animals, common objects, buildings, *et cetera* in isolation and in context. Subjects named many images in isolation accurately. In some cases, they ignored the whole image and focused on individual parts in succession before naming the image. This process led to misidentification, for example, of a goat as a cow because the position of the tail did not match the tail position seen locally on goats. As Goldsmith (1987) states,

> if a child cannot name an image, it could be because the distinguishing features are not clearly shown *(semantic unity)* [italics in original]; the object is unfamiliar *(pragmatic unity)*; or he [sic] recognizes the object but does not know what it is called *(semantic text parallels)*. (p. 58)

The children identified some images more accurately when they were in context. However, unfamiliarity with aspects of the context reduced identification levels for images recognized in isolation. For example, subjects did not recognize a framed picture placed on a table because it was out of its natural context (i.e, Kenyans customarily hang photographs on the walls of their homes.).

Goldsmith (1987) also concluded that after a few relational principles are learned, "syntactic text parallels" and "semantic text parallels" generally create no difficulty in understanding but that "pragmatic text parallels" may cause problems. Making meaning in general and specifically in informational picture books requires more than detection and recognition of images. It demands apprehension of the significance of depictions. In
pictorially oriented cultures children develop this interpretive ability, often referred to as pictorial literacy, by the age of eight or nine (Goldsmith, 1987). In part, it depends upon a child’s focus. Vurpillot (1968) studied 68 children between the ages of two and nine. Their identification of drawings of six pairs of houses as “same” or “different” demonstrated increasing ability with age. It also showed that below the age of six children “scanned only a limited part of each stimulus and judged two houses to be identical or different on the basis of insufficient information” (p. 632). Other research has shown a tendency for young children to focus on details in a picture rather than on the whole picture (Amen, 1941; Mackworth & Bruner, 1970) and to be inflexible in the ability to switch attention between parts and wholes until the age of nine (Elkind, Koegler & Go, 1964). This limited or narrow focus impacts the meanings that young children make.

The construction of meaning is also dependent upon culturally-based understanding of pictorial elements and images. Inexperienced viewers may not interpret arbitrary symbols and symbolic images (e.g., a cross means “prohibited”; a blue spot means “water”; a body on a funeral pyre represents “death”) in the way that the artist intended (Fussell & Haaland, 1978). Their responses emanate from a different cultural frame of reference. They make meaning by relating what they see to their existing schemata (Rumelhart, 1980).

Finally, Goldsmith (1987) inferred that the three levels of “emphasis” are critical to all viewers’ construction of meaning from illustrations. Clearly, what viewers attend to in a picture will influence the meaning made. First, an artist can use various techniques to direct a viewer’s
attention: (1) selective use of color; (2) positioning on the picture plane, especially on the left and in the upper half of the plane; (3) size of image and of entire picture; (4) isolation of image or picture; (5) complexity within the composition; (6) contrast in tone within the picture; (7) directional cues within the picture; and (8) implied motion within a picture or a double-page spread (Goldsmith, 1984, 1987).

The inclusion of novelties (Faw & Nunnally, 1968; Wolf & Tira, 1970) or a human being (Reid & Miller, 1980) also will direct a viewer's attention. “Human beings generally tend to find images of human beings more interesting than anything else and to give them more attention” (Nodelman, 1988). The human face, especially the eyes and mouth, will attract attention (Buswell, 1935; Wolf & Tira, 1970).

The human eyes and lips (and the eyes and mouth of an animal) are the most mobile and expressive elements of the face. The eyes and lips can tell an observer the mood of a person and his attitude towards the observer, the steps he may take next moment, and so on. It is therefore absolutely natural and understandable that the eyes and lips attract the attention more than any other part of the human face. (Yarbus, 1967, p. 191)

Lastly, individual characteristics of the viewer can influence what is noticed in informational picture books. Interests and purposes will guide a viewer's attention, but developmental level can affect it. Children younger than six years tend to stop scanning a picture prematurely (Vurpillot, 1968), and those under 12 or 13 years have difficulty focusing on relevant versus irrelevant images (Hale & Piper, 1973). Children under five years of age scan a vertical image downward, and children under seven or eight years scan an array of images without concrete organization in a random manner. These scanning patterns can result in omissions in visual attention to important
details. In the case of the former pattern this omission might occur if the initial focal point is not at the top of the image. In the later case it might occur due to the indiscriminate nature of the viewing (Braine, 1972; Elkind & Weiss, 1967). Elkind and Weiss (1967) noted that when a concrete organizational structure was imposed on images, six year olds scanned in an organized manner due to the influence of a strong gestalt. They also noted that those children who were beginning reading instruction attempted to inappropriately generalize left-to-right scanning to the visual task. As Nodelman (1988) states,

> the sequence of actual eye movements with which people inspect pictures has little to do with the dynamics of pictorial composition; we can look at a picture that suggests a circular motion without our eyeballs actually going around in circular patterns, and then we can rightly say that the circular pattern by which pictures convey relationships among their parts demand activity of the mind, not of the physical eye [cf., Pliny, 77/1938]. We must relate the various objects to each other not in terms of the order in which we actually do look at them but in terms of how we understand they ought to be looked at--in terms of the temporal sequences we determine they suggest. (p. 161)

Thus, eye movements are important in terms of the information which they enable a viewer to pick up or cause a viewer to miss and the resulting meaning that is constructed. In this sense, the eyes influence understanding.

**Constructing Meaning with Pictures in Text**

In pictorially oriented cultures children constantly encounter visual images that activate the mind. In many of the parallel cultures within the United States today, children transact with unique combinations of text and illustration each time they turn a page of a picture book. Informational
picture books are no exception. The visual and textual displays encountered and the context in which they are met contribute to the meanings that children construct.

The limited research on the types of responses children have to pictures in isolation delineates two levels of response: observation and inference (Amen, 1941; Boast, 1974; Higgins, 1978). Observational responses consist of recognition, identification, and description of images. They are literal in nature. For example, young children base their interpretations of illustrations on what is literally depicted. Anything "out of sight" does not exist (Higgins, 1980). A picture showing a human torso but no head, no hands, and no feet would be interpreted as a person without a head who is unable to think, without hands who is unable to throw, and without feet who is unable to walk. Inferential responses consist of conclusions drawn about specific icons within an illustration but also those drawn about an illustration as a whole. Amen (1941) and Boast (1974) found in studies of children in the two through four age group and in grades two, four and six, respectively, that children's level of response generally increased as their age or grade in school did. Amen (1941) found that children under the age of four did not commonly infer psychological states or mental activity from pictures. Goldsmith (1984), however, cites a replication study done in 1981 by Human in which children's levels of response were higher. In this study some two year olds were drawing these inferences. Although the general trend in response was the same, Human found that the level of response varied with the picture.
Recently the literature on pictures in text has focused attention on the functions that pictures perform in viewers' meaning-making (Duchastel, 1978; Levie & Lentz, 1982; Levin, 1981). Many of these functions have unclear origins. Touted in educational communication and technology textbooks, it is likely that these functions originated from the informed opinion of practitioners (Peeck, 1987). Consideration of their existence centers on two functional realms: affective-motivational functions (Levie & Lentz, 1982; Peeck, 1987; Travers, 1969) and cognitive functions (Duschastel, 1978; Levie & Lentz, 1982; Peeck, 1987).

**Affective-Motivational Influence of Illustrations**

Writers have purported numerous affective and motivational influences of textual illustrations upon readers. They have claimed that pictures arouse interest (Dale, 1946; Heinich, Molenda & Russell, 1993), generate emotion (Dale, 1946; Heinich, Molenda & Russell, 1993), arouse curiosity (Smith & Smith, 1966), stimulate new interests (Kinder, 1959), and vitalize learning (Alcorn, Kinder & Schunert, 1964). In general, it is believed that textual illustrations produce more enjoyable reading experiences and bring about positive attitudes toward reading and toward the individual illustrated text (Peeck, 1987). However, relatively little empirical evidence exists to support these claims since the emotional impact of illustrations seems so obvious (Levie & Lentz, 1982; Peeck, 1987).

In a study of the influence of pictures on the acquisition of knowledge and interest in the text, Vernon (1953) illustrated, for example, a 700-800 word text on the causes of illness in young children with "four rather
striking photographs of, for instance, living conditions in the slums" (p. 181). She noted that "the pictures produced a considerable emotional impact, such as might affect the attitudes of the subjects to the social problems described in the text" (p. 187). Other research has demonstrated the impact of illustrations on attitudes in the areas of sexism and racism (Litcher & Johnson, 1969; Parish, Bryant & Prawat, 1977). However, some studies have demonstrated that pictures do not necessarily motivate readers to continue exploring a subject (Bryant, Brown, Silberberg & Elliott, 1981).

If the text is redundant [emphasis in original] with the illustration or contains less information than the picture the child may find the text disappointing and the presence of pictures may actually detract from rather than stimulate interest in the text. The child may examine the illustration and then read the text only to discover that the text is bland in comparison with the picture. If, on the other hand, the text is complementary or supplementary [emphasis in original] to the pictures, then the presence of pictures may serve to encourage reading of the accompanying text. (Willows, Borwick & Hayvren, 1981, p. 162)

Peeck (1987) summarized his dissertation research in which he explored fifth graders' "extended curiosity" (Berlyne, 1966), operationalized as ratings of their desire to learn more through other texts or through motion pictures. Each child read a text dealing with fictional prehistoric animals and illustrated "with either well-designed informative illustrations, poorly designed less informative illustrations, or no illustrations" (p. 122). Peeck found that children's extended curiosity was significantly lower in the poor design condition than in either the no illustration or the well-designed conditions. His findings disprove the approach taken in much research on the influences of illustrations on meaning-making that "'a picture is a
picture is a picture’” (Willows, Borwick & Hayvren, 1981). It indicates that the inclusion of pictures in text should be considered carefully. It cannot be assumed that adding pictures to text will not negatively impact meaning construction (Peeck, 1987).

Beyond these affective functions of illustrations, “a primary purpose of visual illustration is to regulate orientation and to maintain a high level of concentration on the symbolic response patterns” (Smith & Smith, 1966, p. 334). Paradowski’s (1967) investigation of the attentional role of pictures demonstrated that curiosity-arousing illustrations produced significantly greater recall than illustrations arousing little interest. However, the attention-getting nature of illustrations may not be beneficial. Like advance organizers such as prequestions (Anderson & Biddle, 1975), an illustration may draw attention away from other aspects of the book (e.g., the text). In this case, a picture is not worth a thousand words (Willows, 1978). Attention will be facilitated when an interdependence between text and illustration exists in the intended communication (Peeck, 1987).

Cognitive Influence of Illustrations

References to the cognitive influences of illustrations abound in the literature. Writers have claimed that pictures enrich reading (Dale, 1946), clarify text (Pepper, 1981), make ideas that are difficult to express in words more concrete (Duchastel, 1978; Dwyer, 1972; Nahinsky & Oeschger, 1975; Travers & Alvarado, 1970), enhance the reality of the text (Smith & Smith, 1966), function like advance organizers (cf. Ausubel, 1960; Bernard, Petersen & Ally, 1981; Weisberg, 1970), establish authorial perspective (Peeck & Goud,
standardize textual meaning (Dwyer, 1972), and correct misimpressions (Dale, 1954). All of these influences point to the facilitation of comprehension, especially when the text is difficult or abstract but also when it is relatively easy (Levie & Lentz, 1982; Peeck, 1992).

Empirical evidence demonstrating the facilitative effect of illustration on meaning-making is scarce. Most studies measure retention rather than the construction of meaning as it occurs during the reading event. A few studies using a cloze test measured comprehension. One frequently cited study of the illustration-comprehension relationship by Rankin & Culhane (1970) investigated the influence of 17 illustrations, seven of which were pertinent to the text, on graduate students and sixth graders' understanding of a 250 word encyclopedia article on American pioneer life. Results showed a facilitative effect for the college students but not for the sixth graders. However, the ecological validity of this study is questionable. Subjects studied the illustrations prior to reading the cloze passage. Although illustrations can be used by readers as advance organizers (Ausubel, 1960), this procedure may not reflect the manner in which readers regularly use illustrations in text.

In a doctoral dissertation cited by Levie and Lentz (1982), Bluth (1972) found that second grade readers scored 25 percent to 35 percent better on a cloze test when a story was illustrated. In a conference paper that they also cited, Wardle (1977) found that illustrations improved poor, seventh grade readers' comprehension of passages from a science textbook but did not improve good reader's comprehension. On the basis of the limited evidence from these three studies, Levie and Lentz concluded that "research using
techniques that appear to avoid the effects of forgetting shows that pictures can have at least a modest positive effect on comprehension" (p. 220).

This facilitative influence may be due to the context for meaning construction that illustrations create. In a study of high school students, Bransford & Johnson (1972) played a tape containing an obscure text. The illustration aided student recall by creating a meaningful context for the message. Although this investigation measured recall, Bransford and Johnson argue that the picture facilitated comprehension during the reading rather than serving as a retrieval cue during the recall assessment. As Bransford (1979) later suggested, "The written passage was not simply a description of the context picture. Instead, the picture provided a basis for allowing people to interpret meaningfully and to connect or organize sentences they heard" (p. 132).

Another explanation for the facilitative effect of illustration, suggested by Levie and Lentz (1982), is that pictures might cause deeper semantic analysis by readers. For example, drawing from a study by Bock (1978), Levie and Lentz provide a potentially ambiguous sentence like "The soldier likes the port" combined with a picture of a soldier "sitting at a table by a harbor (a port) with a bottle of wine (port) on the table" (p. 221). In this case, the illustration aids recall of the sentence due to the picture's ability to accentuate the potential ambiguity. Awareness of the problem causes readers to analyze the semantic value of the text. Research by Sherman (1976) also provides a dimension of this cognitive aspect of the illustration-comprehension relationship. Sherman found that pictures offering "a vague indication of the passage content by providing a partial illustration of
the scene described" created greater recall than those that provided "a clear picture of the scene described in the passage" (p. 373). This suggests that the incomplete nature of the illustrations caused readers to evaluate the semantic aspect of the printed text thoroughly to construct meaning.

Levie and Lentz (1982) speculate about other explanations for the facilitative effect of illustrations on meaning construction. They suggest that illustrations help readers to keep the relationships between important ideas in mind. They also indicate that illustrations provide information against which textual understanding can be checked. But, they go on to point out the limited view of illustrations that exists in educational research and in educational practice. "Pictures are often thought of as 'adjuncts' whose function is to illustrate the printed word. Pictures can, however, be the primary vehicle; some types of information can be provided more efficiently or effectively with pictures than with words" (p. 223). This observation is important to my research. It points out the need to not only consider the influence of illustration on the construction of meaning when it is combined with text but also to consider its singular potential in the reader/viewer's meaning-making.

Summary

Children's apperception of illustrations stems from culturally defined meanings for visual symbols. The constructed meanings are related to the socioculturally determined use of visual factors and semiotic levels (Goldsmith, 1984; Langer, 1957; Worth, 1974). Making meaning with illustrations involves a complex perceptual process that combines sensory
experience and schematized knowledge (Arnheim, 1974; Gibson, 1971, 1979; Gombrich, 1969; Goodman, 1968; Wartofsky, 1980). When placed in the context of books, illustrations influence readers/viewers' attitudes about the work and also the way in which text is understood (Peeck, 1987). Within this context researchers and educators often overlook the possibility for a reader/viewer to transact with illustrations independent of text (Levie & Lentz; 1982).

The Social Nature of Meaning-making

The construction of meaning is a social process afforded by cultural artifacts and by other people (Gibson, 1979). Each supports the perception and thinking of readers and viewers. The social interactions among reader-viewers influence the meanings made. Talk about the print and illustrations in books verbally assists learners in engaging in a transaction with a text (Vygotsky, 1978). While the previous sections of this chapter dealt with the construction of meaning from words and pictures, this section will focus on the social nature of the meaning-making process.

Social Affordance

"To perceive the world is to coperceive oneself... The awareness of the world and of one's complementary relations to the world are not separable" (Gibson, 1979, p. 141). Gibson views the interaction between man and the environment as a unified complex of activity, naturally indivisible. It possesses a relational or transactive quality (Dewey & Bentley, 1949) that
influences perception. This ecological perspective stands in opposition to a dualistic outlook in which an independent humankind acts upon an independent environment or in which the environment completely shapes the individual.

Gibson (1979) contends that the environment provides the human animal with affordances, environmental properties viewed in relation to an individual's body-scale. Surfaces, objects, substances, and events furnish affordances.

Although affordances are reciprocal to the structural and functional features of an animal, they are not 'subjective' or contingent upon the moods or needs of the animal. They are relational properties of the environment and exist as opportunities [italics in original], whether or not an animal wants to use them. (Lombardo, 1987, p. 307)

For example, a high chair affords "sitting" to a twenty pound child but not to a one hundred twenty pound adult who does not see it as a viable seat. The affordance exists in the human interaction with the object, not in the physical characteristics of the object.

Affordances exist at a level of organization commensurate with animate ways of life. Though the structural and compositional support may be complex, it exists at a finer level of organization. The affordance, existing at a more global level, may be relatively simple in comparison to its constituted support. Consider how simple the affordance of 'writability' is for a pencil or pen in comparison to the complexity of factors that make up a pencil or pen. First, there is no one set of complex, constituent factors that is necessary: they can be made of wood, plastic or metal, or be short, fat, thin, long, green, blue, heavy, light, and so forth. Second, one can analyze pens or pencils into a series of finer and finer levels of organization down to its atoms, protons, and quarks. Must we perceive the parts before the whole? At what point do we stop? (Lombardo, 1987, p. 347)
Humans' design and use of tools extends and refines environmental affordances in support of human life (Lombardo, 1987; Shotter, 1983). Tools have affordances built into them. Humans construct them with their uses in mind (Gibson, 1979). Tools, therefore, offer opportunities. But, the most prominent affordances for us are social. Other people provide rich, multiple affordances in support of social interaction (Costall & Still, 1989; Gibson, 1979). Tools and other people are an integral part of the dynamic, ecological relationship.

Heft (1989, 1990) and Looren de Jong (1991) incorporate the concept of intentionality into Gibson's view of affordance. They acknowledge the influence of intent or purpose on human perception of the environment. Heft (1989) uses the example of the typewriter in developing this idea. The keyboard affords the depression of keys, but this act hardly constitutes typing. Typing involves a specific linguistic and motoric act not acknowledged in Gibson's view of affordance. It involves "a goal-directed or intentional, situated behavior [italics in original]. . . . From an intentional perspective, then, the typewriter takes on functional meaning, that is, an affordance, within the context of this goal-directed activity" (Heft, 1989, p. 13). Framing the specifications of affordances in relation to the body and goal-directed activity expands the concept of affordances.

We might then reconsider affordances as the functional significances of environmental objects taken relative to what an individual can do with respect to them. Knowing how to do something necessarily implicates (1) the structural characteristics of the objects utilized in the performance of the action and (2) the structural characteristics of the body that engages those objects. In other words, knowing how to do something is situated knowledge. (Heft, 1989, p. 13).
Chow (1989) contends that the incorporation of intentionality into the concept of affordances introduces cultural relativism. On this view perception that is influenced by intent diminishes the usefulness of affordances as a universal construct. In the extreme, one's perception and use of affordances is relative to one's cultural frame and one's intent. Recognizing the dangers of dualism, Gibson (1979) acknowledged that perception was culturally influenced.

It is a mistake to separate the natural from the artificial as if there were two environments; artifacts have to be manufactured from natural substances. It is also a mistake to separate the cultural environment from the natural environment, as if there were a world of mental products distinct from the world of material products. There is only one world, however diverse, and all animals live in it, although we human animals have altered it to suit ourselves. (Gibson, 1979, p. 130)

As a way out of the dilemma of cultural relativism, Costall and Still (1989) argue for a view of affordances that recognizes their pervasiveness. They contend that

not only are other people sources of multiple affordances, since they are necessary to support all social interaction, but all aspects of our surroundings have their meaning, and therefore their affordances, because of their place within a social or cultural context. This is not just because what things afford, and even their construction, is culturally relative. Is is also because, within human cultures, objects which afford quite different activities, such as chairs, table lamps and flower pots, also share a more general kind of affordance, that of being picked up and moved in the service of many and varied projected activities which are social in their origin. . . . The cultural pervades all experience, and there is indeed no division between two separate realms of the natural and social. (Costall & Still, 1989, p. 438)

Looren de Jong (1991) shares Costall & Still's view and translates Gibson's theory into Vygotskian terms. According to Gibson, pictures and
verbal descriptions mediate "second hand" or indirect perception. Since pictures are intrinsically related to the objects they represent and words are extrinsically related, each mediator provides different information. Pictures communicate tacit knowledge captured by the creator whereas words convey explicit knowledge converted by the composer. Since words cannot completely capture what pictures show, they are comparatively an impoverished form. On this view pictures are not elements of knowledge but rather are perceptual aids. They represent culturally acquired information gathered through direct perception. They afford others the opportunity to see what they refer to or represent. As mediators, they "help to sharpen perception, to fixate the results of perception by transmitting acquired knowledge, and are intrinsically social in nature" (Looren de Jong, 1991, p. 99).

In his later work Gibson (1979) states:

The child who has learned to talk about things and events can, metaphorically, talk to himself silently about things and events, so it is supposed. He is said to have 'internalized' his speech, whatever that might mean. By analogy with this theory, a child who has learned to draw might be supposed to picture to himself things and events without movement of his hands, to have 'internalized' his picturemaking. A theory of internal language and internal images might be based on this theory. But it seems to me very dubious. (Gibson, 1979, p. 262)

Although Gibson doubts the application of the internalization principle, Looren de Jong finds similarities in Vygotsky's and Gibson's views on mediation and considers Vygotsky's view of internalization a natural complement to mediation.

Vygotsky (1978) contends that children support their thinking and perceiving through the use of external aids. Over time children internalize
these psychological tools of thought and perception and complete tasks without the external aid. This co-optation of signs and subsequent internalization represents a cultural process. Vygotsky contends that “all the higher functions originate as actual relations between human individuals” (Vygotsky, 1978, p. 57). These functions of the mind are initially interpersonal and later intrapersonal. In other words, through interaction with more knowledgeable learners (i.e., parents, teachers, siblings, peers) external representations subsequently become internal symbolic processes. “Hence, like Gibson, Vygotskij [sic] sees mediated perception as an extension of direct perception, where tools help to refine and structure perception, and as intrinsically social process” (Looren de Jong, 1991, p. 100).

My research involves children’s interaction with a cultural object (i.e., an informational picture book) within a social context. The concepts of affordances and intentionality within a Vygotskian perspective inform my study. They offer a perspective on the functions that a book, a reader’s intent, and mediated assistance can have on children’s indirect perception and the resulting processes that are internalized.

**Social Language Learning**

Language learning is not an isolated, solitary act. It is a collaborative process involving interactions with peers and adults who support learners’ approximations (Chang & Wells, 1988; Clay, 1991; Holdaway, 1979; Forman & Cazden, 1994; Rowe, 1989; Teale, Martinez & Glass, 1989; Wells, 1990; Wells & Chang-Wells, 1992). In exploring early language acquisition Cazden (1988) discusses the sequential structures or slots in which young children learn to
speak. Interaction with parents provides models of mature language patterns. At first, hand movements, tongue thrusts, et cetera serve as the child's participation in the dialogue (Trevarthen, 1977). Parents' acceptance of these slot fillers and temporary assumption of the verbal parts of both conversants share responsibility for a complete performance with the child. Gradually this scaffolding, provided by the adult, self-destructs as the child's need for it decreases.

In research of mother-infant dyads involved in picture book reading, Ninio & Bruner (1978) found that mothers used a four-part dialogic structure: attentional vocative (i.e., "Look!"), query (i.e., "What's that?), label (i.e., "A duck."); feedback utterance (i.e., "Yes."). Through this "language acquisition support system" (Bruner, 1983) mothers regularized the interactions in support of the child's labeling. The mothers supplied what the children were unable to provide, but they altered the demands as the children's language competence increased. By gradually upping the ante, the mothers forced the children to assume more and more responsibility for the book activity. This self-destruction of the scaffold resulted in the children learning social rules of interaction and socially constructed rules of participation that are important in language learning. Similarly, researchers have found that parents provide scaffolds or language acquisition support systems to children during story readings. A gradual shift in the collaborative interaction patterns leads to the child's independent re-enactment of a text (Heath, 1983; Martinez & Roser, 1991; Sulzby & Teale, 1991).
In her research with nursery school children Cochran-Smith (1984) found that young listeners negotiated the meaning of a text as they interacted with the reader. In her analysis of over 100 story reading sessions she identified three interaction patterns: readiness interactions, life to text interactions and text to life interactions. Readiness interactions established appropriate behaviors for book reading. Life to text interactions enabled children to create meaning out of the events and characters by connecting life experience to the story. Finally, text to life interactions helped the children to apply story meaning to their lives.

Rowe (1987, 1989) found that social interaction also was important in the literacy learning of three and four year olds in a day-care and a nursery school setting. In the day-care context she found that through social negotiation children made two types of “intertextual” connections. First, as members of a community they formed shared meanings out of their conversations. Second, they connected present literary experiences to past experiences. In the nursery school context Rowe found that interactions around children’s writing/drawing provided more than just a context for learning; they influenced children’s process and products. She states that “social interaction plays an important role in determining not only what children learn but the kinds of thinking they will use” (1989, p. 346). As Vygotsky (1978) contends, higher psychological functions emerge from human interactions.

In a study of children’s use of fictional and informational literature in a kindergarten classroom, Harvey (1993) concluded that peer interaction supported children’s literacy learning. Children jointly constructed meaning
with informational books by creating stories about the illustrations. Their interactions also supported their exploration of reading and writing. Harvey found that the amount of interaction varied among children though. Some students provided themselves with "private literacy lessons" using dialogues with themselves to direct and structure their thoughts and activities. For these children language was important to their construction of meaning.

Eeds & Wells' (1989) research on fifth and sixth graders' engagement in literature discussion groups again points out the critical nature of social interaction. During discussions of self-selected novels children deepened and enriched the meanings that group members constructed. Collaboratively, the children articulated shared meanings, connected personal experience to the text, formed and evaluated hypotheses, and made literary judgments about the text. Through "grand conversations," Eeds and Wells' term for collaborative talk, students formed generalizations that would not have been formulated without interaction. Negotiations surrounding text led to reconsideration of individual interpretations and ultimately to deeper understandings.

In research of first, third and fifth grade students' responses during peer-directed group discussions of informational books, storybooks, and informational storybooks read aloud to them, Leal (1991, 1993) also documented the power of social interaction. The activation of personal prior knowledge during discussions led to the construction of "corporate knowledge, and the dynamic assumption of positions in the group (Davies & Harre, 1990) resulted in problem solving as peers collaborated (Vygotsky,
1978). As a sidelight to the study, Leal discovered that informational storybooks led to longer responses, aesthetic responses such as predictions, speculation, and connections, and responses that combined peer-provided ideas with personal prior knowledge.

In a 15 year longitudinal study following children from 15 months of age to the end of elementary school, Wells (1986) identified linguistic influences on students' achievement. He found that through stories children made sense of their lives. They made meaning of real life experiences and observations by connecting them to stories. Wells also identified the difference in linguistic environments between home and school. Unlike their homes, the children's schools afforded fewer opportunities to talk and positioned children and adults (Davies & Harre, 1990) in less collaborative ways. He concluded that the home's affordance of the interactive negotiation of meanings was critical to children's learning and needed to be equally important in the school. Like Barnes (1975) he indicated that active meaning-making through sustained interaction influences what and how children learn.

In their research Chang & Wells (1988) focused on the literate potential that collaborative talk possesses. They identified two conditions that must exist for collaborative talk to enable and empower learning. First, it must occur in a situation in which the learner maintains ownership of the task at hand. Second, "expert's contributions to the dialogue should be contingently responsive to the needs of the learner, as these needs are understood in the light of the immediate situation as well as of the longer-term goals of education" (p. 97).
Summary

Children's construction of meaning is a social process. First, it is mediated by the symbols shared by members of a community. Cultural artifacts as well as language-mediated interactions with other people, afford opportunities to make meaning. The reader/viewers' intent to live through an experience or to obtain information from an illustrated book lends a functional meaning to this type of artifact. Books such as informational picture books, then, take on an affordance within the context established by the reader/viewer. Second, through interpersonal actions with more knowledgeable learners, young reader/viewers make meaning of illustrated informational books by connecting literature and life. Interactions that are contingently responsive to the learner's intent support the meaning-making process.
CHAPTER III

METHODOLOGY

The purpose of this study was to investigate the nature of first grade children's transactions with informational picture books in a classroom setting. The study explored the ways in which three children used the visuals and the text as they encountered the printed page and constructed meaning. The nature of the research problem, the theoretical perspective framing the research, and the nature of the questions explored led to the selection of an interpretive case study design and cross-case analysis.

Theoretical Perspective

For Gadamer (1976) a person's history is an essential part of present experience. The "prejudices" or perspectives derived from it inhere in one's presence in the world.

Prejudices are biases of our openness to the world. They are simply conditions whereby we experience something - whereby what we encounter says something to us. This formulation certainly does not mean that we are enclosed within a wall of prejudices and only let through the narrow portals those things that can produce a pass saying, 'Nothing new will be said here.' Instead we welcome just that guest who promises something new to our curiosity. (p. 9)
Prejudices direct the way in which the world is experienced. When they create dissonance between one's experience and the object to be interpreted, the discord created opens opportunities for understanding.

Language is not a transparent medium through which reality is revealed. Language and the apprehension of meaning or content are a unified process (Gadamer, 1976). Reality only exists as the subject matter of a discourse community. It is socially constructed in the ongoing interactions of community members with one another and with objects of material culture. The dialogic nature of understanding leads to disharmony as one's prejudices (i.e., one's horizon) strike a discordant note with others'. Understanding develops through dialogue as worlds defined by past experience converge. Gadamer refers to this mediation between past meaning and the present situation as a "fusion of horizons." One cannot reconstruct meaning. One must participate in producing it. For Gadamer understanding occurs when "the interpreter's action . . . fills out the temporal gulf between him and his objects" (Linge, 1976, p. xvi-xvii).

Similarly, Bakhtin (1981) suggests that language exists on the boundary between oneself and others. The words of others are contained "in the miniature world of each person's own words (words sensed as his own)" (Bakhtin, 1986, p. 143). On this view, interpretations are historically situated and are socially and linguistically constructed. This viewpoint informs my study in two ways. It frames the interpretive process in which child readers engage as they construct meaning alone and in groups. It also underlies my interpretive process of understanding children's transactions with text.
Rationale for Interpretive Case Study Design

Inquiry into the nature of a child's transactions with informational picture books in a classroom setting requires investigation under natural conditions. The construction of meaning cannot be separated from its context. It contributes to the meaning created (Cook-Gumperz, 1986; Gumperz, 1986). The indeterminate nature of the context necessitates the use of instruments which can adapt to the changing scene (Lincoln & Guba, 1985). The selection of a research design with its embedded data collection methods and data analysis strategies must be appropriate for the questions posed (Howe & Eisenhart, 1990).

A case study is a study of a bounded system, an identifiable entity (e.g., a person, a program, a process, a concept, or an institution) within a specific temporal, spatial, and social frame (Bogdan & Biklen, 1992; Merriam, 1991; Stake, 1988). The entity under study constitutes the "case." Researchers using a case study design usually investigate the system within its naturally occurring conditions (Yin, 1989) so that its dynamic, and complex character can be understood. They consider the case in its entirety but focus upon aspects of it which are relevant to the inquiry (Goode & Hatt, 1952; Stake, 1988).

The constantly changing character of a natural setting demands the use of a data collection instrument which can adjust to change. The human-as-instrument is uniquely suited to this task. It can respond to personal, social, and environmental cues seeking clarification and forming hypotheses within the immediate situation (Lincoln & Guba, 1985; Merriam, 1991).
can explore unanticipated or idiosyncratic responses which are not interpretable on ordinary instruments. Its adaptability makes it possible to focus on more than one person, object or situation, to consider multiple aspects of it simultaneously, and to refocus continually. Unlike paper or metallic instruments the human instrument also can view an entity within its context and perceive the complexity within its existence (Lincoln & Guba, 1985). In this research a case study design enabled me to explore the research problem, the nature of a child's transactions with informational picture books, while studying visual, textual, and social aspects of the transaction which appear relevant at different times. The responsiveness of the design to the changing context permitted research questions to evolve and to receive attention as the study progressed (Erickson, 1986; Evertson & Green, 1986).

"The use of a human instrument suggests that the methods employed should be primarily those that are congenial to humans--qualitative methods" (Guba & Lincoln, 1989, p. 177). Human instruments are well suited to collecting information through activities using the senses (e.g., talking with people, responding to non-verbal cues, observing events, reading documents, and viewing artifacts). Their tacit understanding of a situation allows them to move beyond propositional knowledge. The ability to integrate new information with existing knowledge makes the human instrument valuable in a naturalistic study. These capacities lend a depth of understanding and a richness of detail to interpretations of social contexts (Guba & Lincoln, 1989; Merriam, 1991).
Interpretive research aims to uncover and to describe the human construction of meaning in social situations (Erickson, 1986). Interpretation occurs as the researcher's world view comes in contact with that of the entity being studied. Data are mediated through the researcher and the instruments used (Evertson & Green, 1986; Merriam, 1991). Attempts to understand the meanings of participants and to later report them consist of an ongoing cycle of interpretation. It involves a continued fusion of socially constructed, individual horizons (Bahktin, 1986; Gadamer, 1976).

Case study research is particularly useful in the development of a new line of research (Foreman, 1948; Merriam, 1991). Its focus on the participant's process and on the characteristics of the context provides for the development of an in-depth, well-organized picture of the complex and dynamic nature of phenomena (Isaac & Michael, 1981; Patton, 1990). As discussed in Chapter I, this study breaks new ground by investigating children's transactions with the visual and textual aspects of the informational picture book.

The context dependent nature of this study and its exploration of unexplored territory makes a case study design most appropriate for this research. The flexibility of the human instrument and the use of qualitative methods permit the collection of richly detailed data needed to describe the case for the reader. Finally, an ongoing, interpretive analysis of the data is consistent with the theoretical perspective that views reality as socially constructed.
Transferability of Case Study Research

As a participant observer in a naturalistic setting, a researcher participates in the construction of experiences as people and contexts are explored. Through a comprehensive and richly detailed description of the case an investigator constructs a case report which is contextually grounded (Lincoln & Guba, 1985). The description fuses the perspectives of the informants with that of the researcher to create a case picture. It accounts for the interaction of numerous variables with the case (Donmoyer, 1987).

A case report should render a case in sufficient detail to enable a reader to experience it vicariously, to determine the researcher's basis for analytical interpretations, and to identify the researcher's theoretical stance (Evertson & Green, 1986). Stake (1978) suggests that readers easily integrate richly textured reading experiences with their past. Their epistemological harmony with the reader's experience makes them "a natural basis for generalization" (p. 5) to other familiar contexts. "The case study researcher does not guarantee that the reader will have an equal share in the interpretation, but it is common for responsibility to be shared between case study researcher and reader" (Stake, 1988, p. 262).

Evertson & Green (1986) contend that it is a researcher's obligation to disclose beliefs held upon initiating the study and decisions made in collecting, transcribing, analyzing, and reporting data. All systems for observing, recording, analyzing, and reporting data have their biases. Documenting these biases is essential in establishing parity between the researcher and the reader. Researchers enter the field to capture a reality, not
the reality (Mead, 1975). By providing detailed, comprehensive description, the case report affords the reader the opportunity to co-analyze the case (Erickson, 1986) and to form naturalistic generalizations.

Readers draw naturalistic generalizations from the case described to contexts they define as similar. They do not draw them to entire populations (Stake, 1978). Readers construct these generalizations from tacit knowledge of experience. Their knowledge of the ways they experience the world, of the ways they feel about experiences, and of their contemplation of experiences is the basis for such constructions. Thorough and detailed description of a case enables a reader to recognize similarities to cases of personal interest and to form naturalistic generalizations (Donmoyer, 1990). This process enhances the reader's understanding of cases (i.e., people, events, programs, et cetera) in social contexts (Stake, 1978).

In naturalistic inquiry the reader is responsible for constructing generalizations to other contexts. The researcher is obligated to provide a detailed and comprehensive description of the case. Through an interpretive process the reader must judge whether the case is similar to known contexts and whether the transfer of understanding is warranted.

A case study is valid to the reader to whom it gives an accurate and useful representation of the bounded system. Accuracy of observing and reporting is not a matter of everyone seeing and reporting the same thing. Observers have different vantage points. (Stake, 1988, p. 263)

The validity of a case study, therefore, is related to both its internal characteristics (i.e., systematic, comprehensive, descriptive, in-depth) (Merriam, 1991; Patton; 1990) and to the external interpretation which each reader brings to it (Lincoln & Guba, 1985).
Gaining Access

Gaining access to a school research site requires permission from gatekeepers in school district offices, in school offices, and in classrooms. It requires the researcher to establish and maintain rapport with principals, classroom teachers, and children. Ethically, it demands participants' informed consent and, where children are involved, the permission of a parent/guardian in order to take part in the study (Bogdan & Biklen, 1992).

Involvement with the Midwest, urban elementary school selected as the site for this study began one year before the research started. Participation in a school-university collaborative which evolved into a professional development school brought about frequent contact with part of the school's faculty and the principal during after-school meetings. I first observed the school in operation during the academic day in October, three months before the research started. Participation in the collaborative supervision of graduate students' field experiences necessitated ongoing dialogue with some classroom teachers and the principal.

Relationships built with the principal and the teachers led to conversations related to personal interests. One teacher, who participated as a teacher-researcher in the inquiry component of the professional development school and who was contemplating entering a doctoral program, expressed interest in the topic of my dissertation and in experiencing how a dissertation study could be conducted. She used informational picture books in her curriculum and made a limited number available to students in her classroom library. Becoming aware of our shared
interests, the principal extended an invitation to conduct research in the school and the teacher offered her first grade classroom as the site.

As Bogdan & Biklen (1992) suggest, the opportunity to observe in the classroom before official sanction for research is obtained permits preliminary data collection. During January and part of February I observed in this first grade classroom. I acclimated myself to the environment and familiarized myself with the classroom and school routines. The observations provided insights into the type of data that could be collected. This period also provided opportunities to experiment with the most appropriate tools for data collection and to consider my stance as a participant-observer in this classroom.

Three months after submitting a formal proposal to conduct research in the school district, I received written approval from the Assistant Superintendent of Student Services, who chaired the district committee which reviewed all research requests. I also received a letter of introduction for presentation to building principals. Delivering this letter to the principal of the selected school was merely a formality.

The study officially began in late February. I orally explained the study to the children and solicited their participation. The children took letters, explaining the study and requesting permission for their participation, home to their parents. Although only five children were selected as focal children for this study, their involvement with others in the classroom necessitated permission for all children to participate. Parents/guardians granted permission for twenty-five out of twenty-six children to participate in the study. One parent denied permission. My attempts to contact this parent by
telephone and by mail in order to negotiate the child's participation produced no further communication. The reason for the denial remains unknown.

School/Classroom Site and Population

I conducted this study in an alternative elementary school in a Midwestern state capital. Students from all parts of the school district attended the school. A voluntary lottery determined the racially-balanced school population. Students came from families with lower and middle socioeconomic profiles.

The school curriculum had a social studies focus on the city in which the students lived. Teachers integrated traditional content areas and also the arts (i.e., visual arts, drama, music, dance) in their instruction. Children's trade books were a primary resource for reading and for thematic instruction. Located within walking distance of the downtown area, the school depended upon local resources such as science and art museums, the city library, governmental offices, and special exhibits for field instruction. Teachers took children on bus trips to more distant locations in the city too.

The school consisted of four open learning areas for grades one through five; a separate, open kindergarten area; a central library; and a gymnasium. Children ate lunch in their instructional areas. The first grade area which was the site for this study housed three first grade classes.

Each day began with a half hour of quiet reading, a time when the children could read self-selected books and quietly talk to others about their
books. The first grade teachers teamed to plan their morning, whole class instruction. They designed thematic units that alternately used fictional picture books and informational storybooks, informational books (Harvey, 1993; Huck, Hepler & Hickman, 1992; Leal, 1991, 1993b), or picture book biographies. The books created the focus for the morning activities. After reading the day's book aloud to the class, each teacher sent the children to their tables to complete a series of activities. The teachers encouraged the children to help one another when difficulties arose. Each day children completed a duplicated word or comprehension activity related to the book. They also copied a sentence excerpted from the book as their handwriting practice and wrote a few sentences about the "word of the day" selected from the book. The final activity was a math worksheet which was not connected to the book read aloud. The teachers rotated the books and related activities among the classes. Every fourth day a new cycle began.

While the children completed their paper work within an environment filled with student voices and student movement, each teacher met with small, ability groups to teach reading. Children read fictional narratives. Repeated readings of a book were done on successive days. Teachers gave children word lists to practice reading with parents or more skilled readers in the home. During the afternoon each teacher taught math to a large group of children, drawn from the three classes, who had similar math abilities.

Prior to the initiation of the study the children encountered informational picture books when the teacher read them aloud to the class for thematic instruction or for content area instruction (e.g., math). The
children also found a few informational books within the classroom library. Individual interest determined the experiences children had with them. When the class visited the school library once a week, the teacher directed the children to the fictional picture books and easy readers. The teacher forbid the children to check out or to explore the books in the nonfiction section. She believed in the primacy of story in children's language learning (Hardy, 1978). The teacher dropped this ban when I began preliminary data collection.

Twenty-six children comprised the first grade class in which I conducted the study. They were predominantly from middle socioeconomic backgrounds and educational backgrounds that ranged from high school through advanced graduate study. A few children participated in the free or reduced lunch program. Of the children in the class 14 were Caucasians, 12 were African-Americans, and one was Filipino-American. Fourteen were boys and 12 were girls.

Selection of Participants

During my acclimation to the classroom I placed approximately twenty informational books on a table at which children could read during the quiet reading period at the beginning of each school day. The books were changed regularly. I observed the frequency and duration of the children's reading of these books. I also watched the books which children checked out of the school library, selected from the classroom library, and read at other times
during the school day. With this information available I met with the classroom teacher to discuss the selection of participants in the study.

Five children formed a purposive sample. Intensity sampling provided information-rich cases that afforded opportunities to observe transactions with informational picture books (Merriam, 1991; Patton, 1990). The following three criteria were used to select the focal children:

1. The child must have demonstrated a sustained interest in informational books.
2. The child must indicate a willingness to interact with the researcher.
3. The children must be distributed across the continuum of reading ability.

During the study the sustained interest of two children waned. Although they did not opt to leave the study, their willingness to talk about the books noticeably declined. Subsequently, the two cases were not included in the final data analysis. This decision left three cases which were distributed across the continuum of reading ability.

Data Collection

Field work began at the beginning of January and ended in late May. For the first six weeks I collected preliminary data. I began formal data collection in late February and continued for 12 weeks. Field observation, technological recording, document analysis, and teacher interviews constituted the modes of data collection in this study (see Figure 8). I used
these sources of information to construct a picture of the context and the children's transactions with informational picture books within it. Ongoing data analysis permitted me to determine the collection of additional data through these sources.

The research unfolded in phases. During January and part of February observations took place two and one half days per week between 9 a.m. and 3:30 p.m. This "orientation and overview" phase involved observing with a "wide-angle lens" in order to determine salient features of the social situation and through prolonged engagement to select those worthy of more detailed investigation. From late February to the middle of May observations took place three days per week between 9 a.m. and 11:45 a.m. This phase of the inquiry consisted of two parts. The first, "focused exploration," involved persistent engagement with the cases that had been identified from the analysis of preliminary data gathered in the first phase

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<td>Participant Observation</td>
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<td>Interview (teacher)</td>
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<td>Technological Recordings</td>
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<td>(quiet reading &amp; one-on-one sessions)</td>
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<td>Photographs</td>
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Figure 8. Sequence and overlap of data sources in two phases of study.
(Guba & Lincoln, 1985). The second, "selective observation," represented a more sharply focused engagement with the cases (Spradley, 1980).

In the "focused exploration" segment I videotaped and audiotaped the focal children's reading of informational books in two contexts in an attempt to broadly explore each focal child's reading. During quiet reading when a focal child chose to read an informational book, I watched the child's reading and recorded my observations in field notes. Since this reading usually occurred in the company of other classmates at the table where I had laid out informational books, I also focused my attention on the child's interaction with others while reading. During one-on-one sessions with each focal child I also videotaped and audiotaped the child's reading of child-selected and researcher-selected informational books and the child's conversation with me. The following types of questions and statements were planned to guide my participation in the dialogue:

- **questions** - "What are you noticing?"; "How do you feel about these pages?"; "What do you think about this?"

- **statements** - "Tell me about these two pages."

- **requests for clarification or elaboration** - "What do you mean?"; "What do you like about it?"

- **requests for justification** - "How do you know?" and "What makes you think that?"

- **reiterations of the child's statements as questions.**

During the "selective observation" part of the second phase of the study I refined my focus. Based upon an ongoing analysis of data I began to see patterns in each focal child's reading. Emerging interpretations and
hunches resulted in more specific questions and in carefully focused observation in order to recover pertinent data.

The two phases of observation represent a total of 74 hours of engagement within the research site. I used notepads, a Realistic cassette tape recorder with an external PZM microphone, an 8 mm Panasonic video camcorder with an external PZM microphone, a Canon 35 mm, automatic focus camera, and a Polaroid Spirit 600 camera in the collection of data. Through persistent observation of the five cases I gathered 20 hours of videotape and audiotape of one-on-one sessions and 14 hours of videotape and audiotape of the quiet reading sessions.

Participant Observation

Participant observation provides a means of describing social situations consisting of people, settings, and activities, a subset of "larger patterns called events" (Spradley, 1980, p. 41). This method enables the researcher to describe the meanings which the observed attaches to the social situation. It provides a firsthand holistic understanding of the context and highlights things that participants may not be aware of, may not have paid attention to, or may be unwilling to discuss. Observation enables the researcher to gather data which falls outside of the selective perceptions of the observed. This method permits the researcher to use personal knowledge and direct experience as interpretations are made. It provides for the inclusion of impressions and feelings which go beyond what an observer can reasonably record in field notes (Patton, 1990). Ultimately it allows for
the creation of a detailed picture based on the selective perceptions of the observer.

During the five months of this study I positioned myself as a participant observer. I moved along the participation continuum from passive to complete involvement (Spradley, 1980). Contact throughout the study with five focal children, twenty-one other children in the classroom, a teacher, and a student teacher constantly influenced my stance. "Cultures do not provide within their social structures a role called participant observer . . . participant observers must convince those they are studying to accept them and allow them to question and observe" (Denzin, 1989, p. 162). A day-to-day, moment-to-moment negotiation of my position took place. It was linguistically and socially constructed with the children and the adults in the classroom. The assumed positions framed my view of the events and activities occurring around me. (Davies & Harre, 1990).

Once having taken up a particular position as one's own, [whether consciously or not,] a person inevitably sees the world from the vantage point of that position and in terms of the particular images, metaphors, story lines and concepts which are made relevant within the particular discursive practice in which they are positioned. (p. 46)

In the field I recorded condensed notes about the unfolding activities that I experienced. At a later time, usually that evening or the following weekend, I expanded the brief forms into fuller accounts (see Appendix A for sample of field notes). The code "FN" denoted field notes. "PN" indicated personal notes that functioned as a reflexive journal in which I documented thoughts about the human instrument. "MN" signified methodological notes that tracked my methodological decisions and reasons for them. "TN"
marked theoretical notes made as contextually grounded, tentative theories emerged (Corsaro, 1981). This coding system facilitated the separation of data types as I searched for patterns during ongoing data analysis.

**Technological Recording**

Audio and audiovisual records free the researcher "from the limits of the participant observer's embedding in the sequential occurrence of events in real time and space" (Erickson, 1986, p. 144). These records provide a means of vicariously experiencing or revisiting the activities of focal children. They enhance data analysis in many ways. First, playback enables the researcher to scan forward and backward in time and space to identify similar and unique instances. This ability assists the researcher in reducing the analytic dependence on recurrent activity at the expense of the rare occurrence. It makes repeated observation of unusual instances possible. Second, playback provides for a more detailed description of a case than the field notes of a participant observer. Videotape and audiotape capture a level of detail that would be rare in field notes, but one that is still incomplete. Next, recorded material enables a researcher to adopt multiple foci and perspectives in observing. This ability to view many aspects of the data from different angles provides for a potentially more complete analysis. And finally, technological recordings offer the opportunity for deliberation in interpreting data. They eliminate the need to make early interpretive judgments on the basis of scant data. The capacity for review permits inferences to be held in abeyance until sufficient data exists (Erickson, 1986).
Just as participant observation involves the selective perceptions of the observer, the use of technological recordings retains the problem of selective observation. Regardless of the changing focus and perspectives adopted during repeated observation, the researcher's view is incomplete. The researcher engages in a "choosing activity," that William James (1890/1950) referred to as "selective attention" (p. 284). From the stream of consciousness the researcher selects those dynamic constructions to which attention will be given. Visual and sound recording only delays the researcher's selective observation, but it does not eliminate the selective nature of recording imposed by the researcher's and equipment's fields of focus. When transcription is undertaken, the researcher makes decisions about what will be presented on the page. At this point characteristics of the technology and its use (i.e., the sensitivity of the microphone to sounds in the setting, the vantage point of the camera, the use of a close-up or wide-angle lens) influence the researcher's view of the context and the representation of it created in print (Ochs, 1979).

Transcripts represent the researcher's assumptions about linguistic, social interaction and largely determine the reader's interpretation of the activity rendered (Evertson & Green, 1986; Ochs, 1979). For example, in the tradition of the English language, readers scan a transcript of adult interaction from top to bottom and from left to right. They interpret utterances on the basis of verbal and nonverbal behavior preceding it. It is assumed that utterances will be contingent on behavior that has preceded them and will in some way be relevant. Although generally true for adult interaction, this assumption cannot be made for the interaction of children.
Young children frequently 'tune out' the utterances of their partner, because they are otherwise absorbed or because their attention span has been exhausted, or because they are bored, confused, or uncooperative. . . . The reader of a script involving at least one child as a participant has to suspend the expectation that sequentially expressed utterances are typically contingent and relevant. (Ochs, 1979, p. 46)

A transcript's format influences the researcher/reader's interpretation of it. Both content and form become the data and present the researcher's theoretical beliefs about the importance and the relationship of aspects of the observation (Evertson & Green, 1986).

In considering transcription in this study, I noted that a qualitative difference between the nature of the interactions in the one-on-one sessions and the quiet reading sessions demanded the use of different transcription formats.

When the children read with me, we tend to respond to what the other has said or done, although at times our individual agendas do not match. Then our conversations seem to contain nonsequitors, but in reviewing tapes I can see that this is not the case. It's just that we are not aware or choose not to focus on what the other is doing. When the kids read at the table together [during quiet reading], they have multiple conversations going at once and participate in each of them. At other times they seem to ignore what's happening around them, momentarily or for long periods, and focus on what they are doing. A linear transcript for the one-on-one sessions is probably still okay, but what about the quiet reading transcripts? They need to show more parallel activity. (Field notes)

I decided to use a top to bottom, left to right, single column format, implying contingency and relevance to sequential turns, for the transcription of one-on-one sessions (see Appendix B for sample of transcript). In contrast, for quiet reading sessions I chose a format with multiple speaker columns (see Appendix C for sample of transcript). This second choice reduces the
tendency to assume that speaker's turns are responsive to the previous turn. It also helps to mitigate the Western cultural, left to right bias leading to assumptions about the initiation of a talk sequence. I recorded verbal and nonverbal behavior sequentially in order to avoid the bias toward attaching greater importance to material placed to the left and to acknowledge the importance of both types of behavior in social interactions (Ochs, 1979).

Throughout the study I collected data using audiovisual recordings. Audio recordings provided a backup system to guard against the loss of data due to technological failure or human error. During transcription they provided a means of determining a child's language which was unrecoverable from the videotape. I used a Magnavox video cassette player and a 19 inch Magnavox color television to transcribe all one-on-one sessions in their entirety and parts of quiet reading sessions which revealed the focal children's social interaction while reading informational picture books. As Genishi (1982) suggests, the degree of detail in the transcription is related directly to the level of analysis selected. I used a loosely adapted form of the Sacks, Schegloff, & Jefferson (1974) notational scheme for transcription. This system produces a rendering of the verbal record as it sounds. I modified it to incorporate nonverbal behavior (see Appendix D for adapted notational scheme).

Interviews

Unlike observation which is temporally bound to the here and now, the interview allows the respondent to comment about the past, the present, and the future. Spradley (1979) states that "language is more than a means of
communication about reality: it is a tool for constructing reality" (p. 17). Through an interview a researcher aims to capture a respondent's construction of a situation. It is an interpretive negotiated dialogue (Guba & Lincoln, 1989) in which a respondent's words are always "half someone else's (Bahktin, 1981). It is a friendly conversation in which the researcher and respondent slowly add new elements as a reality is co-constructed. It is dependent upon rapport as both researcher and respondent position one another during the interaction (Davies & Harre, 1990; Denzin, 1989).

I conducted interviews with the teacher in the classroom in which the study was conducted at the beginning of formal data collection in February and upon exiting the research site in May. The general interview guide approach used each time aimed at receiving specific types of information from the teacher, but it did not use standardized questions (see Figure 9). The order of topics covered during the interview evolved out of the

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<td>♦ Children's use of visual and textual aspects of informational picture books</td>
<td>♦ Impact of study on children making meaning with informational picture books</td>
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<td>♦ Source of children's strategies for reading informational picture books</td>
<td>♦ Focal children's use of visuals in informational picture books</td>
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<td>♦ Focal children's use of informational picture books</td>
<td>♦ Focal children's talk about informational picture books</td>
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Figure 9. Topics guiding teacher interviews.
preceding interaction (Denzin, 1989; Patton, 1990). Mini-tour questions helped to start the conversations (Spradley, 1979). I audiotaped both interviews and transcribed each one using a top to bottom, left to right, single column format. This selection of form was based on the assumption that contingency and relevancy would exist in these adult conversations (Ochs, 1979).

**Documents, Photographs & Artifacts**

Sources of data such as documents, photographs, and artifacts provide information which is contextually grounded. Throughout the study I collected "book jobs," trade book activity sheets; photographs of the context and focal children's responses to informational books read with the researcher; and response artifacts produced by the focal children following some one-on-one sessions. Although such data sources are not reactive to the investigation, they are interactive. Each requires the interpretation of the researcher (Lincoln & Guba, 1985).

**Data Analysis**

Data analysis involved an inductive process that acknowledged "the multiple realities to be found" in the data and the interaction of "mutually shaping influences" (Lincoln & Guba, 1985, p. 40). Bogdan and Biklen (1992) describe this process as a funnel approach to a case study design. The iterative nature of the process permitted a wide-angle view of the data source to be progressively focused for close observation.
The general design of a case study is best represented by a funnel. Good questions that organize qualitative studies are not too specific. The start of the study is the wide end: the researchers scout for possible places and people that might be the subject or the source of data, find the location they think they want to study, and then cast a wide net trying to judge the feasibility of the site or data source for their purposes. They look for clues on how they might proceed and what might be feasible to do. They begin to collect data, reviewing and exploring them, and making decisions about where to go with the study. They decide how to distribute their time, who to interview, and what to explore in depth. They may throw aside old ideas and plans and develop new ones. They continually modify the design and choose procedures as they learn more about the topic of study. In time, they make specific decisions on what aspect of the setting, subject, or data source they will study. Their work develops a focus. The data collection and research activities narrow to sites, subjects, materials, topics, and themes. From broad exploratory beginnings they move to more directed data collection and analysis. (p. 62)

Hohenbrink (1993) combines the diagram of the inductive process designed by Lincoln & Guba (1985) with the funnel metaphor. I have adapted this visual representation for the case study design of this research (see Figure 10).

**Iterative Analysis**

The iterative analysis of data shown in Figure 10 resulted in a gradual focusing of the study. This process, as related to the purposive sample, was presented earlier in this chapter. Ongoing data analysis also influenced the research questions that guided my field work. During the “orientation and overview” phase of my research the following questions directed my observations:

1. How do children use illustrative and textual material in their transactions with informational picture books in their classroom
Figure 10. Funnel of induction for data collection and analysis.
as demonstrated
-- through talk?
-- through non-verbal expression?

2. How do illustrative and textual characteristics of informational picture books influence children's transactions?

3. How do social interactions influence children's use of illustrative and textual material as they transact with informational picture books, specifically
-- interactions with peers?
-- interactions with adults?

However, the observed importance that the children placed upon the illustrations led me gradually to redefine the focus of my study. The recursive analysis of data finally led me to the following research questions:

1. How do children use aspects of informational picture books to make meaning, specifically
-- visuals?
-- text?

2. What visual and textual characteristics of informational picture books influence the meaning made by children?

3. What stances do children display toward informational picture books?

4. How do informational picture books afford children the opportunity to make meaning?
Final Analysis

Final data analysis occurred in two stages. I constructed individual case portraits for the three focal children included in the final analysis. I then conducted cross-case analysis leading to the building of theory. Interpretation and induction facilitated this process (Patton, 1990).

Case Studies

I analyzed the data from the individual cases inductively. The analytic process began with the observations made in the field. Over time patterns within each case became apparent. I attempted to understand the relationships among the emerging patterns without imposing a priori assumptions about the important dimensions. Contextually grounded constructions of the individual cases developed out of my experiences in the field (Patton, 1990).

Analysis of transcripts derived from observations, technological recordings, and interviews occurred throughout the study. I entered transcripts and field notes into the FileMaker Pro database manager for a Macintosh computer. This program enabled me to identify pieces of data by date and context. I looked for categories to emerge from the data and assigned tentative codes to them. The data could then be sorted by categories, context, date, type of field notes (i.e., FN, MN, TN, PN) or any other organizational structure created.

I used the constant comparative method of analysis to organize data by domains (Glaser & Strauss, 1967; Lincoln & Guba, 1985). Recurring regularities identified in the data led to the creation of tentative categories.
The comparison of a unit of information coded for a specific category with previously coded units in that category and others was ongoing. Descriptions of the category properties that were developed as coding proceeded permitted the comparison of a unit of information to the category properties. New categories and subcategories emerged as existing ones took on new definitions through this process. A cyclical process of categorization and redefinition led to a stable coding system in which all units were accounted for eventually.

Each case study focused on the child's transactions with informational picture books. The individual case described a child's reception and response to these books in a holistic and detailed way. Data from observations, technological recordings, interviews, and documents created a picture of each child's transactions.

Cross-case Analysis

I continued to use the constant comparative method to consider data across the three cases. The comparison of categories revealed similarities and differences in the children's transactions with informational picture books. A synthesis of the three case portraits contributed to my understanding of these children's transactions and to the development of theory (Patton, 1990).
Establishing Credibility

Researchers cannot deny their own history nor can they escape the influence of a priori assumptions which they carry from it into their research. As the primary instrument for data collection and analysis, the researcher's constructions emerge out of observations through a historically-shaded lens. Through social and linguistic interaction an investigator co-constructs a reality with participants in a study. Consequently, the investigator establishes credibility for the research by using widely accepted research strategies. In this study I incorporated five strategies: triangulation, prolonged engagement, persistent observation, member checking, and reflexive journaling.

**Triangulation**

Triangulation involves the use of two or more modes of data collection to form analytic interpretations (Denzin, 1978). In this study classroom observation, technological recordings, teacher interviews, and document review provided a means of establishing the consistency of information. For example, audiovisual recordings of quiet reading sessions and field notes of the same setting provided validation for one another.

**Prolonged Engagement**

Regular engagement as a participant observer in the first grade classroom afforded me the opportunity to build rapport with the focal children and to explore the scope of their transactions with informational
picture books. It maximized my chances of uncovering the multiple influences on each child's transactions. In addition, prolonged engagement facilitated my understanding of the context in which the transactions occurred (Lincoln & Guba, 1985).

**Persistent Observation**

Extensive observation of each focal child's engagement with informational picture books increased the possibility of identifying the most salient and atypical characteristics of the transactions. It added depth to the breadth of information gained through prolonged engagement (Lincoln & Guba, 1985)

**Member Checks**

Member checks afford the researcher the opportunity to establish the intent of a participant's actions. They provide participants with the chance to correct misinterpretations or factual errors and to offer additional information. In addition, they put the participant "on record" as having said particular things and as having agreed with the researcher's interpretation of it (Guba & Lincoln, 1989). As a participant in this study I was able to carry out member checks during recorded one-on-one sessions and during interviews by restating what I heard or by asking a question. The following excerpt exemplifies how I carried out member checks with a first-grade child.

Rick: Why did you like that the best?

Tanisha: ((holding book up to show researcher)) And all these flowers (.) all these flowers on this whole page because they're put together and they are all kinds of different colors.
Rick: You liked the colors and the ( )

Tanisha: // And it makes it very pretty and it has a lot of detail.

Rick: It has a lot of detail. When you say put together you mean because they're up against one another?

Tanisha: ((nods))

Rick: Uhhuh.

**Reflexive Journal**

Reflexive notations provide a means for the researcher to document thoughts about the human instrument, about methodological decisions, and other important personal experiences within the investigation (Lincoln & Guba, 1985). I included this commentary within my field notes. I coded them "MN" and "PN," as described earlier.

**Summary**

An interpretive case study design framed this study of three first graders' transactions with informational picture books. Data collected through classroom observation, technological recording, teacher interviews and document review and analyzed inductively through the constant comparative method contributed to the co-construction of case portraits. The comparison of themes across the three cases revealed similarities and differences. The continued use of the constant comparative method contributed to the building of grounded theory. Triangulation of data
sources, prolonged engagement, persistent observation, member checking and reflexive journaling established the credibility of the study.
CHAPTER IV

AN ANALYSIS OF THREE CHILDREN'S USE OF ILLUSTRATIONS AND TEXT IN INFORMATIONAL BOOKS

The world does not present itself to us directly. In the process of becoming human, we learn to recognize the existence of the objects, persons, and events that we encounter and to determine the strategies by which we may interpret and assign meaning to them.

Sol Worth & Larry Gross in Studying Visual Communication (p. 134)

Chapter III described the means by which I collected and analyzed data. This chapter elaborates on the specific application of the analysis procedure to the data. The chapter then presents individual case reports focusing on three first-grade children's transactions with informational books. The chapter ends with a comparison across cases of the children's use of illustration and text in constructing meaning.

Data Analysis

Recurring regularities in the data became apparent from the beginning of the collection process. Observations during the one-on-one sessions with the researcher and during the quiet reading periods led to the formulation of
tentative categories. During the viewing and reviewing of the videotapes and reading and rereading of the transcriptions of the two types of events, new categories emerged. Transcription of the technological recordings provided a medium that I could code. I used a constant comparative process (Glaser & Strauss, 1967; Lincoln & Guba, 1985) to develop a stable coding system. Each pass through the data helped to define and refine the expanding system of codes. As I analyzed the data, I noted connections to existing theories and research findings.

Throughout the development of tentative and final categories, I discussed my codes with two peers. During these periodic meetings I shared categories, giving examples of each and seeking feedback on the existing system. Peers' requests for clarification of codes and inquiries about my thinking caused me to reconsider aspects of my analysis.

The primary unit of coding evolved out of the structural features of books. Single-page and double-page spreads present illustrative and print material and afford opportunities for reader/viewer response (Gibson, 1979; Lombardo, 1987). Each coding unit contained numerous secondary units. These units consisted of talk sequences between the child and the researcher or between children, of individual speech turns, or of actions by a child.

**Coding Categories**

The three major codes of children's transactions with the illustrations and print in informational books are:
1. Affordance
2. Strategies

Each major category contains subcategories some of which are divided further (see Appendix D for a list of codes).

**Affordance**

The 'Affordance' category accounts for the general opportunities that an informational picture book offers a specific reader during transactions with it. Informational picture books are tools designed by humans. They have affordances built into them. A child perceives the varied opportunities to transact that informational picture books afford a reader/viewer (Gibson, 1979; Lombardo, 1987). The specific affordances that a reader/viewer takes advantage of at any point in time are directly related to the purposes held. This intentional behavior represents a selective attentional focus (James, 1890/1950; Heft, 1989, 1990; Looren de Jong, 1991). It is the young reader/viewer's stance. The degree to which attention is paid to public (i.e., information) or private (i.e., lived experience) aspects during the transaction determines where the reader/viewer's stance falls along an efferent-aesthetic continuum (Rosenblatt, 1978, 1989). The child's stance may involve a focus on facts or it may involve the encountering of a virtual reality through picturing, associating, and projecting (Corcoran, 1992; Langer, 1953).

Affordances in this study represent possibilities that a reader/viewer constructs and are based upon two elements:
the characteristics of an informational picture relative to the characteristics of the reader/viewer, and

the reader/viewer’s intentions in relation to the book.

Six subcategories define the affordances the young readers/viewers in this study perceived in informational picture books.

1. Counting
2. Drawing
3. Playing
4. Socializing
5. Reading
6. Viewing

'Counting' refers to the sequential one-to-one correspondence made between objects (i.e., icons, words, letters) seen and numerals stated. 'Drawing' refers to the young child's perception of the opportunity to draw about what was seen or read. 'Playing' refers to the affordance to play with language, to create stories, to pretend to read imaginary print, and to make a game out of locating icons in illustrations. 'Socializing' encompasses the young child's perception of the opportunity to interact with peers, the teacher, and other adults. 'Reading' refers to the opportunity to make meaning from print. And finally, 'viewing' involves the child's perception of an opportunity to see environmental representations within a book. Each of the final two categories (i.e., 'reading,' and 'viewing') is divided further. 'Experiencing virtual reality' refers to a focus primarily on the child's personal lived experience within the world of a book. 'Seeking information'
refers to a focus on information that can be learned from a book and used in new contexts.

**Strategies**

The 'Strategies' category accounts for the ways in which children respond to or utilize the illustrations and print in informational books as they make meaning. As readers/viewers encounter the illustrative and textual material on the page, they connect it to socioculturally determined, background knowledge. They evoke meaning through connections made to life experiences (Cochran-Smith, 1984). Action taken in relationship to the pictures or words on a page may assist young reader/viewers in making meaning (Hickman, 1979; Holland & Shaw, 1993). Recent research by Cox and Many (Cox, 1991; Cox & Many, 1992; Many, 1991) suggests numerous efferent and aesthetic uses that readers may make of text alone.

Five subcategories represent the strategies that the young children in this study made of illustration and text as they responded to or made meaning of the material encountered.

1. Acting
2. Analyzing
3. Connecting
4. Questioning
5. Speculating

'Acting' refers to the actions that young readers take in relation to the content of a book. Tactile sensing of what is seen and demonstrations or sound productions to accompany what is seen or read exemplify the content...
of this category. 'Analyzing' refers to the determination of the nature and relationship of the parts of illustrative or print features. References to the accuracy and structure of pictures or text and to the connection between print and illustration fall into this category. 'Connecting' refers to the links that readers make to general background experience, to specific life experiences, or to other media or texts. It also includes the alternative constructions that young children make as a result of unfamiliarity with specific sociocultural understandings about the structure of illustrations or texts. 'Questioning' refers to the wondering or inquiry carried out in relation to what is seen or read. And finally, 'speculating' involves the hypotheses made about the material seen or read in a book. At times these hypotheses involve attempts to justify or to confirm the statement.

Book Characteristic

The 'Book Characteristic' category accounts for the structural features of an informational picture book that the children in this study attended to as they made meaning. Reading/viewing involves a transaction between a human being and a cultural object (Rosenblatt, 1986). The object may use orthographic displays, iconographic displays or displays that combine both forms (Doblin, 1980). Research has demonstrated that young children attend to details in pictures (e.g., icons) rather than whole pictures (Amen, 1941; Mackworth & Bruner, 1970) and are inflexible in their ability to switch between parts and wholes (Elkind, Koegler and Go, 1964).

Two subcategories represent the global book features that the children in this study attended to. Each is divided further.
1. Illustrations

Illustrations' refers to iconographic displays that viewers used in making meaning. Picture components (i.e., icons, symbols), picture types (i.e., insets, overlays, diagrams), page structures (i.e., double-page spreads, single-page spreads, one and a half page spreads, and sectioned spreads), and book parts (i.e., cover, endpapers, title page) fall into this category. 'Print' refers to orthographic displays that readers used to make meaning. Types of print (i.e., body, caption, label, title, list, environmental) and parts of a book (i.e., cover, endpapers, title page, copyright page, index, glossary, dedication) are divisions of this category.

Case Reports

The data presented in this chapter is descriptive. Interpretive commentary also is presented. Wolcott (1990) contends that it is the researcher's responsibility to tell the "story" of a case by "inviting the reader to see through [my] eyes what [I] have seen, then offering [my] interpretation (p. 27).

The interpretive commentary that precedes and follows an instance of particular description is necessary to guide the reader to see the analytic type of which the instance is a concrete token. Interpretive commentary thus points the reader to those details that are salient for the author, and to the meaning-interpretations of the author. (Erickson, 1986, p. 151)

In writing the following case reports I have included the depth of detail about young readers'/viewers' transactions with illustrations and text that I
believe a reader needs to understand the evidence upon which I have based my interpretations.

Each of the three case reports consists of two major sections. The first deals with affordances, and the second deals with strategies for making meaning. The major coding categories, 'Affordance' and 'Strategies,' and their respective subcategories contributed to the creation of each of these sections within each case report. The data coded in the 'Book Characteristic' category and its subcategories is embedded within each of the primary sections of each case report.

**Marcelita: A Reader Uses Illustrations To Learn**

When I entered the first grade classroom to begin this study, Marcelita, a Filipino-American from a middle socioeconomic, professional family, was expectantly awaiting the celebration of her seventh birthday in a few days. At the beginning of each school day Marcelita spent most of the half-hour quiet-time reading/viewing self-selected fictional books, and occasionally informational books, from the school library, the classroom library and home. She interacted with others at her table, showing them pictures in her book, telling them about them, and responding to their comments. She also leaned across the table to see what others were reacting to, pointing at, laughing about, or commenting on. Frequently, she would bubble over with information or observations about the pictures that the children were scrutinizing or correct factual inaccuracies in comments that others made about them. If her closest friends, Lanie and Beth, were not at her table, she would also take her books to them to share.
Marcelita had attended kindergarten in "a school where you learned" in contrast to some classmates who she said "went to a play school cause there weren't very many schools like" the one she attended [3-31-92 one-on-one session transcript]. Stimulated by this experience, by educational family trips (e.g., the zoo), and by interactions with her parents, Marcelita was "interested in knowing" about her immediate and more distant environment. When she opened a book to a story, Marcelita immediately focused on "the visuals and then ... would jump down [to the print] ... because she want[ed] to know what the black stuff [said] about that picture" [3-12-92 teacher interview].

Marcelita was a reader, who participated in the most advanced instructional reading group out of five groups in the classroom. Marcelita openly informed me though that she did not like to read. She said that "she first learned to read at home. Her mother made her read stories and use flash cards" [2-27-92 fieldnotes]. Similarly, her teacher had been sending lists of words, drawn from the fictional literature used in the reading group, home for practice in recognition.

Marcelita equated 'reading' with 'reading instruction.' To her reading instruction consisted of drill--practicing word recognition in isolation from text and reading text over and over. Her actions with books during self-directed classroom time was markedly different from her stated feelings about 'reading.' Marcelita frequently picked up books and devoured their contents. As described above, she got excited about what she found in books and what she brought to the experience. The illustrations in books provoked reactions and sometimes led her to purposeful reading of print.
As I observed Marcelita's transactions with informational picture books during quiet reading time and during our one-on-one sessions, I made several discoveries about her reading of these books. First, I found that she approached the books in a purposeful manner. Her goal-directed, situated behavior (Heft; 1989) capitalized on the potential that existed in a book. Marcelita's intentions in relation to a book's visual content resulted in viewing for the lived experience and for the information that could be learned from it (Rosenblatt, 1978). For Marcelita informational picture books also afforded opportunities to count, to play, and to socialize.

Second, I discovered that Marcelita primarily used the icons in illustrations as she made meaning. She connected her background knowledge, her life experiences, and other media to her viewing. She questioned what she was seeing and speculated about the visual content. At times, she also analyzed what she was seeing. In the process of using illustrations in these ways, I found that Marcelita used her body and voice as she constructed her understanding. Gesturing, moving, sensing, demonstrating, and vocalizing were tools that she used in relation to the illustrations as she made meaning.

Although Marcelita depended upon illustrations, she did use labels, captions, titles, and the body of the text to clarify what she was seeing. She used print to seek answers to questions and to confirm speculations. She scrutinized print in a wide range of locations in informational picture books when it met her purpose. She used print on the cover, endpapers, title page, and copyright page and in the index, glossary, and dedication.
The following sections of this case report elaborate on these two areas of findings. They paint a picture of a young child who uses illustration as a primary means of making-meaning and uses print to expand on those meanings. The picture that is created shows a girl who views and reads informational books in an attempt to learn more about the environment, of which she is a part, by experiencing it.

The Affordances of Informational Picture Books

Although Marcelita was a young child who was able to make meaning from many printed symbols, she used illustrations extensively. Marcelita approached informational picture books in an intentional manner. With specific purposes in mind she took advantage of the affordances that she realized during her transactions with the books (Gibson, 1979; Rosenblatt, 1978).

**Viewing.** The potential affordance of informational picture books that Marcelita took advantage of most often was that of viewing. She looked at individual double-page spreads for long periods of time. She scanned various sections of the page, focusing on the icons within the picture. When smaller pictures were inset, these captured her attention also.

During the viewing Marcelita most frequently attended to her lived experience with the illustrations. In this first excerpt from the transcript of her reading of *Animals Born Alive and Well*, the joy that she experienced from what she had seen is apparent.

Marcelita: ((pointing at tarsier icon)) Wa. Ha. ((laughs and covers mouth)).
Rick: What's funny about it?

Marcelita: Has big eyes but small body. ((laughs, lowers head, and covers mouth))

As this excerpt shows, body movement and vocalization of sounds often occurred as part of her experiencing of a virtual reality.

Marcelita's repulsion was just as apparent in these excerpts from her reading of Bears as she turned the page to find skeletal and musculature images of a bear.

Marcelita: Now ((turns page)) can I turn? ((looks at illustration showing musculature of bear)) Oo:. ((puts hands to face and looks between fingers))

Marcelita: I don't ((turns page ahead)) like that page.

Rick: You don't like that page? Why?

Marcelita: ((turns back one page)) Cause it has all bones.

Rick: Ya don't like the bones?

Marcelita: No: ((turns page ahead and shakes head side to side))

Examples of other lived experience appear in the section titled 'Making Meaning with Pictures: Connecting'. Marcelita's speculations about illustrations and text and her intertextual and life connections display other lived experience.

Counting. In addition to viewing, informational books afforded Marcelita other opportunities to engage with the visual displays. Most of the books' illustrations contained numerous icons that could be quantified. At times Marcelita counted to support an opinion about what she had seen.
**D is for Dolphin**

Rick: What do you think about these pictures that you've seen? You've looked at three different pages here.

Marcelita: Well, there's too many dolphins.

Rick: What do you mean there are too many dolphins?

Marcelita: 1, 2, ((turns page)) 3, 4, 5, 6, 7, 8, ((turns page)) 9, 10.

Rick: Ten dolphins on just three pages.

At other times she counted to justify a conclusion that she had drawn or a prediction she had made from the details in the pictures.

**Bears**

Marcelita: ((leans over book and points at black bears in main painting on page)) W'll the back black

Rick: //Tell me about this part.

Marcelita: black bears have more nails than any bear.

Rick: They do?

Marcelita: Yeah. ((chuckles))

Rick: How da ya know?

Marcelita: ((points at nails on largest black bear in main painting)) Cause look 1, 2, 3, 4, 5, 6, 7, 8.

Rick: How do we know that that's more?

Marcelita: Because, I'll ((flips back to first double-page spread)) show you that bear. That one has 1, 2, 3, 4, 5.
Catch the Wind!

Marcelita: No, no he wants ((pointing at dragon kite above two children)) that one.

Rick: How do you know?

Marcelita: I don't know.

Rick: Well, what makes you think so?

Marcelita: Cause it's real big.

Rick: It's real big? Is this one kite? Or is this a bunch of kites?

Marcelita: It's one kite.

Rick: It's one kite. Oh. How do you know it's one kite? I thought before you told me over here that that kite ((turns page back to icon of same kite)) was a bunch of kites.

Marcelita: Well they are. See, ((pointing at discs and tail individually)) 1 kite, 2 kite, 3 kite, 4 kite, 5 kite, 7 kite, 8 kite, 9 kite, 10 kite, 11 kite, 12 kite, 13 kite, 14 kite, 15 kite, 16 kite.

And, at other times, she counted as part of her investigation of what she was seeing.

Giant Pandas

Marcelita: Did you lose all of your teeth?

Rick: When I was a baby or young, not a baby, but when I was a little older.

Marcelita: ((pointing at icon of three panda teeth in inset)) Well look at the teeth. (3) I'm gonna count the teeth. ((leans over page and lowers head close to page)) 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 ((sits up, tips head to side, points at human teeth below panda teeth in inset and counts in high pitched voice)) 18, 19, 20.
Although the denumerable nature of the icons existed in the books, the opportunity to count was not sufficient to create an affordance. Only when Marcelita combined this characteristic of the book with her intent to count did an affordance exist.

**Playing.** The illustrations in the books that Marcelita read/viewed afforded opportunities to play also. In *Giant Pandas* Marcelita had been reading/viewing double-page spreads that contained a main picture with others inset. The pages had a brief body of text in the upper right corner of the spread and numerous lengthy captions near the pictures. After reading/viewing the three previous double-page spreads, Marcelita turned the page, finding a double-page photograph with no print superimposed. Continuing her efforts to make meaning of what she was seeing in the book, Marcelita pretended to read an imaginary caption. As she did, Marcelita used the details that she saw in the picture to create a plausible caption.

Marcelita: Now let's turn. ((turns page to double-page photograph of panda lying on back looking out with cut bamboo around it and in paw)) Wow! No words.

Rick: Wow.

Marcelita: No wait. ((points at lower right corner of right page))

Rick: What about it?

Marcelita: There are little words ((lowers head to lower right corner of right page, cups hands beside eyes and rests them on page as left page falls against head)) right there. ((raises head, pushes left page down, lowers head and then raises it)) It says ((pointing at panda)) pandas ((points at bamboo and back at panda)) the panda ((begins moving finger toward bamboo)) is ((jerks finger over to lower right corner of right page)) eating ((pointing at bamboo and running finger over panda)) lots of grass and bamboo and he is laying on rock ((running finger left
Marcelita used her general understanding of the relationship between illustration and text to create a reading and viewing scenario that reflected real life. Her imaginary reading of a caption represented her attempt to learn about the relationship between captions and pictures. As Vygotsky (1978) describes, Marcelita separated direct perception from her activity. She "act[ed] independently of what [s]he saw" (p. 97). Her actions not only reflected her direct perception, but they represented her assessment of the meaning of the situation. Her imaginary play indicated the sense she was making of constructing meaning with illustrations and captions.

Socializing. The nature of informational picture books combined with Marcelita's intentions in reading/viewing them created an opportunity to socialize. Cazden (1985) argues that reading is an activity embedded in social interactions with peers. Research has shown that the reading of children's books is not a solitary activity in the classroom. Children seek out others to share in their literary encounters (Harvey, 1993; Hickman, 1979; Hepler, 1982). Although Marcelita was involved with me in one-on-one sessions in the classroom, she occasionally found the need to share her discoveries with her best friends.

**Giant Pandas**

Marcelita: ((pointing at panda attacking dog)) Well (. ) well, ((shrugging shoulders, turning palms up with arms bent, and frowning)) is she killing it?

Rick: Whadaya think?

Marcelita: I think she is. ((smiles))
Rick: You think she is?

Marcelita: Cause she's biting it right in the neck ((puts both hands around neck)) as hard as she can.

Rick: Oh. You think that will kill it.

Marcelita: Very much. ((calling to child passing by and extending arm toward her)) Lanie. Lanie. Look. ((pointing at panda attacking wild dog)) It's killed. ((to researcher)) I think that it's biting so hard the eyes are gonna pop out.

Just as Harvey (1993) found "friends helping friends" to learn about literacy, Marcelita's socializing also involved sharing knowledge about literacy with friends who she knew were less able to make meaning from print. On many occasions Marcelita asked her friend Lanie to read with her. At other times she told Lanie that she needed to do it because Lanie had attended a 'play kindergarten' and was behind in her learning.

Time To

Marcelita: ((opens book to title page; tapping each word)) Time To

Lanie: Time To

Marcelita: ((turns page; points at digital time representation)) Do you wanna read that?

Lanie: 7:00 p.m.

Marcelita: ((shakes head side to side)) a.m.

Lanie: a.m.

Marcelita: 7:00 a. (1.5) 7:00 in the morning. Time to wake up. You go ahh ((bending arms at right angles and raising by side; chuckles; turns page))

Lanie: Here ((pointing at page)) I read the time
Marcelita: // Oh boy, that's a (.)
((holding left page up toward camera)) Camera that's a teddy
bear. Look at that. ((smiles))

Lanie: 8:00 a.m.

Marcelita: // a.m.
8:00 in the morning. Time to eat breakfast. ((turning page;
frowning)) I watch cartoons at 8:00. I eat at 7:00.

On the occasions when Marcelita came to the table where I had laid out
informational picture books during quiet reading time, the books combined
with her desire to interact also afforded her an opportunity to socialize. In
Figure 11 Marcelita and Sean were each viewing their own books. Marcelita
was looking at A Puppy Is Born when Beth, one of her closest friends, sat
down and picked up her own book.

The meanings that Marcelita constructed from the potential created by
the illustrator are influenced by the connections that she made in this social
situation. As Hepler and Hickman (1982) state, "the literary transaction, the
one-to-one conversation between author and audience, is frequently
surrounded by other voices" (p. 279). To this, I would add the book illustrator
and audience. As Marcelita's interactions demonstrated, the other people in a
social context influence the dialogue that occurs between an illustrator and a
viewer. They create rich, multiple affordances (Costall & Stiles, 1989; Gibson,
1979). As Smith (1988) points out, the nature of one's literacy is strongly
influenced by the company that one keeps. Hickman (1979, 1981) and Hepler
and Hickman (1982) argue that communities of readers, and I add viewers,
explore meanings together. The community that Marcelita participated in
had an impact on the connections that she made and the meanings that she
explored.
<table>
<thead>
<tr>
<th>Beth</th>
<th>Marcelita</th>
<th>Sean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whatever you're name is (.5)</td>
<td>((turns page in own book; looks at illustration))</td>
<td></td>
</tr>
</tbody>
</table>

Beth (((laughs)))

Beth ((pointing at icon of dog being walked)) Look.

He's taking the dog for a walk. ((looks at Marcelita's book))

Who?

((looking at photograph in Marcelita's book))

((shrugs shoulders)) I don't know. ((scots forward toward table and two classmates)) One of my friends (.5) Jennifer (. ) she has a dog and it is so, so soft.

((closes book and puts spine up to mouth; listens to girls))

((rubbing finger over dog icon)) Like this here. ((smiles))

((shaking head side to side)) No. Real soft. ((turns page))

((runs finger over photograph of puppies being born in Marcelita's book))

And it is so cute. And it likes me so much.

((looks at photograph of puppies being born))

((puts book down on table))

((covers mouth)) Oo:

((turns book back around; looks up at teacher walking by; turns page))

Figure 11. Transcript of Marcelita's social interaction during viewing/reading.

As a cultural object the potential affordances that informational picture books possess are related to the intent of the creator. In the transactions between creator and object and between reader/viewer and object, meaning is made. Each involves a unique transaction to which the other does not have direct access. Thus, as in Marcelita's case, the affordances that a particular
informational book offers are related to the reader's/viewer's purposes. The meaning does not rest in the object, but rather, it resides in the transactions that the reader/viewer has with it. In Marcelita's case the affordance to view, to count, to play, and to socialize collectively helped to frame the meanings that she made.

**Making Meaning with Pictures**

As I observed Marcelita's engagement with informational picture books during our one-on-one sessions and during quiet reading time, I noticed her extensive use of the illustrations. As Looren de Jong (1991) indicates, pictures express the tacit knowledge of their creator. In comparison words are an impoverished form of expression. They lack the ability to capture all that exists in a picture. Pictures "consolidate the gains of perception, and thus pass culturally acquired knowledge on to others. Their referring and representing function is to help others see, and thus is always shared between individuals" (p. 99).

Marcelita took advantage of pictures' ability to transmit cultural knowledge. She satisfied her desire to know about her world by looking closely at selective details in a single-page or double-page spread.

**Bears**

Marcelita: ((turns page)) Look. ((points at picture of skeleton with fish in its mouth)) (2.5) (.h) ((eyes open wider)) Is > that ((pointing at picture of musculature of bear)) what the inside of the bear looks like?
Marcelita: ((pointing at inset in bottom left corner of left page showing stance of a bear, man, and another animal representative of those that walk on toes)) Look at that.

Rick: Wha’ is that showin’ us?

Marcelita: It shows that the bear’s foot is bigger than your foot. The bear’s nails

Rick: //Than a man’s foot?

Marcelita: Yeah (.5) is bigger than that.

Connecting. Marcelita’s construction of knowledge was dependent upon her schemata (Rumelhart, 1980). The background knowledge and experiences that she brought to the reading/viewing of an informational picture book influenced the meanings that she made. Research on young children’s transactions with books has shown the influence that background knowledge and life experience have upon their meaning-making (Cairney, 1990; Cochran-Smith, 1984; Cox & Many, 1992).

As Marcelita listened to me read the information in the glossary that corresponded to the ‘G’ page of the alphabet book D Is for Dolphin, she drew upon her background knowledge in order to understand just how big a dolphin is.

Rick: Gracefulness comes naturally to these 400 pound animals.

Marcelita: ((sits upright in chair)) W: wa wo: They’re 400 pounds?

Rick: They’re 400 pounds.

Marcelita: Pollar (Marcelita’s pronunciation) bear is bigger.

Rick: Yeah? How many pounds is a polar bear?
The source of this knowledge is uncertain. During this same period in the academic year Marcelita's class was studying animals in the cold regions of the world. Her knowledge about the weight of a polar bear could have been a result of this unit of study. It could just as easily have been an outgrowth of independent reading, trips to the zoo, or any number of other experiences also. Marcelita's use of past experience, however, did not always arise out of that general pool of knowledge of which it was difficult to determine the origin.

In the following excerpt from her viewing of *Bears*, the basis of Marcelita's mean-making is apparent. As she turned the page, Marcelita saw a polar bear climbing out of the water onto the ice and snow.

Marcelita: ((turns page ahead)) That's the pollar bear.

Rick: That's a polar bear. The me about what you:: see:

Marcelita: The ((shakes head side to side)) pollar bear, the pollar bear doesn't like da dry.

Rick: He doesn't like what?

Marcelita: The dry. An um you know what? W: I learned ((rubbing nose)) when (we're) talking about pollar bears?

Rick: What?

Marcelita: I learned ((holds hand up forming circle with thumb and index finger of left hand)) that the hair has are: like straws.

Rick: Mhm.

Marcelita: You can drink their hair.

Rick: You can?
Marcelita: ((smiles and chuckles)) (Psych) (2) ((rubbing nose)) (outs)

Rick: How do you do that?

Marcelita: I don't know. ((leaning over table and book)) But um, but they ((holds right hand up and forms circle, touching tips of thumb and index finger)) they are like straws. They have holes outside. Then um then they ((presses thumb and index finger together harder)) shut, they're full of air. So when they get real cold, it's warm air in their straws.

Marcelita remembered the insulating effect of the polar bear's fur that she had studied recently with her class. She applied this knowledge to the image of the polar bear in a cold environment that she saw on the double-page spread in front of her.

The basis of Marcelita's meaning-making is equally apparent in the following excerpt from the same book.

Marcelita: Know what? ((pointing to bottom of running bear's foot)) The bears have slippers. See?

Rick: What do ya mean slippers?

Marcelita: Has a pad on its foot and that's a slipper.

Rick: Oh:: I see, the pad. So what (.5) do you

Marcelita: // Know what? My gramma's (. ) cat has ((holding three fingers up)) three slippers.

Rick: It does?

Marcelita: Yeah. ((smiles, then chuckles))

Rick: Wha' da ya mean?

Marcelita: ((holding tips of thumb and index fingers on left hand together to form circle and placing in front of face)) There're three little pads (.h) ((holding circle in front of left eye and looking through)) (2) I mean four.
Rick: Oh, on each (.8) paw?

Marcelita: Yeah.

Rick: Oh:

Marcelita: ((putting finger circle back to eye)) See there's t (.5) there's three little ones um ((moves finger from left to right in front of face)) across en then a ((makes circle in the air with finger)) big one at the bottom.

Marcelita made sense of the image of the bear's foot by comparing it to her knowledge of her grandmother's cat. As she did in the previous excerpt, Marcelita used gestures to make the spatial aspect of what she was thinking about more concrete.

Connections to life experiences in the classroom and at home are not the only sources of meaning-making on which Marcelita drew. She used experiences with media outside of the material she was looking at to assist her in understanding what she presently saw. In the following excerpt from her viewing of Bears Marcelita was looking at the double-page spread of the polar bear coming out of the water onto the ice, that was referred to earlier. She had focused on an inset photograph of a man standing by a drugged polar bear. As we talk about the picture, Marcelita tried to make sense of the location that she referred to alternately as the North Pole, the Arctic, and Antarctica. She drew upon prior experience with another form of media to understand the environment in which the man and the polar bear were located.

Marcelita: You know what?

Rick: What?
Marcelita: Antarctica is the coldest place in the world.

Rick: It is?

Marcelita: ((nods head, mouths 'yeah')) Said on TV (1) when Bugs Bunny was telling us about things. He told me that it was the coldest. There are lot of waves and there are ice in the middle.

This intertextual connection to a television program helped Marcelita to understand the situation in which the human and animal icons were located and to attach significance to their relationship with the environment.

Marcelita also made connections between illustrations that she saw within an informational book. In the following excerpt from her viewing of *D Is for Dolphin* Marcelita was grappling with the concepts of birthing and nursing in dolphins. She was turning pages looking for something.

Marcelita: I'm looking for when the mommy is feeding.

Rick: Oh, I thought you were looking for something you had heard there. That feeding is called nursing so what letter would we look for?

Marcelita: N. Oh look. ((pointing at baby partially exposed from bottom of mother)) Where's the baby going?

Rick: Oh yeah. It's coming tail first isn't it.

Marcelita: It's ((opening eyes wide)) coming borned! Wow. ((thrusts chin down on page)) That's the mother's butt? ((looks at researcher))

Rick: Well I don't know how you would say what the butt is because they don't have the same parts that people do.

Marcelita: But ((raises palm upward)) how come the baby's coming out? I thought the baby comes ((moving finger from mouth outward)) out of the mouth. ((looks at researcher))

Rick: No, obviously not if this is true. Do you think this is true?
Marcelita: Yeah. ((turns page)) Let's go to N. ((in high pitch)) See. ((pointing at nursing site on mother)) It's drinking out of the nipple. No ((pointing at site)) that's where the baby was born. ((looks at researcher))

Rick: Is that the exact same place?

Marcelita: Yeah. ((turning back one page and pointing at site)) See. ((turning ahead one page and pointing at site)) See. What that?

Rick: I don't know.

Marcelita: ((pointing at site)) She squeezed it shut.

Rick: Different than people, isn't it?

Marcelita: ((turns to glossary)) Yeah. ((smiles)) Very different.

Marcelita began reading the alphabet book, *D Is for Dolphin*, from front to back. By the time she reached the 'G' page she had become dissatisfied with the depth of information she was receiving from the illustrations and the print.

Marcelita: ((flips to back of book)) Oh. ((turns page from back)) I want to see if there's anything that they teach you about this book besides the alphabet.

As she turned the pages from the back of the book toward the front, she discovered the glossary. It provided a brief informative statement about the key word and focus of the illustration on each lettered double-page spread in the body of the book. From this point on, the reading/viewing changed from a linear process moving from front to back to one that involved a lot of flipping back and forth. The page turning occurred between the body and the glossary, and it also occurred among the pages of the body. As the previous excerpt demonstrates, Marcelita's construction of meaning involved the
physical and mental restructuring of images and information. Each new image seen or piece of information read changed the prior knowledge that Marcelita used in making meaning.

The visible flipping of pages and audible comparison of images and information may provide a window to Marcelita's process of understanding. As Rumelhart & Norman (1978) point out, schemata are always changing. Ongoing life experiences result in the elaboration and refinement, or even the restructuring, of existing schemata. The creation of new concepts can make an image or piece of information, that was dismissed when first seen or read, important to the reader/viewer. As a result, a return to the picture or print in what appears to be an 'out-of-order' manner may in fact be 'in-order' with the thinking in which a reader or viewer is involved.

Questioning. Just as Marcelita raised questions about the birthing and nursing images that she saw in D Is for Dolphin, she raised questions while exploring other informational books. Five types of questions arose in her reading/viewing. Marcelita sought answers that involved:

1. identification
2. locations
3. relationships
4. reasons
5. meanings.

As she had me read the main text in Animals Born Alive and Well, Marcelita scanned the icons of two types of animals, one adult and one baby on each side of the book's gutter.

Rick: ((turns page)) MARSUPIALS are different but they are MAMMALS, too.
Marcelita: That's a kangaroo.

Rick: *When they are very, very small into their mother's pouch they crawl and grow just like this KANGAROO*

Marcelita: *(pointing at koala icon)* What *(is that)*?

Rick: *KOALAS are MARSUPIALS, too.*

Marcelita: *(pointing koala icons)* I like koala bears. *There's koala at the zoo.*

The words of the text provided the answer to her question. Not all questions involving identification were as easily answered.

In the next excerpt from Marcelita's reading/viewing of *Giant Panda* Marcelita tried to identify the area of mixed black and white fur between the rear legs of a panda sitting upright and facing outward.

Marcelita: Oh *(pointing at genital region with blending of black and white fur)* lookee. What's that? What's that? *(rubbing finger on area and speaking in squeaky voice)* What's that? *(laughs)*

Rick: I don't know. What is it?

Marcelita: *(smiling and in squeaky voice)* I don't know. What is it? What is it?

Rick: It must be the white fur mixed with the black.

Marcelita: *(laughing and pointing at genital region)* Look at that thing sticking out. *(giggling)* He-he. Read what it says. *(bouncing in chair, tilting head from side to side and speaking in sing-song voice)* I wanna know; I wanna know; I wanna know.

Rick: Where do I read?

Marcelita: *(pointing at caption beside picture)* Right there.
Directing me to read the icon caption, the icon label, and then a nearby caption for another icon without finding an answer, Marcelita temporarily abandoned her search. She proceeded to read/view the remaining two double-page spreads and the index. As we talked about the book after she had finished, Marcelita again opened to the icon. She told me that she liked it and asked me if the print stated what the black and white area was. Although the print did not satisfy her desire to identify an anatomical part of the panda, Marcelita's question did not die. About a week later, when she looked at the book again during quiet reading time, Marcelita asked me to help her find the answer to her question. The combination of questioning and of, then, reading captions and labels was a strategy that Marcelita used to make meaning. Lack of success did not deter her from continuing to use the same approach.

Marcelita raised other types of questions also. In the next excerpt from her reading/viewing of Giant Panda Marcelita scanned the double-page spread in search of the panda. Her inability to locate it resulted in speculation about what she was seeing and, finally, in the reading of a caption that disconfirmed the speculation.

Marcelita: ((bouncing backward in seat, pushing it away from table)) Wo::ho-ho. Where's the panda? ((standing and bending over picture with face almost touching; then standing upright)) I don't ((sitting in chair and pulling it toward table)) see the panda.

Rick: I don't know. What is this we're looking at?

Marcelita: I don't know. ((pointing at red pandas in double-page picture)) We're looking at cougars.

Rick: Those are cougars? How do you know?
Marcelita: ((shrugs shoulders)) I da know. ((pointing at caption and reading)) Um no they are red pandas.

Rick: They're red pandas?

Marcelita: Yeah. ((pointing at words in caption)) See. ((in high pitch)) Red pandas. ((smiling)) Ha-ha.

At times Marcelita questioned the relationships between animals and people that were suggested by or depicted in some of the illustrations. She wondered about the relationship as it applied to herself and those near her. For example, as she was viewing Bears she encountered an inset picture of a young sun bear with its front paws wrapped around a man's leg. This scene caused Marcelita to wonder.

Marcelita: ((kneeling on chair, leaning on hands, looking at inset photograph of man with bear on right page)) Hug! That bear's ((pointing at photograph)) actually ( ) hugging him. ((chuckles, makes circular motion with head))

Rick: Hm.

Marcelita: Can a bear do dat to me or will it eat me?

Rick: I don't know.

Marcelita: I wish I (1) maybe that's his pet. I wish I could do that. I wish a bear would hug me. I want a bear to hug me.

Rick: You do?

Marcelita: Did a bear hug you?

Rick: I've never had a bear hug me.

Marcelita: Can a bear hug me?

Rick: I don't know. I'd be afraid that they would hurt me.
Marcelita: It wouldn't hurt me ((pointing at bear in photograph)) cause he's hugging that man.

Rick: //Cause they're pretty strong, I think.

Marcelita also sought reasons for what she saw in order to make meaning from a picture. When something did not make sense to her, asking this type of question was a strategy she employed. In the next two excerpts Marcelita was puzzled by what she saw and sought reasons for what she could not understand. In the first she was looking at an inset photograph of a man kneeling by a panda wearing a metal collar.

Marcelita: N(.)n(.5) ((pointing at photograph of scientist and panda with radio collar)) well now ((lowering head toward page)) it's putting ((raising head)) Why ((looking at researcher)) Why's it doing that? To choke it ((puts hand around front of neck)) and make it die?

In the second she was viewing two dolphins hovering at the ocean's surface and was listening to the text that she had me read.

Rick: Ocean dolphins sleep by floating tail down at the top of the ocean. They sleep with their eyes open and only for a few minutes at a time.

Marcelita: Why?

In each case the question that she asked represented her attempt to uncover reasons for what the illustrations and text seemed to present. Questions seeking reasons were Marcelita's strategy for making meaning with images and print that seemed unexplainable.

Finally, Marcelita raised questions about the meaning of what she had seen. In the following excerpt from her viewing of Giant Pandas Marcelita examined a double-page illustration of a mother panda attacking a wild dog in order to protect her cub.
Unable to determine the exact meaning of what she was seeing, Marcelita raised a question to help construct her understanding. She used the social context to get the information from me that she needed.

Most questions that involved the determination of meaning though were related to the print in informational books. For example, in *D Is for Dolphins* Marcelita had me read "R is for ROSTRUM" and "V is for VERTICAL" from the main text. She asked about the meaning of the words, rostrum and vertical. My explanation along with the icons in the double-page illustrations provided her with the information that she needed to make meaning. Similarly, after asking me to read the copyright information, Marcelita inquired about its meaning. Once again, her ability to get an answer in this social situation enabled her to understand.

**Speculating.** Cox and Many (1992) found that children make predictions and speculate about possibilities as they transact with media and with print. For Marcelita the process of speculating was an important means by which she attempted to construct meaning with the images that she found in informational books.

In the following excerpt from the transcript of her viewing/reading of *Giant Pandas* Marcelita acknowledged her awareness of the speculative nature of her thinking.

Marcelita: ((pointing at icon of panda without fur)) That's what (.5) that's what a pan (.5) that's what the um skin of the panda looks like. ((pointing at icon of panda with fur lying on its back on left page)) And that's what the
Rick: //It does?

Marcelita: ((running finger over surface of icon)) And that's what the fur is.

Rick: Oh. How did you know that?

Marcelita: ((turns back one page))

Rick: That that's what the skin looked like?

Marcelita: ((shrugs shoulders while looking at photograph of panda lying across an upright rock)) I just made a guess. ((smiles))

Frequently, Marcelita used the printed words to confirm her speculations and in the process sometimes found disconfirming evidence or no evidence at all. Continuing the excerpt above, Marcelita asked me to read the main text on the double-page spread.

Rick: You want me to read this?

Marcelita: ((nods head)) Because I ((pointing at rock under panda)) don't know what that is on the panda.

Rick: What this is on the panda right here?

Marcelita: Yeah. Maybe the panda is old and it's ((looking at researcher)) growing rocks (.5) "on it".

Rick: It's old and it's growing rocks on it?

Marcelita: ((nods head))

Rick: On a panda?

Marcelita: ((raises eyebrows, purses lips, and moves in seat))

Rick: Why would a panda grow rocks on it?
Marcelita: ((shrugs shoulders)) I don't know ((lowers head glancing at picture, raises hand to face, drops hand, and looks up at text)) Read it. ((draws chair closer to side of page with text))

Attempting to locate information that would help her to better understand the picture in front of her, Marcelita listened intently as I read the print.

Rick: Have you heard anything yet that would explain it?

Marcelita: No. ((pointing at back leg hanging off rock)) They also have tails en bears don't have big tails.

Rick: Oh. Is that a tail?

Marcelita: ((in high pitched voice)) Yeah ((thrice moving finger downward over leg)) see it hangs down.

Rick: Well, did you get an explanation about the picture?

Marcelita: ((shaking head side to side)) Uh-uh.

Rick: How could you explain that? You noticed that there are stones here.

Marcelita: ((running finger over panda's coat)) There are stones in its fur.

Marcelita's attempt to confirm or disconfirm her speculation was unsuccessful. In the process though she revealed a possible reason for her interesting speculation. Immediately following the point at which this transcript left off, I asked Marcelita to use her finger to trace around the panda icon shown in a profile position. Starting at the nose, she traced over the head and back, around one rear leg that she had called a tail, and then said smiling "I don't know where it's leg is. I'm getting lost now." Marcelita proceeded to trace around the rocks, around the front leg, and up to the nose.
Marcelita was unable to separate the icons in what she was seeing. She did not perceive the panda's profile position. Consequently, the panda's fur and the rocks became one mass to her and the leg appeared to be a tail.

Goldsmith (1984, 1986, 1987) discusses this difficulty in understanding images as a problem with syntactic unity and syntactic location. A young child may not have learned the culture's 'grammar of pictures' well enough yet to discern the boundaries of images and the spatial relationships among icons. The schemata may lead to alternative constructions, constructions that diverge from those that are culturally defined. In this case, Marcelita may not have distinguished the boundaries of the panda from those of the rock. This difficulty may have been compounded by her developing, but not fully developed, understanding of the pictorial techniques for showing depth. As Amen (1941) and Mackworth and Bruner's work (1970) suggests, Marcelita's difficulty could be related to selective attention that is too focused on details rather than the whole. Children under the age of nine have been found to be inflexible in switching attention between details and wholes (Elkind, Koegler & Go, 1964).

Although Marcelita's attempt to confirm or disconfirm her speculation was not successful in this case, in many others it was. In the following excerpt from Marcelita's reading of the same book, she used the print to inform her 'guess.'

Marcelita: ((pointing at picture of mother panda carrying baby by the neck)) Uh:::

Rick: What's he doing to it?

Marcelita: ((continuing to point at same picture)) He's ((jerking head toward page)) eating it.
Rick: He's eating the cougar.

Marcelita: ((continuing to point at picture)) Well (. .) well the mother bear's eating the baby bear.

Rick: The mother bear is eating the baby panda?

Marcelita: ((smiling and nodding head)) Yeah.

Rick: How come?

Marcelita: I don't know. ((pointing again at picture of mother panda carrying baby by neck and smiling)) See? It's biting him.

Rick: Why would she do that? I wonder.

Marcelita: ((sliding off chair)) Read!

Rick: Read where?

Marcelita: ((pointing at caption under picture)) Right there (. .) so we can know.

———

Rick: The powerful jaws of a mother panda can be very gentle when she holds her baby in them.

Marcelita: ((turning toward researcher, smiling, and shaking head side to side)) *Oh, she's not going to eat it.*

In this sequence the disconfirmation of her speculation informed Marcelita's construction of meaning by eliminating a possibility and defining the images shown. Therefore, the disconfirmation helped Marcelita to shape meaning in the same way that any of her confirmed speculations did.

Analyzing. A much less frequent, but nonetheless important, aspect of Marcelita's reading/viewing of an informational book was her analysis of what she was encountering in images and print. As she read/viewed, she evaluated the blueprint for meaning offered by the illustrations and words.
These evaluative judgments were based on highly personal, experience-based standards of aesthetic response noted by Corcoran (1987, 1992).

In the following excerpt from Marcelita's viewing/reading of *D Is for Dolphin*, Marcelita evaluated the images that she had seen in the book.

Rick: Tell me - you said, as we were reading this book that this was different from the other books that you've read with me. How is it different?

Marcelita: ((turns book over with front cover up)) There are too many dolphins.

Rick: How else was it different from other books that we've read?

Marcelita: Well there's dolphins and there's too much blue.

Marcelita expressed dissatisfaction with the feeling she got from the quantity of dolphin icons included in the book and from the artist's color choice. She indicated some understanding of the illustrator's decision, but reasserted her objection.

Rick: So blue was the main color in here. Why do you think the illustrator chose so much blue?

Marcelita: They picked all blue. See? ((opens book to show pages))

Rick: Why?

Marcelita: Cause dolphins are blue and so are the water ((showing a page)) All blue.

At other points in the reading Marcelita evaluated the content of the words that were not satisfying to her.

Marcelita: ((turns page; pointing at words)) *D is for dolphins DIVING.* ((looking at researcher)) But this doesn't tell you
anything about the story (pointing at dolphin icons) about dolphins.

Marcelita: (turns page) L is for (2) I wanted j

Rick: // LANGUAGE.

Marcelita: LANGUAGE. (turns page) This doesn't tell me anything about this book.

Based upon past experiences with books, Marcelita found this reading/viewing experience unsatisfactory. Her expectations for the concept load and the appearance of the illustrations were not met. These evaluative judgments reflected the type of thinking in which Marcelita engaged as she constructed meaning from the illustrators' and the writers' blueprints for informational books.

**Acting.** Throughout the many ways in which Marcelita went about using illustrations and text to make meaning in order to experience her environment, she used her body and voice to support her thinking. Many of the excerpts provided in this case report demonstrate this point. In the Giant Panda excerpt in the 'Playing' part of the 'Affordance' section, Marcelita put her hands around her neck as she talked about the panda biting the wild dog's neck. In the Bears excerpts in the 'Connecting' part of the 'Making Meaning' section she used her fingers to display the foot pads and straw-like hairs to which she was referring. In the first Giant Pandas excerpt in the 'Speculating' part of the 'Making Meaning' section, Marcelita ran her fingers over the bear's fur in an attempt to feel it.

In the following excerpt from Marcelita's reading/viewing of Catch the Wind!, Marcelita identified the stunt kite flying in the sky and with her voice projected the movement the kite was able to make.
Rick: ((pointing at stunt kite icon)) This is his kite?

Marcelita: Yeah. ((running finger up string to kite)) See wooo:::zoop.

In the same book Marcelita also provided a demonstration as she made meaning with the diagram and title, "How To Bring a Kite Down."

Marcelita: ((pointing at middle section title)) How To Bring a Kite Down. I know how. ((pointing at winder)) Twirl that down and ((pointing at string)) it will go ((making small circles with finger above winder)) down, down, down.

All of these forms of action were an integral part of Marcelita's construction of meaning. These means of constructing meaning were not unique to Marcelita, however. Harvey (1993), Hickman (1979, 1981), Hepler (1982) and Hepler and Hickman (1982) all documented the active use of the body in young children's response to literature.

Summary

Marcelita engaged with informational books for the virtual experience that they had to offer. She used illustrations as her primary tool in constructing meaning with what she saw. Print enabled her to clarify, expand upon, or change the meanings that she created from the pictures. Her interaction with others also helped to shape those meanings.

Informational books afforded her the opportunity to engage in many ways. They permitted her to act as a viewer at the same time that they enabled her to count, to play, and to socialize. The affordances that her goal-directed behavior realized enabled her to make intertextual and life connections and to explore the environment of which she was a part. In the context utilized in this study viewing and reading an informational book was
not a passive, solitary activity for Marcelita. Instead, it was an active social one. It was an activity that allowed her to experience parts of the world that may not have been within her physical grasp but were within the grasp of her mind.

Tanisha: Learning To Be Literate with Print and Illustrations

Tanisha, a seven year old, African-American first-grader, came from a lower-middle socioeconomic family. She participated in the reduced lunch and latch-key programs in the school. She often fended for herself at home and watched out for a younger sister. In the mornings she made breakfast and got her sister and herself to school. Tanisha took pride in her appearance and was upset when she arrived at school in dirty or wrinkled clothes or when she spilled something on herself during the school day.

Tanisha was a perfectionist. Everything had to be in its place and everything had to make sense. When I first began putting informational books out on a table during the quiet reading time, Tanisha was the one child who consistently wanted to make sure that all of the books had been picked up and stored in the crates when the period ended, no matter how long it took her. According to her teacher, "Hers is an exact world. And very often she works methodically slow. Her work is exact. It's very neat and she doesn't exhibit a lot of frustration. If she doesn't get another job done, it's a 'so' which is a powerful thing because she knows she's setting up her own agenda" [3-12-92 teacher interview].

Tanisha participated in the middle instructional reading group in the classroom. She was highly motivated to read. During her conversations with
me she revealed that she had a few books at home and was trying to teach herself by practicing them. When she got stuck, her mother would help her, but since her mother worked a lot, this assistance was not always available. In these situations, Tanisha said that she sounded out the words, looked at the pictures again, and made it make sense. Her teacher indicated that Tanisha was "very much print-oriented. . . .The visuals [were] supplemental to her."

My observations of Tanisha's transactions with informational picture books during quiet reading time and during our one-on-one sessions revealed purposeful behavior in her approach to the literature. Her intentions combined with the books' potentials led to certain affordances (Gibson, 1979; Heft; 1989). For Tanisha informational books primarily offered opportunities to read and to expand her knowledge about literacy. In addition, they afforded opportunities to view a virtual reality, to count, and to draw. My observations also showed me that Tanisha made meaning with the print and used the illustrations to clarify and to expand upon it. She also used the illustrations to extend the meaning beyond the print. In the process she made intertextual and life connections to what she had read and had seen. Gestures and demonstrations also supported her meaning-making.

The Affordances of Informational Picture Books

Tanisha's reading of informational picture books focused on the printed symbols and the illustrations. Her transactions with the illustrations were aesthetic. They permitted her to experience the virtual reality of the book. Most of all, though, the print afforded Tanisha an opportunity to read, contributing to an efferent experience (Rosenblatt, 1978). The informational
books' potentials combined with her strong desire to practice print literacy made reading the primary affordance for her (Gibson, 1979; Heft, 1989).

**Reading.** Tanisha usually chose to read alone. Even when sitting at a table with other children, engaging with a book was a private experience to her, one that she wanted to control. Meek (1988) contends that "reading doesn't happen in a vacuum" (p. 6). It is not a solitary activity. It occurs in a social context. Nonetheless, children learn to read, in part, through what she calls "private lessons" (p. 7). By engaging with print they expose themselves to the structures of informational books, that Pappas (1986, 1987, 1990) has defined, and to a series of implied directions on how to read it. The background needed to grasp these structures and instructions is not directly taught. It emanates from the exposure to a wide range of 'literacy events' that includes more than books. Experiences with television, cereal boxes, road signs and more are important. Meek suggests that "understanding authorship, audience, illustration and iconic interpretation are part of the ontogenesis of 'literary competences' " (p.10). For Tanisha private engagement with informational picture books was a way of building competency.

Tanisha read print aloud for her own ears. On rare occasions, when others wanted to see the pictures that went with the words that they had heard her read, she would pull away from them. During these reading times she permitted no one to invade her private space. She wanted to capitalize privately on the affordance to read even though she was in a social situation. Tanisha demonstrated an understanding of the social interaction that would permit her to maintain control of her reading. She positioned her peers as
outsiders to that experience (Davies & Harre, 1990) and their reception of her action created a homeostatic situation (see Figure 6 for an embedded example).

Our one-on-one sessions also showed evidence of positioning. Although Tanisha was pleased to have the opportunity to read with an adult who could help her figure out the print, she controlled when and to what degree she would talk about her engagement. At times she would shake her head from side to side to indicate that she did not want to talk about the book or would say "Nothing." At other times, she would immediately converse about the pages at hand. The following excerpts from a transcript show these two types of behavior.

**Spring**

Tanisha: *Spring is time for baby owls to grow bigger each day. They wait for mother owl to return*

Rick: *return*

Tanisha: *return with a fat mouse.* ((glances at photograph of owls on adjoining page, glances back at text, and looks at photograph again))

Rick: *What daya think about this?*

Tanisha: *((shakes head side to side; turns page)) Nothin.*

Tanisha: *While woodpeckers (((looks at caption under photograph on next page)) peekers (((looks back at text)))

Rick: *woodpeckers*

Tanisha: *((points at words)) woodpeckers are - woodpeckers and wrens choose snung*
Rick: *snug*

Tanisha: *snug nesting* - *nesting holes.* ((looks at photographs of woodpecker and wren with holes)) How did they make them?

Rick: How did they make what?

Tanisha: They - they peeked ((points a photograph of wren's hole)) their beak in - I think they peeked their beak into - into the um - the thing.

Rick: Into the tree?

Tanisha: ((turns page)) And then they keep on ((separated two pages stuck together)) doing it again and again.

On the few occasions when Tanisha asked me to read some of the main text, she took pleasure in reading the label that went with each icon in the illustration. For example, in *The Reason for a Flower* the 16 labels by products of flowers represented an exciting reading challenge to Tanisha who finished by saying, "Did I do them all?" Positioning herself as a capable and knowledgeable person was very important to Tanisha.

Occasionally, in an attempt to learn more about literacy, Tanisha would position me as the authority who could teach her what she wanted to know. Usually her attempts to expand her understanding had a narrow focus. They often involved the graphophonic aspect of print as the following excerpt from a transcript of her reading/viewing of *Animals Born Alive and Well* demonstrates.

Tanisha: ((pointing at sea otter icon)) This looks like a um ((squints, shakes head slowly, rubs finger over brow and up over forehead)) seal.

Rick: ((pointing at icon on left page)) No, that's the seal there. ((pointing at sea otter icon label)) This is the Sea Otter.
Tanisha: Sea Otter. ((reading label)) Dolphin.

Rick: Uhhuh.

Tanisha: Where's the 'f'?

Rick: Well the ((pointing at letters)) 'ph' - when those two letters come together in the middle of a word often times they make a /f/ sound.

On some occasions Tanisha would inquire about words as she did in the excerpt from the transcript of her reading/viewing of Pets during quiet reading time (see Figure 12). Although at first any request for assistance may seem to contradict her need to appear capable, Tanisha and I jointly structured the way in which they happened. She maintained control by positioning me temporarily as the authority and I willingly accepted. Once she achieved her purpose, we interactionally renegotiated the situation as her focus changed. In this way my assistance addressed intellectual functions that fell within Tanisha's zone of proximal development (Vygotsky, 1978). As Davies & Harre (1990) indicate, our conversations represented our socially determined action. We subtly communicated our needs and expectations for the experience to one another and constructed a series of homeostatic situations. Thus, the affordance of reading was socially determined and Tanisha was able to maintain her feeling of capability.

Tanisha's focus on learning words and sounds to improve her reading ability combined with her interest in just practicing her reading are indicative of her efferent stance toward print (Rosenblatt, 1978). She viewed print as a source primarily for learning about literacy, a source that on occasions provided her with interesting tidbits of information. As such, print experiences were satisfying to her. They afforded her the opportunity to
<table>
<thead>
<tr>
<th>Sean</th>
<th>Tanisha</th>
<th>Rick</th>
</tr>
</thead>
<tbody>
<tr>
<td>((looking at own book))</td>
<td>((turns to goldfish page)) <em>Goldfish</em> ((looking at label by inset picture)) (3) ((sounding out word)) gl (3) gi:: (2) giles (1) gd ((looking at researcher; frowning)) gile?</td>
<td>((seated at end of table taking fieldnotes))</td>
</tr>
<tr>
<td>((looks at Tanisha's book))</td>
<td>giles</td>
<td>((looks at Tanisha; raises eyebrows))</td>
</tr>
<tr>
<td>((emphatically)) dile ((looks at researcher and back at book))</td>
<td>Gile? Where?</td>
<td></td>
</tr>
<tr>
<td>((frowns at Sean; looks at researcher; moves finger under label; emphatically)) giles</td>
<td>It starts with a 'g'.</td>
<td></td>
</tr>
<tr>
<td>((looks back at own book)) gills</td>
<td></td>
<td>gills</td>
</tr>
<tr>
<td>((looks at book; points at label)) gills ((points at other insets &amp; labels)) fin (1) tail and ((runs thumb under label)) s: ((glances at researcher, looks at label, turns page toward researcher, runs thumb under label, stares at researcher))</td>
<td>What is that picture of?</td>
<td></td>
</tr>
<tr>
<td>((looks at illustration)) (4) I don't know. ((looks at researcher))</td>
<td></td>
<td>((pointing toward illustration)) Show me on the fish itself where you see the same thing.</td>
</tr>
<tr>
<td>((touches fins in illustration)) ((looks at book; frowns))</td>
<td>Right there ((points at label))</td>
<td></td>
</tr>
<tr>
<td>((points at label))</td>
<td>((pushes Sean's hand away))</td>
<td></td>
</tr>
</tbody>
</table>
Figure 12 (continued)

<table>
<thead>
<tr>
<th>fins</th>
<th>No: fins would have to start with what letter?</th>
</tr>
</thead>
<tbody>
<tr>
<td>'f'?</td>
<td>(((points at another label; reads emphatically)) <em>fin</em> (((looks at researcher))) That's a fin. Right. (((pointing at inset picture)) And this picture is showing ((points at scales on main illustration of goldfish)) you these markings here. Dya know what they're called?</td>
</tr>
<tr>
<td>No. (((looks at own book)))</td>
<td>No. scales</td>
</tr>
<tr>
<td>Oh. Scales (((turns page in book)))</td>
<td>Scales (((turns page)))</td>
</tr>
</tbody>
</table>

**Figure 12.** Transcript of Tanisha seeking help with print.

accomplish an important self-determined goal - reading.

**Viewing.** In addition to reading, informational books afforded Tanisha opportunities to engage with visual displays. At times, she looked at the illustrations before she focused on the print. Most of the time, however, the opposite was true. She usually read the text and used the illustrations to clarify or to expand on it. The section titled 'Making Meaning with Print and Illustrations: Linking Sign Systems' explores Tanisha's use of pictures with words.

Viewing afforded Tanisha the opportunity to savor the lived experience with the book. She often described the images in front of her as "cute." The following excerpt from the transcript of her reading/viewing of *Animals Born Alive and Well* exemplifies this response. As she turned to
the title page, Tanisha saw images of mice and repeated my reading of the label.

Tanisha: House mouse. ((pointing at baby mice icons)) These are cute. ((lifts page corner, peeks at next page and drops it))

Rick: What makes them cute? Why do you think they're cute?

Tanisha: Cause they're very small and they don't look like the mother.

Tanisha also responded in the same way to the image of the Pekinese, although she did not realize it was a dog: "The cat is cute." Images of small, defenseless, cuddly animals brought forth aesthetic responses from Tanisha.

Other images also elicited aesthetic responses. In this excerpt from the transcript of Eyes Tanisha was reading the text that accompanied an octopus icon. She made it clear that a particular aspect of the icon was unappealing.

Tanisha: An

Rick: octopus's

Tanisha: octopus's eyes are toing and frow

Rick: froing

Tanisha: froing, Trying to see where it's arms are all going! Ugly.

Rick: What's ugly about it?

Tanisha: ((pointing at cups on tentacles)) Cause its gots all these.

Tanisha made it equally clear through body movement that she was distressed by the juxtaposition of icons of a bicycle and a squirrel in The Reason for a Flower. After reading the print on the page, I asked Tanisha
what she found interesting. Noticing her body language, I perceived her displeasure and pursued an explanation for it.

Tanisha: (((pushing body into chair back))) Nothing.

Rick: Nothing. What don't you like about this page?

Tanisha: That it could have ran over (((points at squirrel icon))) the squirrel.

Rick: What could have run over the squirrel?

Tanisha: The bike.

Rick: So it looks like he's going to hit him?

Tanisha: (((nods and turns page)))

In this double-page illustration the squirrel's furry tail blocked from view part of the bicycle's front wheel. This cultural convention for showing depth indicated that the squirrel was closer to the viewer than the bicycle was. It clearly placed the squirrel out of harm from the vehicle. Tanisha, however, did not perceive the images in this way. As a relatively inexperienced viewer in our pictorially oriented culture, she constructed an alternative interpretation for what she saw. She missed what Goldsmith (1987) refers to as the syntactic aspect of location. Apperception did not provide her with the culturally appropriate interpretation of the spatial relationship of the icons. Salomon (1979/1987) cites Neisser's proposition that

perception is guided by internal schemata of past experiences and knowledge that determine what stimuli will be picked up from a perceptual field. Anticipatory schemata, rather than the information entailed in a stimulus, determine how a presentation is to be perceived. (p. 46)
In this case, Tanisha's existing schemata provided for a naive, culturally based interpretation.

As Bruner (1990) indicates, meaning "depends upon the prior existence of a shared symbol system" (p. 69). Since Tanisha did not yet share all of the symbols that make up the language of illustration, she did not share the meaning that many in her culture would make from the icons. But, as Rosenblatt (1986) indicates, the experienced evocation from a cultural artifact may have been "projected onto [it] because of attitudes, assumptions, ignorances, brought to the transaction" (p. 125). Thus, the schema that Tanisha brought to this viewing was central to her construction of meaning and to her experiencing of a virtual reality.

In the following excerpts from the transcript of The Reason for a Flower, Tanisha experienced the virtual reality of the flowers that she saw and remembered an earlier lived experience with some of them in this book.

Rick: What made you want to pick this book up and look at it?

Tanisha: Cause it has pretty flowers.

Rick: It has pretty flowers. What do you like about what you see on the cover here? What makes them pretty?

Tanisha: Pretty birds flying on em and bees flying on the flowers and I've never seen a purple and white flower.

Rick: You've never seen a purple and white flower? Is there one here? Where?

Tanisha: ((begins to open book to page with purple and white flower remembered from earlier viewing))

Rick: What do you think about this [page]?
Tanisha: That it has pretty butterflies and birds and bees and pretty flowers and (points at bottom right corner of right page) (buds).

Rick: What makes the things so pretty? The flowers and the butterflies.

Tanisha: Cause it has different colors on it.

Rick: You like the different colors.

Rick: What do you think of this page?

Tanisha: I like it.

Rick: You like it? What do you like about it?

Tanisha: (pointing at barrel cacti) These two because these white things kind of (.5) these white sticky things kind of look like stars.

Rick: Oh.

Tanisha: They look like they're shiny.

Rick: Uhhuh.

Tanisha: And also (pointing at tall cactus on far right of right page) this one.

Rick: They do kind of look like stars, don't they. Do you think that's what they really are?

Tanisha: (shakes head side to side)

Rick: What could they be then?

Tanisha: It's (holding one finger straight up) those sticky, pointy things and I got (pushes finger into thumb) stuck by one too.

Rick: But you like the way the artist made them look on here?
Tanisha: ((nods))

Rick: Now that you've read the whole book what did you like best about it?

Tanisha: ((turning to page in book)) The purple and white flowers.

Rick: Why did you like that the best?

Tanisha: ((holding book up to show researcher)) And all these flowers (.) all these flowers on this whole page because they're put together and they are all kinds of different colors.

Rick: You liked the colors and the ( ).

Tanisha: // And it makes it very pretty and it has a lot of detail.

Rick: It has a lot of detail. When you say put together, you mean because they're up against one another?

Tanisha: ((nods))

The artist's picture composition and use of color drew Tanisha into the virtual reality that they offered. Her transactions with the illustrations made the viewing experiences aesthetic ones. As Rosenblatt (1986) states an aesthetic experience requires admittance "into the center of selective attention . . . the referents of the particular [icons], but the shutters must be opened wide to admit also their experiential aura. There will be no dearth of ideas and logical relationships, yet they will be inextricably interfused with their lived-through, qualitative colorings and textures" (p. 124).

In this final excerpt from her viewing of Spring Tanisha places herself in the world that the flowers exist in as she looks at and talks about a page as her favorite part of the book.
Tanisha: ((opens book from front and turns to page of lavender wildflowers))

Rick: Why was that your favorite, with the weasel and the wildflowers on the mountainside?

Tanisha: ((looks at photograph of lavender wildflowers)) Cause there was a lot of pretty flowers. And you can pick em and ((waves right page up and down)) give em to somebody

Rick: Uhhh

Tanisha: //that you love.

Rick: Uhhuh, I see. So you like to do that?

Tanisha: ((nods head))

The power of the images moved Tanisha. Her words, "you can pick em and give em to somebody that you love," revealed the broad social context in which her lived experience occurred. Her transactions with illustrations in informational books were embedded in an array of social experiences that framed her view of the reality offered on the page.

Examples of other lived experience appear in the section titled 'Making Meaning with Print and Illustrations: Connecting.' Tanisha's intertextual and life connections display other aesthetic transactions.

**Counting.** The illustrations in informational books also afforded Tanisha the opportunity to count. Many of the books that she viewed contained icons that she could quantify. She used numeracy for three purposes:

1. to justify predictions.
2. to identify icons.
3. to realize size.
In the following excerpt from her viewing of *Animals Born Alive and Well*, Tanisha made a prediction about the book's content based on her impressions from the cover illustration. In the process she quantified what she saw to support her prediction.

Rick: Why do you think it's going to be about animals in the woods?

Tanisha: ((looking at cover illustration)) Cause deers are in the woods.

Rick: Mhm. You see ((pointing at cover)) a deer here?

Tanisha: Yes. ((pointing at deer icon on cover)) Two.
((pointing at and counting stoats on cover)) Four. And four of these.

Tanisha also counted to identify what she was referring to. In the next excerpt from *Animals Born Alive and Well* Tanisha was looking at a double-page spread showing adults and children from many parts of the world. She responded to my inquiry about any similarities among the icons by counting for identification purposes.

Rick: Is there anything that's the same about these people?

Tanisha: The kinds of people.

Rick: What do you mean?

Tanisha: ((pointing at adult human icons on left page)) These three. And ((pokes fingers at other icons)) two.

Rick: So those five are the same? What makes these five the same?

Tanisha: ((pointing at icons at top of left page)) 1, 2, 3, 4, 5, 6.

Rick: What makes those the same?
Tanisha: By the way they look. ((turns page))

In the next excerpt from *Eyes* Tanisha was looking at a spider icon. Once again, she counted to identify, in this case, the spider's eyes that she thought were on the fly icon on the adjoining page.

Tanisha: That spider is looking for a fly.

Rick: How is it looking?

Tanisha: With eight eyes.

Rick: Eight eyes? Who has eight eyes?

Tanisha: 1, 2, 3, 4, 5, 6, 7, 8

Rick: Woo. 8 eyes. Anything else you notice?

Tanisha: I think it has 8 eyes because (1) I think it has 8 eyes so it could look with 8 eyes 8 ways.

In addition to counting for the purposes of justifying and identifying, Tanisha counted to measure. In this excerpt from her reading/viewing of *The Reason for a Flower* Tanisha read about a very large flower and counted to realize its size.

Tanisha: *The largest FLOWER ever found grows in the jungle near the ground. A PA*

Rick: *PARASITE*

Tanisha: *PARASITE clinging tight (4) and (1) tight to roots of trees that feed it it's three eat (.) feet (.) three feet wide ((moving finger from top to bottom of flower in three jumps in straight line with 1 on top edge)) 1, 2, 3. ((looks at researcher)) three feet wide or maybe four,

Tanisha's intention to quantify what she was seeing and reading about along with the denumerable nature of the illustrations created an affordance
to count. As Heft (1989) stated, affordances are "the functional significances of environmental objects taken relative to what an individual can do with respect to them" (p. 13). Tanisha's goal-directed behavior in relation to the qualities of the book, therefore, constructed the affordance - counting.

**Drawing.** The nature of informational picture books combined with Tanisha's intentions in viewing them created an opportunity to draw. In the following excerpt from our conversation about her engagement with *Eyes*, Tanisha revealed an affordance that her transaction with the book realized. She responded to my inquiry about what she liked best in the book.

Tanisha: ((shrugs shoulders)) Um (4) becau - um ((opens book to dolphin page)) because this one.

Rick: You liked the one [page] with the dolphin the best? Why did you change your mind?

Tanisha: Cause I want something with water in it and I want to make dolphins because it's my best animal.

Rick: You can make dolphins? Uhhuh. So you like the dolphin because you can draw it?

Tanisha: ((lowers and raises eyelids slowly; dips and raises chin slightly))

Rick: Do you like to draw water too?

Tanisha: ((nods))

Although Tanisha did not draw at that time, she clearly constructed an affordance to draw in her transaction with the potential in the book. The content of the picture and its style of presentation captured Tanisha's attention. It struck a chord with her because it was her "best animal."

According to Rosenblatt (1986) her stance permitted "attention to the matrix
of personal overtones, kinaesthetic states, [and] intellectual or emotional associations" (p. 124) and resulted in the actualization of an affordance (Heft, 1989).

Tanisha's transactions with the potentials within informational books resulted in specific affordances to read, to view, to count, and to draw. Each helped to frame the meanings that she constructed. Together they constituted literary and artistic experiences, and they tuned or structured Tanisha's schemata for reading/viewing informational books.

Making Meaning with Print and Illustrations

Observations of Tanisha's engagement with informational books during one-on-one sessions and during quiet reading time revealed her use of print and illustrations as she constructed meaning. The primary focus of her attention was on the print. As discussed in the last section of this chapter, Tanisha had a strong desire to improve her literacy. Since she saw print as the main avenue to achieving her goal, it became her initial focal point. Tanisha did not ignore the illustrations though. She used them to support her attempts to make meaning from the print.

Linking Sign Systems. Informational picture books provide a potential to mean through the use of words and illustrations. While words mean basically because of semantics and syntax, pictures do not have a similar grammar. Instead, they possess form, structure, and conventions. Together these symbolic systems create potential meaning. Individual readers/viewers produce actual meaning out of their intertwined psychological, social and cultural histories (Worth, 1981). Since each symbol system is capable of
communicating different types of ideas better than the other, a potential
framed by both systems will be different from that framed by either one.
Informational picture books are a literary and artistic form which capitalize
on a paired sign system.

The reader (viewer), if he [sic] can participate in a
communication event, recognizes the work's structure, assumes
an intention to mean on the part of the creator, and proceeds to
his extremely complex job of making inferences from the
implications he can recognize. (Worth, 1981, pp. 172-173)

In reading/viewing informational picture books Tanisha constructed
meaning from words and pictures. She used the illustrations to support the
meanings that she made from print in three ways:

1. to clarify the words.
2. to expand on the words.
3. to extend beyond the words.

Tanisha clarified the words that she read in informational books by
looking at the illustrations nearby. In her reading/viewing of Eyes Tanisha
used the illustrations to assure herself that she constructed a plausible
meaning for the main text: "The emperor moth has large painted eyes. Don't
be fooled that's a clever disguise." She looked at the painting of the moth and
noticed the circular patches of color on the wings. At this point, she realized
the metaphorical use of the word 'eyes' and said, "I think it's ((pointing at
circles of color on wings)) right here." The illustration limited the possible
interpretations in Tanisha's mind and aided her in defining her meaning.

The following excerpt from Tanisha's reading/viewing of Animals
Born Alive and Well also demonstrates the use of illustration to clarify the
words read. In this case she was making meaning with the label beside an animal icon.

Tanisha: *Spider Monkey.* ((shaking head side to side)) It doesn’t look like it.

Rick: It doesn’t look like a spider monkey?

Tanisha: ((pointing at tail around branch)) But it hang (1) but it hangs. And spiders do hang from a string.

Rick: M:hm

Tanisha was initially puzzled by the descriptive term, 'spider,' that was used to name the monkey. However, investigation of the icon helped her to see a possible metaphorical use of the label. She noted that the monkey, like the spider, hangs. Regardless of whether this was the reason the animal was given its name, this example does represent Tanisha’s use of the illustration to construct a meaning for the words that was satisfying to her.

Tanisha also used the illustrations to expand on the meanings that she constructed from the words alone. The following excerpt from Tanisha’s reading/viewing of *The Reason for a Flower* demonstrated the expansive nature of the illustrations in the meaning-making process. Tanisha elaborated her understanding of the word 'seed'.

Tanisha: *The reason for a FLOWER is to*

Rick: *manufacture*

Tanisha: *manufacture . . .* ((turns page)) *SEEDS that have a co­ver*

Rick: *cover*

Tanisha: *cover some of one can*
Rick: *kind*

Tanisha: *kind or another*. *Some grow inside a juicy fruit, and it's not so very*

Rick: *odd*

Tanisha: *odd to find them growing in a pod*. ((pointing at cross-section of peas in pod)) In here?

Rick: What's in there?

Tanisha: That's the seeds.

Rick: Mhm.

Tanisha: ((pointing at cross-section of watermelon)) And there are the seeds in here.

Rick: Uhhuh.

Tanisha: ((pointing at cross-section of tomato)) Here goes the little seeds in here. ((pointing at avocado cross-section)) Here goes seeds and ((pointing at green pepper cross-section)) here goes seeds in the green onion. ((pointing at pomegranate cross-section)) Here goes seeds in ((frowns, hits forehead, and glances off to the side)) (10) in the onion and ((pointing at apple cross-section)) here goes seeds in the apple.

Although Tanisha knew what the word 'seed' meant, she was not familiar with the many different types of seeds found in fruits and vegetables. Seeing the cross-section of a pea pod and realizing that peas are seeds, expanded her understanding of the words by tuning her schemata for 'seeds'. It was less clear whether her identification of seeds in the final turn of the dialogue served the same purpose or whether it was a performance of existing knowledge.

In addition to clarifying and expanding on the meaning of the print in the book, Tanisha used the illustrations to extend her meaning beyond the
confines of the words. In the following excerpt from her reading/viewing of *The Reason for a Flower*, Tanisha read the print on a double-page spread and looked at the double-page illustration of a tree with animals on it and around it.

Tanisha: *Some SEEDS grow up to be TREES.*

Rick: What do you think about this page?

Tanisha: That all kinds of animals live on trees that grow from seeds.

Rick: Like what?

Tanisha: Birds, bugs, caterpillars and snails

Rick: What kinds of birds and bugs?

Tanisha: ((pointing at insect on trunk in bottom left of right page)) There goes a bug. ((pointing at woodpecker on trunk)) There goes a bird. ((points at mouse icon at base of tree)) A mouse lives on a tree. ((turns page))

The meaning that Tanisha constructed from this page extended beyond the 'seed to tree' aspect of the words. She carried this life cycle concept into an ecological realm. She not only thought about the development of the tree but considered the ecosystem of which it is a part. The later concept was nonexistent in the words of the book. It was the text of the illustrations. Thus, in three different ways - clarification, expansion, and extension - Tanisha's meaning-making combined the text of the print with the text of the illustrations to construct her text.

**Connecting.** As she linked the print with the illustrations, Tanisha connected her background knowledge, life experiences, and experiences with other texts (i.e., linguistic and artistic) to her current reading/viewing. This
prior knowledge and experience constituted the schemata that Tanisha used to make meaning (Rumelhart, 1980).

Tanisha's reading/viewing of *Catch the Wind!* demonstrated her use of background knowledge to make meaning of what she was seeing. In the following excerpt I opened the book to the illustration preceding the title page. Tanisha made a visual connection to what she beheld.

Rick: ((lays book on table front cover facing up)) This is the book we're going to read today. It's called *Catch the Wind!: All About Kites* by Gail Gibbons. ((opens to first illustration - a dragon kite)) What do you notice here?

Tanisha: That this looks like a caterpillar.

Rick: Looks like a caterpillar? What makes it look like a caterpillar?

Tanisha: ((running finger in circle around face)) Cause these circles ((running finger along rest of body)) look like it.

Although what Tanisha saw on the page did not bear a photographic resemblance to a living caterpillar, it did bear similarities to an often used artistic style for rendering caterpillars. The many circles making up this kite were similar to the circular images used to represent the humps that are found down the back of some varieties of the insect. Clearly, in the unidentifiable past Tanisha encountered this style of rendering a caterpillar and used the knowledge stored from that experience to make sense of what she was seeing in the book.

In the following excerpt from her reading/viewing of *The Reason for a Flower*, Tanisha read about flowers that grow where it is dry. She turned the page to find a double-page spread showing icons of flowers growing in the
water. Around and on the flowers she saw fish, a frog, a turtle, a dragonfly, and other insects.

Tanisha: ((turns page)) and these grow where it's wet. In the water.

Rick: In the water?

Tanisha: They grow in the water. And sometimes and I never came to where there is (.5) what is (.5) lily pads (1) where there's lily pads in the water and flowers because I don't want to get stuck by a dragonfly.

Somewhere in her unrevealed past Tanisha had encountered information that influenced her thinking about dragonflies. She connected what she believed to be a fact (i.e., Dragonflies sting,) to the images that she saw in front of her.

The origin of all connections is not as obscure as these. Tanisha made numerous connections to identifiable experiences in her life. She used these in constructing meaning with what she read and what she saw. In the 'Viewing' part of the previous section of this chapter Tanisha made reference to the experience of being stuck in the finger by a cactus thorn. This experience contributed to the meaning that she constructed from the cactus icons that she was seeing. Tanisha revealed other life-to-text connections just as the children in Cochran-Smith's (1984) research did.

In the following excerpt from the transcript of her encounter with Catch the Wind!, Tanisha listened to me read about the flying capability of a delta kite. She used ongoing experiences at home to make meaning from the words.

Rick: Delta kites are triangular and can be flown when there isn't much wind.
Tanisha: Like in the house?

Rick: I don't know. Do you think we can do it in the house? It says not much wind. Is there any wind in the house?

Tanisha: Sometimes when the heat's on. ((turns page))

Rick: Oh. How do you know there's wind when the heat is on?

Tanisha: Cause it blows on me.

Rick: So you feel it?

Tanisha: ((nods))

The moving air that Tanisha had felt when the heat was on influenced her thinking about where kites could be flown. Since the words indicated that delta kites could be flown when wind speed was low, Tanisha wondered about the possibility of flying a kite in the house.

In this excerpt from the transcript of her reading of The Reason for a Flower, Tanisha made another connection to a life experience. In this case, the experience was a one time occurrence at school. As she read about grains being flowers and food for animals, she recalled a visual and auditory experience that she had had in her classroom during this school year.

Tanisha: MILLET and BAMBOO are a treat for ((turns page)) for animals who don't like meat. They are called HER-BIV-O-ROUS.

Rick: HER-BIV-O-ROUS. ((turns page))

Tanisha: HER-BIV-O-ROUS. ((turns page))

Rick: What do you think about the page?

Tanisha: ((turns back one page)) That it's a good group of animals that don't eat meat. ((points at elephant icon)) I think the elephant eats peanuts or apples. And
Rick: What makes you think that?

Tanisha: Because there was a tape that somebody brought here for Miss Benjamin and the other two home bases [first grade classrooms] and they fed on nuts and apples. And I think ((pointing at icon of monkey leaping through air)) this eats a fruit and ((puts finger on bottom lip)) its apple. ((frowning and shaking head)) Now wait (2) its one of those fruits that I've seen on TV. I forgot what they're called. And ((pointing at pig icon)) this eats a vegetable and it's corn, I think corn. The rabbit eats carrots. The cows eat grass. And polar (.) no (4) are those panda bears?

Rick: Where?

Tanisha: ((points at panda icon))

Rick: Yeah that's a panda.

Tanisha: And I think pandas eat weeds. ((turns page))

Tanisha's experience with the tape enabled her to expand on the words of the text. Her thinking went from what the animals do not eat to what they do eat. Clearly, the content of the tape contributed to her framing the words and pictures in a new way, in a way that provided specifics about the animals' herbivorous nature.

Tanisha not only used life experiences to make meaning from the words in informational books but also from the illustrations in them. In the following excerpts first-hand experiences contributed to Tanisha's understanding of the images that she encountered in informational picture books.

Animals Born Alive and Well

[looking at double-page spread of adult and baby elephants]
Tanisha & Rick: ((Tanisha leans over page)) Sometimes a MAMMAL'S hair is scant as on the thick-skinned ELEPHANT. ((Tanisha sits up))

Tanisha: ((leans over page; looks at icon label)) African Elephants. ((sits up))

Rick: Hm. What do you notice?

Tanisha: That elephants weigh a ton.

Rick: You can tell that from this picture?

Tanisha: Yes. I can tell it from the zoo.

The Reason for a Flower

[looking at double-page spread of seeds with coverings]

Tanisha: The largest one i- (2) largest one's a COCONUT (1) one's a COCONUT.

Rick: The largest one's a coconut? Which one's that?

Tanisha: ((points at coconut icon))

Rick: That. How do you know?

Tanisha: Cause it's big and I've seen one or two coconuts. ((turns page))

Eyes

[looking at painting of fish with large eyes]

Tanisha: Some fish though only small in size have the most enormous eyes.

Rick: Hmm.
Tanisha: This looks like it gots big eyes. We have fish at ECHO and the fish are scared of us whenever we come up to the tank. And the eyes look like this ((moving eyes back and forth)). They look everywhere.

First-hand experiences with the size of elephants and the appearance of coconuts and fish aided Tanisha in making meaning from the icons that she encountered in these three informational books.

In addition to life experiences, Tanisha connected her reading and viewing to other linguistic and artistic encounters. Some of the associations were intratextual, involving print and media within the informational book that she was reading/viewing, while others were extratextual, involving print and media outside of the book. In the following excerpt from the transcript of her reading/viewing of *Spring*, Tanisha reflected on her transactions with the print and illustrations. On adjoining pages she had seen photographs of a trumpeter swan and a coyote. The text had mentioned the swan’s nest building and the coyote’s shedding of fur. Tanisha responded to my inquiry about the part of the book that she did not like as well as other parts.

Tanisha: That animal could of ((puts left hand on chin)) ate this in - ate this in one bite

Rick: That another animal could have eaten the um swan in one bite? Howdaya know that? I wonder how you knew that?

Tanisha: ((shrugs shoulders))

Rick: Did it tell you in the book?

Tanisha: ((shakes head side to side))

Rick: How did ya know that?
Tanisha: ((puts finger in mouth)) That I learned about it because there was- the um ((removes finger from mouth)) there was a story about Peter and the wolf and ((puts finger in mouth)) it and the wolf ate up (.) up (.5) ate up the duck in one bite.

Rick: Um-hm. So you think ((points a photograph of swan)) this swan might get eaten by what?

Tanisha: A wolf. ((glances at researcher))

Rick: The wolf. Is there a wolf here?

Tanisha: ((shakes head from side to side))

Rick: No, but you're picturing a wolf being in this place?

Tanisha: This ((points at photograph of coyote on adjoining page)) looks like a wolf.

Tanisha connected the side by side illustrations of a coyote and a swan with the story of Peter and the wolf. She projected the threatening nature of the wolf in that story onto the images of another wolf-like mammal and waterfowl in Spring as she constructed meaning. This intertextual connection outweighed the conflicting evidence provided by her reading of the text and picture caption that identified the animal as a coyote. Her stance in relation to the print and illustrations made this an aesthetic experience.

In the following excerpt from the transcript of Animals Born Alive and Well Tanisha immediately connected the author's name on the dust jacket of the book with another book that she had read.

Tanisha: ((standing by table and talking about book on it before researcher gets to table)) Ruth Helen (2) by the same author (I know). It's by the same author. Ruth Heller.

Rick: ((approaching table)) I'm sorry. I can't hear you.

Tanisha: It (.) it's by the same author.
Rick: This is by the same author as what? (sits down)

Tanisha: //Ruth Helen. By Ruth Heller (sits down)

Rick: //Ruth Heller. Mhm. This is the same author as what book?

Tanisha: Uh (2) same author (2) as (2) Chickens (2) Aren't the Only One.

Knowledge of the book's authorship set up expectations for its content and helped Tanisha in making meaning. As we talked about the book Tanisha noted about Heller's books "That it always has (15) ((pointing at "VI-VIP-A-ROUS" at end of text)) it always has these words. . . . It always has ((pointing at same word)) these kind of words. It always has ROUS at the end." She remembered that in Chickens Aren't the Only Ones the text ended with an ROUS word, O-VIP-A-ROUS. Tanisha also connected Animals Born Alive and Well with another of Heller's books, The Reason for a Flower. She noted that both books contained colorful flora.

Rick: What makes her flowers in this book look the same as the flowers in the other book?

Tanisha: They're pink. ((looking at colors on pages as turning back through book)) Some of them are pink and some of them are blue. Green.

Rick: She uses blues and greens.

Tanisha: ((continuing to turn pages)) Blue and green. Bright yellow. Purple and white. And this color.


Tanisha was attracted to Heller's use of color in her illustrations and to the rhyme and rhythm in her language. After reading two of Heller's books,
she expected to find similar pictures and words in the others. The mere sighting of the author's name activated the mental framework that had been established during the reading/viewing of the first two books and permitted intertextual connections to be made. These connections helped to frame the way Tanisha read and viewed the books and, therefore, influenced her meaning-making.

As Tanisha viewed informational books she made numerous comparisons among the icons in the illustrations of a particular book. At times she noticed similarities and at times she noted differences. And, on some occasions she noticed both at once. As Tanisha was viewing Eyes, she noticed that the picture of the tiger's eyes contained within the book was identical to the one on the back of the dust jacket. In Catch the Wind! she noted that the same kite shop appeared in the title page illustration and in the picture where the text begins. After further observation though she realized that the people on the stairs were different in the two illustrations.

In the following excerpt from her viewing of The Reason for a Flower, Tanisha was looking at an illustration that showed some plants whose fruit and roots are below ground and others that only had roots underground. She noticed the similarities and differences among the icons and classified images into two groups as she constructed meaning with the icons.

Rick: What's interesting to you about this page?

Tanisha: ((looking at icons on both pages)) That they have different kinds of roots and ((pointing at radish icon)) they have kind of the same roots as ((pointing at beet icon)) these.

Rick: How is it the same?

Tanisha: Cause of ((pointing at long root below fruit)) these.
Rick: Those long thin hairy kinds of things sticking off of them?

Tanisha: And ((pointing at similar icon on far right)) this.

By comparing the icons of the roots of six different plants Tanisha discovered the similarity among the carrot's, the beet's, and the radish's roots and their difference from the other plants whose fruits are not part of the root system. This comparative process was significant in the meaning that she made with the icons.

As Tanisha read the icon labels in Animals Born Alive and Well, she encountered an icon of a tarsier. By making a visual comparison she connected what she saw to images that she had seen on the previous page.

Tanisha: ((turns page)) Bat. (Only the bat) ((turns page)) Tar-

Rick: Tarsier

Tanisha: Tishure

Rick: Tarsier

Tanisha: Kind of looks like a bat.

Rick: What makes it look like a bat?

Tanisha: ///But it has hands.

Rick: But it has hands? What makes it look like a bat, though?

Tanisha: ((pointing at ears)) The ears. ((circling face with finger)) The little round face. ((reading next icon label)) Marmo-set?

Tanisha made meaning with the icon of the tarsier by visually comparing it to the icon of the bat. Although the animals are not closely related, Tanisha noted significant features that they shared and ones that they did not. This comparative process allowed her to make sense of what she saw
and to fit it into the big picture created visually by the book. Tanisha did not follow a scientific classification system to link the animals. Instead, she used physical appearance to construct meaning from the icons. Unfamiliarity with the culturally accepted way of grouping animals led her to group them according to an anticipatory set that made sense to her (Bruner, 1990; Salomon, 1979/1987).

In addition to connecting media encountered within books, Tanisha also made associations between the images in books and the media that she saw in other contexts. In the following excerpt from her viewing of *Eyes* Tanisha compared the emu icon to a cleaning device that she had seen in cinematic film.

Tanisha: It looks like (.5) you know those things they have in movies sometimes (1) like a stick and it has these sticking up things and you brush off desks and stuff.

Rick: You brush off desks?

Tanisha: Dust.

Rick: Dust?

Tanisha: Dust off of things.

Rick: You mean a feather duster?

Tanisha: ((nods))

Rick: ((pointing at emu icon)) He looks like one of those?

Tanisha: ((passes hand over page)) The way it just has eyes.

Rick: Just his eyes?

Tanisha: But it just has eyes and a nose and ( ) ((turns page))
The illustrator's presentation of the emu hid most of the bird's body behind feathers. As Tanisha viewed the illustration and tried to make meaning with it, her schemata led to a connection with an inanimate object in her memory that for her bore some visual resemblance. Her personal history led to a rather unique connection and impression that might not be shared with many in her sociocultural context (Worth, 1981).

**Questioning.** On rare occasions Tanisha inquired about what she read and saw. In an excerpt involving Spring, included at the beginning of 'The Affordances of Informational Picture Books' section of this chapter, Tanisha wondered about how woodpeckers made their nests. In the preceding part of this section on 'Making Meaning with Print and Illustrations' Tanisha also questioned the possibility of flying a delta kite in the house. Questioning was a strategy that Tanisha rarely used to construct meaning. When she did, she seemed extremely puzzled by what she had read and had seen. Questioning became a last resort for trying to reconcile competing ideas and usually led to tuning or restructuring of her schemata.

In the following excerpt from her reading of Animals Born Alive and Well Tanisha encountered information about people and found it difficult to accept.

Rick: *The largest MAMMAL is the BLUE WHALE. The smallest is the SHREW.*

Tanisha: ((pointing at icon labels)) *Shrew. Blue Whale.*

((pointing at remaining text on page))

Tanisha & Rick: *The best of all are . . .* ((Tanisha turns page))

*PEOPLE just like me or you. All of us are MAMMALS.*

Tanisha: ((jerks head back)) *We're mammals?
Rick: That's what it says. Do you believe it?

Tanisha: No.

Rick: You don't believe we're mammals? How come?

Tanisha: ((shrugs shoulders and turns page)) Animals are mammals.

Tanisha asked a question to assist herself in reconciling her anticipatory schemata with the words of the text. Her mental framework for the concept 'mammal' did not allow a place for humans. Although this encounter with print may have led her to tune or restructure her schemata at a later time, Tanisha gave no indication of assimilating or accommodating this new information. Instead, she rejected it as untrue and moved on to other ideas and images.

Speculating. Connections and questions were not the only strategies that Tanisha used to construct meaning with informational books. Sometimes she speculated about possibilities in what she read or saw and attempted to justify her hypotheses just as Cox and Many (1992) found in their research of children's transactions with print and with media. In excerpts from her reading/viewing of Spring, included at the beginning of 'The Affordance of Informational Picture Books' section and in the 'Connecting' part of the 'Making Meaning with Print and Illustrations' section, Tanisha speculated about the way in which woodpeckers make their nests and about the possibility of the coyote eating the swan. In the later instance she justified her speculation through an intertextual connection to the wolf's devouring of a duck in the story of Peter and the wolf.

In the following excerpt from her viewing of the title page of Catch the Wind!, Tanisha speculated about the flying of kites in the illustration. The
dragon kite that she described in a prior excerpt as a caterpillar appears in the double-page picture. A string attached to it runs through the picture frame to the edge of the page.

Rick: ((turns page)) Gail Gibbons. Catch the Wind!: All About Kites. What do you notice here?

Tanisha: The people are flying kites and-

Rick: Who is flying a kite?

Tanisha: ((studies double spread)) Kites (.) some kites ((runs finger diagonally from top to bottom across right page tracing kite line)) are coming from far away and kites are in the house and ((runs finger around window)) in the window everywhere.

Rick: You said that some kites are coming from far away. What makes you think they're coming from far away?

Tanisha: Cause of ((pointing at dragon kite)) this one and ((running finger along kite string)) it gots a long string and you don't see the person.

Tanisha justified her speculation that the kite was coming from a distant location on the basis of her knowledge of picture conventions. She constructed meaning from the line that ran off the edge of the page. She did not take a limited and literal view of the illustration as young children in some research have been found to do (Amen, 1941; Higgins, 1980; Mackworth & Bruner, 1970). Even though the kite flyer was out of sight, Tanisha assumed that one did exist. She demonstrated an understanding of what Goldsmith (1984) refers to as semantic location, the ability to attach meaning to a spatial convention. Tanisha shared a symbol system with the illustrator and, consequently, was able to speculate about a culturally appropriate interpretation of the picture (Bruner, 1990).
Analyzing. An important aspect of Tanisha's reading/viewing of an informational picture book was her analysis of the illustrations that she encountered. As our conversations about the books progressed, I sensed that, although we both used the word 'picture' and assumed that we shared a common understanding of its meaning, it was not the case. Some books had double-page spreads containing one picture. Others had a double-page spread containing three, four, or more pictures. Some pictures had others inset. Consequently, I asked Tanisha about her analysis of some of the double-page spreads that she encountered.

I discovered that the meaning that Tanisha attached to the word 'picture' varied from context to context. In one double-page spread within Catch the Wind! Tanisha viewed an illustration with one frame around it and one internal division, separating a picture of people in the workshop from a diagram of the parts of a flat kite, as three pictures.

Rick: How many pictures do we have on these two pages?

Tanisha: Two.

Rick: Two?

Tanisha: No three.

Rick: Three? Where's the first one?

Tanisha: ((points at picture on left page))

Rick: Where's the second one?

Tanisha: ((points at part of picture on opposite side of gutter))

Rick: How do you know that this is not the same picture?

Tanisha: Cause they're on one side.
Rick: Because they're what?

Tanisha: It looks like it because they're on one side.

Rick: Who's on one side? The people you mean?

Tanisha: Yeah.

Rick: Uhhuh. Where's the last picture?

Tanisha: ((drops fist on kite parts diagram and rubs it along))

The placement of the three people on one side of the gutter and the continuation of the workshop picture on the other side of the gutter caused Tanisha to form an alternative construction to the one which experienced viewers in her culture would have formed. Where she saw three pictures, experienced viewers would have seen two.

In other contexts when a double-page spread contained two pictures that were framed separately, one on the right page and the other on the left page, Tanisha had no difficulty identifying the picture boundaries. Likewise, when a single frame surrounded a picture that ran across the two pages without any internal divisions, Tanisha recognized it as one picture. The visual presentation in the gutter that is difficult to see, the placement of the people, and perhaps, the continuation of the background or landscape, all play a part in Tanisha's ability to detect picture boundaries. As Nodelman (1988) and others (Buswell, 1935; Wolf & Tira, 1970; Yarbus, 1967) have pointed out, the human figure, especially the face, contributes emphasis to the part of the picture containing it. Therefore, attention to this detail could impact perception of picture boundaries.
In the following excerpt Tanisha was once again confused, at first, by the number of pictures that were in front of her. The double-page spread showed a landscape that continued from the right page onto the left. Each side showed people flying kites; however, each page had a separate frame. The illustration on the left page contained an internal boundary separating a diagram showing how kites fly from the landscape with people flying kites.

Rick: How many pictures do we have on these two pages?
Tanisha: Two.

Rick: How do you know?
Tanisha: Cause you just said it. ((looks at researcher and smiles))

Rick: I just said that there were two? I said, on these two pages, how many picture do we have?
Tanisha: Two.

Rick: How do you know that there are two pictures?
Tanisha: No. ((puts finger on lips)) Three.

Rick: There are three? How do you know that there are three pictures?
Tanisha: Cause ((spreads thumb and index fingers over top diagram on left page)) this page and ((spreads fingers over bottom picture on left page)) this page and ((spreads fingers over picture on right page)) this page.

An additional factor in Tanisha’s defining of pictures became apparent in our interaction. Tanisha’s initial confusion about the number of pictures resulted in part from the fact that she heard me ask about the two pages. Past experience with books may have led her to expect one picture per page. Many
books are laid out in just that way. Tanisha highlighted the equivalence between the number of pages and the number of pictures in the way that she identified them in her last turn of the excerpt above. Although she identified two pictures on the left page, she referred to each of them as 'pages'. Thus, she made it sound like there were three pages involved in the double-page spread.

**Acting.** As Tanisha made meaning during her transactions with informational books, she used her body to support her thinking. Many of the excerpts provided in this case report support this point. In *The Reason for a Flower* excerpts in the 'Viewing' part of the 'Affordance' section, Tanisha pushed her finger into her thumb as she talked about being stuck by a cactus thorn and pushed her body into her chair as she feared that the bicycle would hit the squirrel. In the *Eyes* excerpt in the 'Connecting' part of the 'Making Meaning' section, she demonstrated how the fish's eyes move by moving her own back and forth. In the *Animals Born Alive and Well* excerpt in the same part and section of this case report, she points at her ears and circles her face to explain the resemblance she perceives between a tarsier and a bat. And, in *The Reason for a Flower* excerpt in the 'Counting' part of the 'Affordance' section, she moves her finger across the flower to measure its size.

In the following excerpt from Tanisha's reading/viewing of *Eyes*, Tanisha attempted to feel the tiger's fur as she noticed that a picture in the book also appeared on the back cover.

Tanisha: *The eyes of a tiger* ((flips to back cover and then turns back)) *the eyes of a tiger are yellow with ra-

Rick: *rage*
Tanisha: *rage, when it cannot*

Rick: *roam*

Tanisha: *roam free but is teep*

Rick: *kept*

Tanisha: *kept in a cage. ((turns to back cover)) This is on the back.*

Rick: *That's on the back, yeah.*

Tanisha: *((runs palm over picture surface and turns back to last page read))*

Tanisha's demonstrating, moving, gesturing, and sensing were an integral part of her meaning-making. Like the children in research conducted by Harvey (1993), Hickman (1979, 1981), and Hepler (1982) Tanisha's active use of her body contributed to her response to informational books.

**Summary**

Tanisha engaged with informational books for the opportunity to improve her literacy. Her primary focus was on making sense of the print, but the illustrations were important in supporting her reading. In one-on-one and in quiet reading sessions she positioned herself and others in a way that enabled her to control her reading situation. In most cases that meant creating a private experience with a book even though she physically remained in a social context.

In addition to affording her opportunities to engage in private literacy lessons, informational books provided the chance to view virtual realities, to count, and to draw. As she was reading and viewing the informational books, Tanisha constructed meaning by linking the artistic and linguistic
blueprints laid down by the authors and illustrators. In the process she connected her background knowledge, life experiences, and experiences with other books and media to the print and images before her. Through questioning, speculating and action she expanded and supported the meanings that she was constructing. For Tanisha engagement with informational books represented transactions involving aesthetic and efferent stances.

Sean: An Emergent Reader Uses Illustrations

When I entered the first grade classroom to begin this study, Sean, a six year old Caucasian from a middle socioeconomic, entrepreneurial (i.e., operated a day care facility) family, was the newest member of the class. He arrived in early December so he had been in the class less than a month. For what his parents alluded to as a myriad of reasons but simply stated as dissatisfaction with the education, they transferred him within the school district. His new teacher and classroom environment were "hand picked" by the principal to counteract the "very, very negative environment for him" that existed in the previous school. Sean's parents were "just ecstatic about his attitudinal change towards school" [3-12-92 teacher interview] that resulted from this placement.

Just before leaving his previous school, Sean had been designated 'learning disabled.' His new classroom teacher stated that, in his case, 'learning disabled' meant "A short attention span. An ego that needs nurtured. A child that's afraid to take risks. A child that is not feeling comfortable in an environment where you're constantly told what to do and
how to do it" [3-12-92 teacher interview]. His previous teacher had referred him for diagnostic testing because of this lack of success in learning to read and in completing work. In his new educational environment Sean was given a learning disabilities tutor that he met with three times a week.

When he goes up with his LD [learning disabilities] tutor, he dialogues with her, and she takes his actual dictation. And, of course, he can read that. And, then, that looks like real reading to him, and he values it. And he will skip down those stairs and push that in my face. He does not put that in anybody else's face. There is no peer that's significant enough to show that to. I'm the primary person that sees his 'I did it.' [3-12-92 teacher interview]

In the classroom Sean participated in the lowest instructional reading group. He was hesitant to take risks in the group and was in constant need of teacher approval. He was "interested in knowing about his world, and he [chose] to use books as a tool to accomplish that task" [3-12-92 teacher interview]. His teacher felt that he had many strategies for learning, but that his short attention span made it difficult to detect what they were. According to her,

Some of them [strategies] he just likes and some of them don't work but he likes them and he does them anyway. He can tell you about a picture, and it has nothing to do with the print. He'll go on and extend. He'll use his imagination - 'that puppy dog is going to go over there and sit in that basket' - and there's no over there and there's no basket on that page. But that's the way he'll share. . . . He'll turn it into a fictional situation. . . . I think he has learned that when you invent things nobody tells you you're wrong. And I think it's more risk free for him, and he has probably never had his hand slapped verbally - 'No, that's not right.' Nobody can tell me I'm wrong. If I say, I think that puppy dog is going to go over there and have a nap in that basket, it's off the page. Nobody can criticize me for saying that,' and it's a way he can manipulate his environment to get perks. [3-12-92 teacher interview]
As I observed Sean's transactions with informational picture books during quiet reading time and during our one-on-one sessions, I discovered the way in which he read the books. First, I found that he engaged with them in a goal-directed manner. He capitalized on the potential to mean that existed in the books. His intentions relative to the books' visual content resulted in his viewing them for the lived experience and the information that they had to offer (Heft, 1989; Rosenblatt, 1978). Sean's intentions also afforded opportunities to play and to socialize. Second, I discovered that Sean almost exclusively used the illustrations to make meaning. He connected his background knowledge, life experiences and experiences with other print and media to his viewing of informational books. He questioned what he was seeing and speculated about the visual content. As he made meaning, Sean used his voice and action to support his thinking about the illustrations.

The following sections of this case report elaborate on these two areas of finding. They paint a picture of a young boy who uses illustration to make meaning. The picture that is created shows a child who views informational books to experience the world and to build his self-esteem.

**The Affordances of Informational Picture Books**

As a child who was able to make very little meaning with print, Sean used illustrations extensively. He engaged with them in an intentional manner. With specific purposes in mind he took advantage of the affordances that he realized during his transactions with informational picture books (Gibson, 1979; Heft, 1989; Rosenblatt, 1978).
Viewing. The potential affordance of informational books that Sean took advantage of most often was that of viewing. He looked at individual double-page spreads and flipped acetate overlays for long periods of time. He scanned an illustration focusing on the icons within the pictures rather than attending to the whole picture. At times he even looked at the icons making up an image in a full-page or double-page illustration. For example, in his viewing of Catch the Wind! Sean focused on the identical appearance of the shoes that the boy and girl were wearing rather than the kite building materials in the workshop that the text delineated.

This viewing behavior was not unusual to find. Amen (1941) and Mackworth and Bruner (1970) noted that young children have a tendency to focus on details rather than the whole picture. In the following excerpt from his viewing of Catch the Wind!, Sean revealed his meaning for the word 'picture.' Although he was looking at a double-page spread that had two pictures individually framed on separate pages, Sean attended to the parts rather than the whole.

Rick: Before you turn, look at these two pages. How many pictures has the artist given us on these two pages?

Sean: ((placing hand on right page)) There's 9 right here and ((placing hand on left page)) there's 15 right here.

Rick: Show me the 9.

Sean: ((pointing at kite icons, people icons, checkout stand icon and kite crate icon)) 1, 2, 3, 4, 5, 6, 7, 8, 9 (.5) 10? Did I count that?

Rick: I don't think so.

Sean: Okay, now ((pointing at kite icons, kite tube icons and crate icon on left page)) 1, 2
Attention to the individual icons in pictures without considering the impact of their placement together influenced the affordances that Sean realized in his transactions with them. His inexperience in viewing illustrations sometimes limited his meaning-making as compared to the meanings that experienced viewers would have constructed.

While viewing an illustration Sean usually attended to his lived experience. In the following excerpts from his viewing of one book, Pizza Man, the joy and revulsion that he experienced and his immersion in the virtual reality were apparent.

[Viewing black and white photographs of machine mixing the pizza dough]

Rick: ((pointing at words)) A large machine does all the mixing.

Sean: ((turns page))

Rick: It churns the ingredients to make a sticky, pasty dough. What are you noticing?

Sean: ((scrunching face, opening mouth, rocking head and speaking in deep voice)) Sticky.

Rick: That it's sticky.

Sean: ((repeating same movement)) Ah:::

Rick: I need help to get the dough out of the big mixing pot. It is really heavy.

Sean: ((pointing at strained look on pizza man's face, laughing and covering mouth))

Rick: What's so funny?
Sean: He's like ((holding bent arms in front of body, scrunching face and making noise)) e:::::::::

[Viewing black and white photographs of pizza man putting cheese on pizza and on opposite page the trays of toppings]

Rick: *I pile the cheese over the sauce. Some people like to choose their own toppings. They can pick pepperoni, salami, meatballs,*

Sean: ((opens mouth wide and raises eyebrows))

Rick: *meatballs,*

Sean: ((opens eyes and mouth wider))

Rick: *olives or maybe mushrooms,*

Sean: ((recoils in chair)) Ugh.

Rick: *peppers, onions or broccoli.*

Sean: ((makes slurping sound)) Broccoli::!

Sean: ((flips book closed with back cover up)) Oo ((pointing at colored photograph of boy eating pizza slice)) I like this the best.

Rick: Why do you like this picture the best?

Sean: ((turning head away)) Because ((turning head back)) it looks ((shaking head side to side and lowering face to picture)) goo::::d ((opens mouth and snaps teeth toward picture))

Sean sensed the stickiness of the dough, felt the strain of lifting it out of the pot, rejected the taste of the mushrooms, savored the taste of broccoli, and swooned over the appearance of the pizza. He experienced its production and consumption. Throughout the excerpts body movement and vocalization of sounds occurred as part of his lived experience of this culinary feast.
Examples of other lived experience appear in the 'Connecting' part of the 'Making Meaning with Illustrations' section of this case report. Sean's life and intertextual connections display lived experiences.

**Playing.** The language that Sean heard me read from the informational books and the illustrations that he saw afforded opportunities to play. He had fun with the multiple meanings and the sound values of words. In the following excerpt from his viewing of Animals Born Alive and Well, Sean enjoyed the multiple meanings of the word 'mole.'

Sean: Oh look at the ((pointing at shrew mole icons)) babies of ((pointing at mole icon)) these.

Rick: What is it?

Sean: I don't know. ((pointing at icon label)) Here.

Rick: A mole.

Sean: It's like a mole on your foot.

Rick: ((smiling)) Except I don't think those grow on your feet, do they?

Sean: ((turning head to side and back front)) No:-ho: ((smiling and nodding)) Yes they do.

Rick: Think so?

Sean: Yeah.

When he had finished looking at Animals Born Alive and Well, I asked Sean what part of the book he liked best. He identified the page with the moles as his favorite. He explained, smiling, that it was "because the moles grow on your feet." Clearly, the multiple meaning that he detected was a source of enjoyment.
In the next excerpt from his viewing of the same book Sean played with a sound association that he made as I read the label for one of the many animal icons on the double-page spread.

Rick: ((pointing at animal icons)) Recognize these?
Sean: Porcupine.
Rick: They're hedgehogs.
Sean: Hedgehogs?
Rick: Yeah.
Sean: ((pointing at icon label))
Rick: And a tapir
Sean: Oh. You see those at the zoo, don't you. A tapir can tape you.
Rick: It can?
Sean: ((nods)) Because it spits out tape.

Sean heard /tape/ in my pronunciation of tapir. He created a fantasy animal assigning it an attribute consistent with the sound association that he had made. Thus, this nocturnal animal with a long probiscus became a tape dispensing mammal.

Sean also played with the images that he saw in informational books. He sometimes made up stories that sounded plausible but, in fact, were fantasies. As he was viewing a series of illustrations of pizza pies being formed and tossed in the book, Pizza Man, Sean began a story that he continued off and on through the remainder of our work with the book. At
the time, I did not pick up on the fact that he was creating a fantasy world.
Some time later in our exchange it became apparent to me.

Rick: What are you noticing?
Sean: Nothing. But I used (1) I was eating in the back (2) I was having my dinner with my daddy at Pizza Hut ((motioning over shoulder with hand)) in the cooking place.

Rick: You noticed the cooking place when you were there?
Sean: ((nods))

Rick: Do you see the same thing here?
Sean: ((shakes head side to side, turns page, and points at icon of man tossing pizza in air)) But he [his daddy] was doing that.

Sean: I already know all this because I've been at my daddy's work.

Rick: But your daddy's not a pizza man.
Sean: ((nods))

Rick: He works in an office.
Sean: ((shakes head side staring at book)) (4) How do you know?

Rick: Because he was here and he was talking. He told us that. Remember? When he came for lunch that day?
Sean: ((lowers head and looks out of corner of eyes at researcher))

My insensitivity to Sean's fantasy did not deter him. He continued to play in his story world as we investigated this informational book. Images within it contributed to the imagined setting that he stepped in and out of.
Some of Sean's play with informational books involved other children in the classroom. During quiet reading time he and his peers sometimes would engage in a location game. The object was to notice something in a picture, as a new page was revealed, before anyone else could claim it by putting a hand on it. At other times (see Figure 13), he would identify himself as one of the animals in the illustration and the others would do likewise. In this case, the object was to avoid having to be an animal that one did not want to be.

Sean's intent to play realized potential affordances in numerous informational books. If it were not for his stance in relation to them, the affordances would have gone undetected. They only existed in relation to his purposeful transactions with the books (Heft, 1989; Rosenblatt, 1978). Out of these transactions Sean experienced a virtual reality that few had found. It was a virtual reality that included humor and gamesmanship and brought him enjoyment.

**Socializing.** Sean's intentions combined with the nature of informational books created opportunities to socialize with adults and with peers as the previous excerpt shows. On most mornings Sean was the first child to arrive at the informational book table during the quiet reading time. Since the chairs around the table were not always filled with children, I had asked them to sit first in those chairs that permitted the camera to see their faces and the books. Sean very quickly began to see the table as his domain. Remembering my request, he told the other children where they could sit and where they could not. At times he tried to exert control over who could use the books on the table and when they could do it. In one half-hour, quiet
<table>
<thead>
<tr>
<th>Jamal</th>
<th>Sean</th>
<th>Dwayne</th>
</tr>
</thead>
<tbody>
<tr>
<td>((looking at <em>A Children's Zoo with Dwayne</em>))</td>
<td>((turns page in <em>Bears by Donna Bailey</em>))</td>
<td>((looking at <em>A Children's Zoo with Jamal</em>))</td>
</tr>
<tr>
<td>((catches his book falling off table; looks at Sean's book))</td>
<td>((tapping Dwayne's arm)) Dwayne. Dwayne. I'm (.) I'm ((pointing at bear icon on right page illustration)) this one. ((keeps finger on bear icon))</td>
<td>((looks at Sean's book)) What?</td>
</tr>
<tr>
<td>((points at different bear icon)) I'm this one. ((looks at Sean, smiles; keeps finger on bear icon))</td>
<td></td>
<td>((points at different bear icon)) I'm this one. ((keeps finger on bear icon))</td>
</tr>
<tr>
<td>Uh-a:: ((points at bear icon on left page)) I'm this one down here. ((removes finger))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>((points at different bear icon)) I'm this one. ((keeps finger on bear icon))</td>
<td>((points at same bear icon as Jamal)) I'm this one. I'm that one. ((keeps finger on bear icon))</td>
<td></td>
</tr>
<tr>
<td>((looks at Dwayne and smiles))</td>
<td>((glares at Jamal)) I'm that one.</td>
<td></td>
</tr>
<tr>
<td>((shakes head side to side looking at Dwayne; continues smiling))</td>
<td>((shaking head side to side looking at Jamal)) I'm that one.</td>
<td></td>
</tr>
<tr>
<td>(I was first.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>((begins to turn page; lifts Dwayne's finger off; turns page on top of Jamal's finger))</td>
<td>Tss:::</td>
<td></td>
</tr>
<tr>
<td></td>
<td>((points at bear icon on right page)) I'm that one. ((keeps finger on icon))</td>
<td></td>
</tr>
<tr>
<td></td>
<td>((slaps at different bear icon)) I'm that one. ((keeps finger on icon))</td>
<td></td>
</tr>
<tr>
<td>((points at different bear icon)) I'm that one. ((points at bear icon on left page; moves finger to different icon)) I'm that one. ((keeps finger on icon))</td>
<td></td>
<td>((points at different icon)) I'm that one.</td>
</tr>
<tr>
<td></td>
<td>I'm ((begins to point at same icon as Dwayne)) no:</td>
<td>I'm that one.</td>
</tr>
</tbody>
</table>
Figure 13 (continued)

<table>
<thead>
<tr>
<th>((points at different icon))</th>
<th>I'm this one (in the water). ((turns page))</th>
<th>((points at icon on right page))</th>
<th>I got this. ((keeps finger on icon))</th>
</tr>
</thead>
<tbody>
<tr>
<td>((points at icon on right page))</td>
<td>I got this. ((keeps finger on icon))</td>
<td>I got these. ((points at icon on left page))</td>
<td>Sick. Sick. Look. Look. ((folds up left page to show Jamal and Dwayne))</td>
</tr>
<tr>
<td>((returns to looking at A Children's Zoo with Dwayne))</td>
<td>((returns to looking at A Children's Zoo with Jamal))</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 13.** Transcript of Sean playing location game with peers.

reading session that had ten minutes left in it, Sean tried to control who could use the books on the table (see Figure 14).

Sean used this social context to exert control over an environment in which he was struggling to feel secure. His efforts represented an attempt to fit in, an attempt to show others that he was in as much control in this context as they were. It was an attempt to bolster his self-esteem. Sean found that it did not always turn out that way though. Sometimes his own positioning and his positioning of his peers resulted in them rejecting him and in him rejecting his peers, as his comment "I'm no brothers." meaning 'We are not close friends.' indicated. At other times the loud manner in which he issued his edicts caused his teacher to verbally reprimand him. None of these situations helped his already fragile perception of himself.
<table>
<thead>
<tr>
<th>Jamal</th>
<th>Sean</th>
<th>Tanisha</th>
<th>Jason</th>
</tr>
</thead>
<tbody>
<tr>
<td>((sitting beside Sean reading own book))</td>
<td>((sitting beside Jamal reading own book; scratching head))</td>
<td></td>
<td>((walks up to table and pulls book in front of seat he will sit in))</td>
</tr>
<tr>
<td>((looks at Jason))</td>
<td>((looking at Jason))</td>
<td></td>
<td>((pauses and looks at Sean)) Yeah-ha. ((kneels in chair, slides down back and sits))</td>
</tr>
<tr>
<td>I was the first ((turns head and looks at teacher)) I was the first one here.</td>
<td>((sits in seat and looks at books on table))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Me too.</td>
<td></td>
<td>So.</td>
<td></td>
</tr>
<tr>
<td>((frowns at Sean))</td>
<td>((lowers head and eyes; looks out side of eye at Jason)) You weren't. ((looks at his book))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>((frowning)) No. Kris was.</td>
<td></td>
<td>Unh-ah::</td>
<td></td>
</tr>
<tr>
<td>((shaking head up and down)) Uh-ha. ((looking around for Dwayne)) I saw (him sitting) ((bounces spine of book on table)) at this table.</td>
<td></td>
<td>I'm not (,) I'm</td>
<td></td>
</tr>
</tbody>
</table>
Figure 14 (continued)

<table>
<thead>
<tr>
<th>I'm no brothers.</th>
<th>((looking at Jamal))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will you pass me</td>
<td>Eyes?</td>
</tr>
</tbody>
</table>

Figure 14. Transcript of Sean controlling access to informational books during quiet reading.

The one person whose opinion of Sean mattered the most to him was his teacher. He constantly sought her approval. Her recognition was the one thing that consistently bolstered his self-esteem. Reading informational books became one of many avenues for him to receive her praise. As he read the books during quiet reading time, Sean was careful to notice connections to what the class had studied and oddities that might interest his teacher, Miss Benjamin. The following excerpts, from our one-on-one session in which Sean viewed *Animals Born Alive and Well*, display his attempts to gain her attention and approval.

Sean: ((pointing at giant anteater icon)) And anteater. That's at the rainforest. Can I go show this to Miss Benjamin?

Rick: *Sloth.*

Sean: Sloth. ((loudly)) That's in the rainforest. ((calling across room and holding up page)) Miss Benjamin, there's a sloth right here and that's in the rainforest. ((shows children nearby as teacher suggested))

Sean: ((pointing at seal icon)) Oh, that's a seal. ((calling across room)) Miss Benjamin.

Rick: I think she's busy at the moment.
Sean: I know. ((pointing at seal)) I want to tell Miss Benjamin.

Rick: We can go on and you can talk to her later about it.

Sean connected the class's investigation of the rainforest and the polar regions to what he was seeing. He knew that making these associations was in part what school was all about. He also knew that making these connections would please his teacher and would garner him recognition privately and publicly. Thus, informational picture books afforded Sean the opportunity to socialize and to accomplish his intended goal, improved self-esteem.

Reading. Although Sean's print literacy was emerging, reading was an intentional behavior that he very rarely displayed. When print held any importance for him, he almost always had someone else read it for him.

Making Meaning with Illustrations

As I observed Sean's engagement with informational picture books during our one-on-one sessions and during quiet reading time, I noticed his almost exclusive dependence on the illustrations to make meaning. He depended on them to offer the tacit knowledge of their creators, to mediate his co-construction of cultural knowledge (Bruner, 1990; Looren de Jong, 1991). Sean had a desire to experience aspects of the world that were beyond his physical grasp, but not the grasp of his mind. Illustrations provided an avenue for achieving this goal.

Connecting. Research by Cairney (1990), Cochran-Smith (1984), and Cox and Many (1992) highlights the central importance of past experiences on young children's construction of meaning. Sean's meaning-making was
dependent upon his schemata (Rumelhart, 1980). His prior knowledge and background experiences framed the meanings that he made.

Sean's viewing of *Animals Born Alive and Well* demonstrated his use of background knowledge to make meaning of what he was seeing. In the following excerpt he was looking at a double-page illustration of many ocean mammals. Sean selectively attended to the manatee icon at one point in his viewing of the illustration. He made meaning from what he saw by connecting information that he had acquired at an unidentifiable point in the past.

Sean: ((pointing at manatee icon)) Uh. ((squeezing sides of mouth)) M:

Rick: ((pointing at icon label)) The first letter may give you a clue.

Sean: ((frowning)) Mam?

Rick: A manatee.

Sean: ((raising eyebrows)) Oh, a manatee. ((pointing with finger of each hand)) They get (. . .) they're almost extinct.

Rick: Are they?

Sean: Yeah, cause people that have ((circling with finger on water surface)) the swishing motor things (1) ((circling on manatee icon)) they kill them. It tries to kill them because manatees are ((runs edge of hand horizontally near water surface)) just up to here. They all swim there.

Rick: They swim high in the water?

Sean: Yeah, cause they can't swim down low because they don't get that much air.
Recognition of the icon and its name enabled Sean to connect prior knowledge to a current viewing experience. In the process he constructed meaning with the image in front of him. He made sense of its placement near the surface of the water in the picture.

In another excerpt from his viewing of the same book Sean linked the double-page illustration of mammals, including the panda, rhinoceros, hare, red fox, bison, and hippopotamus, and the text that he heard me read to his existing knowledge. He extended the images and text beyond their literal confines to connect what he experienced to human life.

Rick: *MAMMALS all breathe air, you understand.*

Sean: Even us.

Rick: *This isn’t hard for those on land.*

 Sean: We’re mammals.

Rick: We’re mammals? Why?

Sean: ((shrugs shoulders))

Rick: What makes us mammals?

Sean: Because I was in a sack and a sack has got an egg. ((smiles))

Sean made an enormous intellectual leap from one characteristic of mammals to classifying humans as mammals and supporting the classification with an embryological explanation that is not presented in the book. His intricate schemata for 'mammal' had been activated, and he was able to construct a text that went beyond the images or print.
Sean's use of prior knowledge did not always emanate from unidentifiable sources. Often the connections that he made were related to specific life experiences such as units of study in the classroom (see 'Socializing' part of the 'Affordance section). In the following excerpt from his viewing of *Animals Born Alive and Well* Sean drew on another source.

Rick: ((pointing at icon label)) *Pekinese. Yorkshire Terrier.* What are they?

Sean: Cats and dogs.

Rick: Cats and dogs? Which is which?

Sean: ((pointing at Pekinese icon)) This is a cat. ((pointing at terrier icon)) That's a dog.

Rick: How do you know?

Sean: Cause ((pointing at Pekinese icon)) the cats are not tall as ((pointing at terrier icon)) this. Cats are ((holds palms parallel and apart six inches)) about this tall.

Rick: So if they're shorter they're a cat?

Sean: / / I had ((frowning)) I had a little (. ) cat and it was a baby when I had it and it clawed me and my aunt had it and she ca- (. ) and she named it Baby. ((smiles)) And um then she gave it to me because she was allergic to it and then when I got it (1) I think it's a she or a he (1) and um she um she um it came to sleep with me one night and um when I woke up I had my eyes like that.

Rick: How come?

Sean: I think because um I'm allergic to cats and I am. And now I gave it to my grandma and grandpa. And they have three cats. They're my dad's mom and dads. They have two cats. I mean ((holds four fingers up)) four cats.
Rick: I see. Was there anything else other than the size (. ) how tall they were (. ) that let you know that ((pointing at icons)) this was a cat and that was a dog?

Sean: ((nods))

Rick: What else?

Sean: Because ((pointing at Pekinese)) cats (1) ((pointing at terrier)) dogs don't have big ((pointing at Pekinese's nose)) Theirs (. ) theirs is kind of small noses and ((pointing at terrier)) dogs have big noses and ((pointing at Pekinese)) cats have little noses.

Sean drew on his first-hand experiences with a cat as he identified icons of two dogs as a cat and a dog. Although cats and dogs are common pets familiar to most school age children, less common varieties and artistic presentations of them make identification difficult at times. Sean had a clear memory of his experience with a cat. These memories contributed to his construction of meaning from these paintings.

In the following excerpt from his viewing of See How It Works: Plane, Sean drew on life experiences with his grandfather and father at the airport to construct meaning from the aircraft icons he was looking at.

Sean: Saw this one. ((points at jumbo jet icon))

Rick: What's that one?

Sean: Uh. My gramp-

Rick: //It has it's ((pointing at icon label)) name there.

Sean: My grampa ((running finger from tail to nose of plane)) goes on one of these

Rick: Uhhuh. ((points at icon label))

Sean: because he has a lot of traveling.
Rick: It's called a jumbo jet.

Sean: ((covers mouth and giggles)) And my papa he goes on a lot of trips and my grampa ((pointing at jet engine)) he sits on the motor.

Rick: He sits on the motor? What do you mean?

Sean: No. He sits right here. ((points at cabin beside engine))

Rick: So he can see the engines out the window?

Sean: ((nodding)) I think.

Although identifying the plane by name seemed unimportant to Sean, he drew on his experiences with his grandfather at the airport and on a plane trip they took together to make sense of what he was seeing. His life experience caused him to place importance on a part of the plane (i.e., the engine) that might have gone unnoticed in this image. The engine apparently was a significant part of his schemata for jumbo jets. Thus, he noticed this detail while others went undetected or, at least, unmentioned.

Sean not only used life experiences to make meaning from the illustrations in informational books but also encounters with artistic and linguistic artifacts. Some of the connections that he made were intratextual, involving artwork within the book that he was reading, and others were extratextual, involving other books and television. In the following excerpt from his viewing of *Catch the Wind!* Sean had just had me read an explanation about a structural difference between flat kites and bowed kites that the kite shop owner had given the boy and girl. Sean was looking at a double-page illustration of a flat kite and a bowed kite flying outside of the kite shop. The owner of the shop was standing on the stairs with the two
children and was pointing at the two kites. Sean connected the illustration to one that he had seen earlier in the book.

Rick: What do you notice in this (2) illustration? This picture?

Sean: Um the same ((paging backward one page at a time)) thing as the first picture.

Rick: Whadaya mean?

Sean: The same picture ((pointing at right page of double-spread title page)) as the first did.

Rick: This is the same as this one? ((turning ahead to page just read))

Sean: //Yeah.

Rick: Is it exactly the same? ((turning to title page))

Sean: Well no (1.5) because the ((turning ahead to page just read)) the store doesn't have that much kites in it.

Rick: Uhhuh.

Sean: ((pointing at kites in store window)) Right there. And see ((turning to title page and pointing at kites in store window and doorway)) there was (.) there (.) there was ((frowning, looking ahead to page just read and looking back at title page)) there's ((flips pages back and forth again)) still that much kites.

Rick: Uhhuh.

Sean: ((shrugs shoulders and turns ahead to last page read)) There's (.) the (.) the dragon kite is not in here.

Sean constructed meaning by noticing the recurrence of some images throughout the book. He noticed that the same shop appeared in many illustrations. In this case, he noticed that it was the same shop that he had seen on the title page. Once again, as examples in the 'Viewing' part of the
'Affordance' section highlight, Sean focused on an icon rather than the whole picture in making his comparison. Although my initial question referred to the whole picture, Sean used his understanding of that term, 'picture,' and talked about an icon. Not until I probed his observation did he expand his view and see a difference in the illustrations. At first he thought the number of kites shown in each of the shops' windows and doors was different, but then, he realized that they were the same. At this point he noticed that the types of kites flying outside the shops were different. Regardless of the confusion surrounding the referent of the word 'picture,' Sean did use the repetition of the shop icon to establish continuity in the text that he constructed from the illustrations in the book.

Sean also made extratextual associations as he constructed meaning with the illustrations in informational books. He drew upon two sources in making these connections:

1. books.
2. television.

In the following excerpt from his viewing of Catch the Wind! Sean was looking at the illustration on the dust jacket. As I told him the title and author of the book, he recalled reading another book by the author/illustrator.

Rick: This is called Catch the Wind! All About Kites and it's written by Gail Gibbons. ((opens book to first picture))

Sean: We've read (.5) we've read a kite (.5) we've read a book by Gail Gibbons.

Rick: What was it?

Sean: I forget but we did.
Rick: One that we did together?

Sean: ((nodding head))

Rick: It was that farming one, wasn't it? [referring to Farming by Gail Gibbons]

Sean: Yeah.

Later, Sean made another connection to a book written and illustrated by Gail Gibbons that he had looked at many times during quiet reading. This book was Fire! Fire!. He noted that the kite shop owner looked just like the man that appeared in that book.

Sean: This is the kite store.

Rick: It's a kite store?

Sean: / / ((pointing at person at top of stairs)) This (.) this man was in the fire book.

Rick: He was? That was another Gail Gibbons book, huh?

Sean: ((nods head))

What Sean was noticing, but gave no indication that he was aware of, was Gibbons' artistic style. The men in both of the books looked very similar. But, as far as Sean was concerned, they were the same person. In two ways then, through authorship and through artistic style, Sean linked Catch the Wind! to prior reading/viewing experiences. These connections framed his current viewing experience. The kite shop owner was not just another person in an informational book to him. He existed in relation to the author and in relation to the book Fire! Fire! Sean's schemata for a Gibbons creation established an anticipatory set and helped shape the meaning that Sean made from her pictures.
Sean also used images from television as he tried to understand what he saw in informational picture books. These images created an expectation that Sean believed would be fulfilled when he saw an icon that seemed to match his prior viewing experience. This expectation was dependent upon recalling and attending to the most salient characteristics of the images and icons. In the following excerpt from his viewing of *Animals Born Alive and Well*, Sean was looking at the icons in a double-page spread showing wild land mammals. Among these animals including a panda, a hare, a moose, and a bison were a bighorn sheep and a wild goat. Sean was attempting to visually identify the animals.

Sean: Oh ((pointing at bighorn sheep icon)) I guess this is a mountain goat and ((pointing at wild goat icon)) this is a

Rick: ((pointing at bighorn sheep)) This's a what?

Sean: Mountain goat.

Rick: ((pointing at icon)) That's a wild goat there. ((pointing at icon)) This is a bighorn sheep. ((pointing at icon label))

Sean: Yeah. ((lowers head)) Oh.

Rick: Why did you think it might be a mountain goat?

Sean: Because they fight on the mountains.

Rick: What is it that when you looked at it made you think of a mountain goat?

Sean: Because I saw it on TV and I thought it was a mountain goat.

Rick: How did it look similar to what you saw on TV?

Sean: ((shrugs shoulders))
In this case the matching of mental images to the icons before him led Sean to construct a meaning for what he saw. His construction, however, was consistent neither with the icon label nor with the meaning that more experienced viewers would have made. Sean's comment that "they fight on the mountains" leads me to believe that a critical factor in his schemata for mountain goats involved their horns. Sean may have overgeneralized when he concluded that the bighorn sheep in the illustration was a mountain goat. His selective attention did not permit him to account for enough critical details before drawing a conclusion about what he was seeing.

**Questioning.** Sean wondered and inquired about the words that he had me read and about the icons that he saw. Five types of questions arose. Sean sought answers that involved:

1. identification
2. reasons
3. explanation
4. locations
5. meanings.

As Sean began viewing the book *Pizza Man*, he looked closely at the detail in the photographs. In the picture on the first page of text he observed the position of the man's feet and of his hands. He did not reveal any understanding of the context in which the man existed. When he turned the page, Sean saw an industrial pizza mixer. The pizza man was pouring flour and water into it. Sean could not figure out what he was seeing. The following excerpt reveals his thoughts about the images during his attempt to identify the machinery. At first my own cultural interpretation of the
photographs prevented me from understanding what Sean thought he was seeing. I assumed that he recognized the machine as a mixer.

Sean: ((turns page)) Is this the old-time one?

Rick: Why do you think it's old-time?

Sean: ((shrugs shoulder)) I don't know.

Rick: I wonder what it was you saw

Sean: ((tapping black and white photographs of mixer on both pages))

Rick: in the picture that made you think old-time. ((pointing at mixer in photo on left page)) This machine?

Sean: ((running hands over photos of mixer on both pages)) These two machines.

Rick: They look old-time? I wonder what it is about them that makes them look old-time?

Sean: ((puts head in hands, looks down, and rocks head from side to side)) I don't know either.

Rick: You don't know?

Sean: Nope.

Rick: What would they look like if they were new?

Sean: Oven

Rick: Oh, they would look like an oven? So you think this is where he's going to bake his pizza pie? You think this is the old-time way of baking it?

Sean: ((nods head))

As I tried to understand the distinction that I thought Sean was making between old mixers and new ones, I asked about the appearance of newer
models. Sean's answer made it clear to me that he was not trying to identify the machine as a mixer but rather as one that could be used to bake the pizza. Regardless of my confusion about his reference, Sean's question, "Is this the old-time one?", represented his attempt to identify the machinery.

Not all of Sean's identity questions involved the icons in a visual display. At times he asked about the print in the displays. As he viewed See How It Works: Planes, Sean was excited about seeing the inside of the cockpit. He scanned the instruments on the control panel and talked about them. In the following excerpt that was embedded in this sequence, Sean asked about the identity of labels in the cockpit illustration.

Sean: ((pointing at icon label)) What's this say?

Rick: co-pilot

Sean: ((pointing at icon label)) What's that say?

Rick: captain

Sean: ((smiles and puts finger on side of head)) How come they need co-pilots?

Rick: If someone got sick while they were flying the plane, the other one could take over.

Sean: ((pulling collar over mouth)) Which one?

Rick: The captain normally flies it. But if he wanted to rest or something (.) he could have the co-pilot fly it.

Sean: ((pointing at control yoke icon)) Oh like (1) like when (1) he can fly that?

Rick: Mhm. Yeah. They can turn ((pointing at captain icon)) his controls off and put ((pointing at co-pilot icon)) his controls on, I guess.
Sean: ((pointing at oxygen mask icon by co-pilot)) That's a gas? What's that called?

Rick: Where is the label for it?

Sean: ((points at icon label on page 13))

Rick: oxygen mask

Sean: ((smiles, glances quickly at researcher, looks at page 12 and points at oxygen mask label by captain)) What's that say?

Rick: oxygen mask

Sean: Why do they need oxygen masks?

Rick: Well, sometimes if they're up in the air and something goes wrong and they lose the air pressure that they keep inside the plane (1) then they might have to put the oxygen on because when they get high up in the air there's less and less oxygen.

Sean: ((turns to pages 14 and 15))

Noticing the labels linked to their respective icons by a line, Sean was curious about what they said. In some cases the identification of labels confirmed what he already believed the icons were and in others named something that was visually unfamiliar.

In the above excerpt Sean went beyond mere identification of labels like captain and co-pilot and the identification of icons like the oxygen mask. He asked questions that represented a search for reasons. Sean's inquires about the need for a co-pilot and for oxygen masks were examples of this searching. In addition to the lived experience that resulted from Sean's transactions with the illustrations, his search for information resulted in an efferent experience. By asking 'why' he turned the page with information about the need for specific personnel and equipment on a plane.
Other questions also represented Sean's efferent stance in relation to the pictures and print that he viewed and had me read. At times he sought additional information about what he was seeing. In the following excerpt from his viewing of See How It Works: Planes Sean was looking at an illustration that included a plane with a propeller. He mistook the icon label by the blade for a label identifying the propeller. He then requested an explanation about the blade on the propeller.

Sean: ((points at blade icon label)) Prepeller.

Rick: It's talking about just this part of the propeller. It's called the blade.

Sean: ((looks at researcher and raises eyebrows)) The bla::de. Does it hurt?

Rick: Oh yes. When it's going around you mean? Yeah. That would chop off whatever it hit.

Sean: ((holding out open hand and smiling)) Would it chop off your fingers?

Rick: Sure would. Wouldn't want to do that.

Sean: ((closing hand, pulling against cheek and shaking head)) M:: m-m-m. But ((pointing at blade icon)) what if it wasn't moving?

Rick: Then you could touch it and it wouldn't hurt.

Sean: But what if we ((pressing finger down blade icon)) touched it ha::rd?

Rick: It wouldn't hurt you then. It's only because (1) if it was moving and you stuck your hand in there and it got caught that it would hurt.

Sean: Would it go ((raises hand and slices it through air)) psh::::::ew?
Rick: You mean if you hit it hard?

Sean: ((nods))

Rick: Then you'd hurt your hand because it's made of metal.

Sean: ((looks at researcher wide-eyed)) Woh::::::: ((puts knuckles to mouth and rocks them)) Metal can hurt you.

Sean's questions elicited an explanation about the damage that a plane's blade could do which met his efferent purpose. Throughout the exchange though Sean became involved with the blade in a lived through manner. He pushed his finger against the blade very hard, withdrew his hand pressing it against his face after talking about its ability to chop off fingers, and put his knuckles in his mouth as he realized that a metal blade could inflict pain. Sean realized the virtual reality offered by the illustrations and demonstrated his engagement through these various actions.

At other times Sean sought information about what he had me read. In the following excerpt from his listening to the Afterword in *Spring* Sean assumed an efferent stance and sought an explanation about the birdhouses mentioned in the text.

Rick: That abundant new supply of food stimulates growth and offers a chance for animals to begin to raise a family. Now it's a great time for you to help too; a properly placed birdhouse will give you a chance to watch a family of swallows, wrens, or bluebirds make a new spring beginning. Their songs will last all summer long.

Sean: Sa:::::::y

Rick: What?

Sean: Do they live in those birdhouses?
Rick: They live in birdhouses, yeah. If you put a birdhouse out, they’ll build their nest inside of it.

Sean: Sweet. ((tapping cover)) I like that book.

What Sean discovered satisfied his efferent purpose and elicited an aesthetic response. He not only received a brief explanation about birds building nests in birdhouses but also liked the idea and, in part as a result, liked the book.

In addition to asking questions that involved identification, reasons, and explanations, Sean also inquired about the location of things that he had me read about. In the following excerpt from See How It Works: Planes Sean asked about the location of the ailerons that the text mentioned.

Rick: Pilots use controls called ailerons to make the plane turn left or right.

Sean: ((pointing at aileron icons on plane wing)) These?

Rick: // The plane - I guess, yeah.

As Sean had me read the definitions in the glossary, he inquired about the location of the aeronautic element. In the following excerpt Sean turned back in the book to an illustration that he remembered displaying the instrument panel.

Sean: ((turns to glossary))

Rick: artificial horizon: an instrument to show the pilot if the plane is flying level

Sean: ((turns to pages 12 and 13))

Rick: ((points at icon label on captain’s side)) The artificial horizon shows whether the plane is level.
Sean: ((traces line to instrument icon)) Right here? ((looks at researcher and back at picture))

Rick: I guess so.

Sean: ((points at instrument icon on co-pilot's side)) And right here. ((giggles and turns to glossary))

Finally, at times Sean questioned the meaning of what he had me read. In the following excerpt from *Spring* Sean tried to construct a meaning for the word 'wildflower.' The figurative use of language in the sentence confused him.

Rick: ((pointing at words)) *Waking like mother bear and her cub from a long winter nap...* ((turning page)) *the wildflowers march up the mountainside.*

Sean: ((head juts forward)) What's a mountain? What's a wildflower?

Rick: Hm?

Sean: What's a wildmoum? What's a wildflower?

Rick: A wildflower?

Sean: ((pointing at weasel icon in photo)) //That? That?

Rick: No. ((running finger across photo of wildflowers)) These are wildflowers.

Sean: How can they ((leans toward page)) march? They're ((leans toward page)) real (1) and they're walking?

Rick: Well. No, they don't walk. I think that means that there's so many of them it looks like they spread up the mountainside.

Sean: ((widening eyes)) Yeah.

Rick: So march here means the same thing as spread.

As was true with all of the types of questioning Sean used the social nature of the situation to help him construct meaning. He speculated about
the meaning of 'wildflowers march' by identifying an animal in the illustration that he knew could move on its own. My response, however, disconfirmed his hypothesis and explained what appeared to him to be an impossibility - wildflowers marching up a mountainside. Sean's ability to get his question answered in this social context enabled him to construct meaning from the words of the text.

Speculating. Making connections and asking questions were not the only strategies that Sean used to make meaning. He often speculated about what he saw in illustrations just as Cox and Many (1992) found in their research on children's transactions with media and literature. In excerpts included in earlier parts of this report Sean speculated about the identity of a Pekinese, a Yorkshire Terrier, and a bighorn sheep, the endangered status of manatees, and humans' classification as mammals (see 'Connecting' part of 'Making Meaning with Illustrations' section). He used personal experience, experience with other media, and general background knowledge to support his speculations.

In the following excerpt from his viewing of the endpapers of *Animals Born Alive and Well*, Sean speculated about the reason for the different colored fur on the rows of snowshoe hares.

Rick: ((pointing at words)) *Winter, Spring, Summer, Fall . . . a HARE'S hair changes with them all.* ((pointing at icon label)) This says *Snowshoe Hare*. What are you thinking about?

Sean: Um.

Rick: Tell me what you are noticing here in the picture.
Sean: ((running palm over all hare icons)) Well these hares are (1) some of these hares are white and some of these hares are brown.

Rick: How come some are white and some are brown?

Sean: Because they changed.

Rick: Why?
Sean: They changed colors.

Rick: Why?
Sean: Cause um they wanted to look like snow.

Rick: When do they want to look like snow?
Sean: Winter.

Rick: In Winter. Which one is that?
Sean: ((points at top row of white hare icons))

Rick: Uhhuh. When do they turn these other colors?
Sean: Spring.

Rick: Which one is Spring?
Sean: ((runs fingers across second-from-bottom row of brown hare icons))

Rick: Why would they be like that in Spring?
Sean: Cause they're camouflaged and they don't like any (. ) like animals to eat it.

Rick: Mhm. So they'd be ((pointing at second row from bottom)) this dark brown in Spring. When would they be like this ((pointing at second row from top)) part brown and white and ((pointing at bottom row)) part brown and white?

Sean: ((pointing at bottom row)) This would be I think summer and ((pointing at second row from top)) this would be fall.
Rick: Why would this be fall and this summer?
Sean: ((tilts head toward shoulder and shrugs shoulder))
Rick: You don't know?
Sean: ((shakes head side to side))
Sean justified his speculation about the seasonal coat of the snowshoe hare by drawing on his knowledge of the food chain and the need for camouflage. This prior knowledge was critical to Sean's speculative construction of meaning.

In addition to justifying his speculations based on his existing schemata, Sean also confirmed a few of them after they were made. The print in the informational books played an important role in this confirmation process. As an earlier excerpt demonstrated (see 'Connecting' part of 'Making Meaning with Illustrations' section), Sean hypothesized that humans were mammals. As he had me continue reading Animals Born Alive and Well, Sean heard the following text and used it to confirm his earlier speculation.

Rick: The best of all are . . . ((turns page)) PEOPLE just like me or you. All of us are MAMMALS.

Sean: ((looks at researcher and then smiles)) Told you.
Rick: Yeah.
Sean: ((smiling and pointing at icons)) And these babies are naked.

Rick: //You were right that we're mammals (.) weren't you?

Print also served to disconfirm Sean's speculations. In an earlier excerpt from Pizza Man (see 'Questioning' part of 'Making Meaning with
Illustrations' section) he speculated that the pizza dough mixer was an old-fashioned device for baking pizza. As I read the text to him, he realized that the machine that he was seeing was not an old style oven but, in fact, was a dough mixer.

Rick: So you think this is where he's going to bake his pizza pie? You think this is the old-time way of baking it?

Sean: ((nods head))

Rick: We'll have to see. ((pointing at words)) I start my day by making the pizza dough. I use flour

Sean: Oh ((pointing at machine icon on left page)) this is the pizza dough thing?

Rick: Ah. This is the pizza dough machine?

Sean: Yeah.

Whether confirming or disconfirming his speculations, the process of doing so was an important aspect of Sean's construction of meaning. His speculations and justifications represented his best attempt to make meaning with the information available at the time. But, his confirmation or disconfirmation of a speculative conclusion represented the ongoing thought that he exercised as he made meaning of a whole book. Meaning-making was not only a page by page process; it was also a recursive process that involved constant reconsideration of prior constructions in light of newly constructed meaning.

Acting. As Sean made meaning with the illustrations in the informational books that he viewed, he used his body and his voice. His actions supported his thinking about what he saw. Sean displayed five types of actions in his meaning-making:
At times Sean’s movements indicated his response to what he was seeing. In the following excerpt from his viewing of *Animals Born Alive and Well*, Sean saw the open mouth of a whale. He thought he was looking at the whale’s teeth and moved in response to their imposing appearance.

Rick: *The largest MAMMAL is the BLUE WHALE. The smallest is the SHREW.*

Sean: ((recoiling)) Look at his teeth.

Rick: Where’s his teeth?

Sean: ((runs finger along filter in mouth and turns page)) Big (. ) man.

Sean’s recoiling action was an indication of the initially negative response that he had to the appearance of the blue whale’s so called ‘teeth.’ Although the reason for his response was not revealed in what he said, the threatening nature of animals’ teeth in literature and in life may be connected to Sean’s thinking about the whale and to his physical reaction.

Sean displayed other forms of action that supported his thinking. As he listened to the text’s explanation of how a plane ascends and descends, Sean looked at icons of planes taking off and landing. He gestured as he identified in the illustrations the plane that was ascending and the one that was descending.
See How It Works: Planes

Rick: The plane tips to one side when it turns. This is called banking. This is how a plane goes up and down. This is called ascending and descending. The pilot uses controls on the air assembly called elevators to make the airplane go up or down.

Sean: ((points at icon of ascending plane and moves finger up into the air)) U:::p ((drops finger onto page and points at descending plane)) Dow:::n

Sean also used his hands to feel what he was seeing on the page. He rubbed his fingers along animals' fur, over a swan's down and over a clutch of eggs. In the following excerpts from his viewing of Pizza Man Sean attempted to sense the texture of the pizza by moving his hand over the surface of the black and white photographs.

[looking at photograph on dedication page of pizza slice held in person's hands]

Sean: That looks messy.

Rick: That looks messy? Why? What looks messy about it?

Sean: ((shrugs shoulders)) I don't know.

Rick: You must have seen something when you looked at it that made you think of messy. What did you see there that made you think of messy?

Sean: ((running finger along crust of pizza slice in photograph))

Rick: What is that that you're pointing at?

Sean: The crust.

Rick: The crust. How did the crust look messy?

Sean: Cause it bends. ((puts fists together and moves in upward bending motion))
Rick: Because it's bent? Why is that messy?

Sean: Because ((runs hand over pizza surface repeatedly)) the pizza bents too

[looking at pizza man tossing dough in air and laying it out]

Rick: It’s almost right. Oops! Sometimes the dough tears.

Sean: Woops. ((turns page))

Rick: No problem. I can fix it. When the dough is thin and round enough, it’s time to add the sauce.

Sean: ((runs palm over surface of pizza dough))

Sean’s touch provided him with another sense other than sight to explore the virtual reality provided in the illustrations of informational books. This sensory exploration contributed to Sean’s lived experience with pizza, with animals, and with other objects that come under his investigative touch.

At times Sean’s vocalizations also supported his thinking about the illustrations in informational books. Sometimes he used his voice to identify or count icons while at other times he used it to add an auditory aspect to what the text and illustration presented. In the following excerpt from Catch the Wind! Sean noticed the three connected flat kites that made up the stunt kite in the illustration. He used his voice, in addition to his finger, to point at the three parts.

Rick: “Catch the wind!” Ike shouts to Katie and Sam as he watches their kites join the dance in the sky.

Sean: Wow! Look ((pointing at Ike’s stunt kite)) at his kite. ((pointing at three sections of stunt kite)) v:: v:: v::
In the next two excerpts from his viewing of *Spring* and *See How It Works: Planes* respectively, Sean added a sensory aspect to the icons of a coyote and a plane's engine by producing sounds appropriate to the images.

Sean: ((turns page and taps color photo of coyote)) Oo:::

Rick: ((points at first word)) *Now swans search for a safe place to build a nest, while coyotes and mountain sheep shed their thick winter coats.*

Sean: //Ar:::oo:::::::

Rick: *thick winter coats.*

Sean: How come they need jet engines like ((dips head toward page)) that?

Rick: They just are different types of engines. I think ((pointing at jet engine icon)) these (1) you can fly faster with.

Sean: No. ((pointing at turboprop engine icon)) These can fly ((waving hand through air and trilling sound produced)) fd:::::::

In both types of vocalization Sean supported this construction of meaning from the illustrations and print. In the first his voice enabled him to quantify the sections of the stunt kite. In the second his sounds added an auditory dimension to the virtual reality of the book. Each was indicative of Sean's lived through experience with the illustrative and textual aspects of informational books.

Finally, Sean sometimes provided demonstrations of what he heard in the words of an informational book and of what he saw in the illustrations. In the following excerpt from *See How It Works: Planes* Sean supported his inquiry about a plane's landing gear by demonstrating its retraction. After having me read the 'landing gear' entry in the glossary, Sean searched the
pictures of the book to find an icon that showed the gear. Finding one, he clarified its components and talked about its functioning.

Rick: Can you see the wheels on the plane? ((pointing at wheels on plane)) There (1) that's the landing gear.

Sean: Yeah.

Rick: The wheel

Sean: Yeah ((pointing at bay doors)) those box.

Rick: Yeah(.) the landing gear comes down. It's the wheels and the other pieces that are attached to it.

Sean: //Oh (.5) oh (.5) oh. ((pointing at wheel icon)) Um when ((raises horizontal hand straight up)) they go up(.) the wheels go ((places other hand flat on top)) like that? ((turns hands perpendicular to table)) And then up like that? ((turns hand to horizontal)) They're like that.

Rick: Yeah. They fold back up in there when they're flying, and then when they're ready to land, they come back down.

Sean's demonstration supported his thinking about the operation of a plane's landing gear. This type of action provided him with the opportunity to explore his understanding. The demonstration made an abstract, rarely observed idea concrete. In this way Sean was able to think through the way in which a plane's landing gear would need to operate.

Whether through movement, gesture, touch, sound, or demonstration Sean's actions supported his construction of meaning from the illustrations and text in informational books. The active use of his body contributed to his response to informational books just as the children's action in research conducted by Harvey (1993), Hickman (1979, 1981), and Hepler (1982) contributed to their response. The active use of the body by young children is
an integral part of their meaning-making process. It makes a virtual reality more concrete by involving the tactile, auditory, and kinesthetic dimensions of the real world. What is still and silent on the page of a book comes to life in the hands of a young child. The art and literature offers lived experiences as young children transact with them.

Summary

Sean engaged with informational books primarily for the lived experience that they offered but also for the information that he could take away from the reading/viewing. He focused almost exclusively on the illustrations, but he used ideas from my reading of the text to support his construction of meaning from the pictures. Connections to past experiences and to other books and media contributed to his meaning-making. Sean also used questions, speculations, and body movement to support his thinking about informational books.

For Sean these books afforded opportunities to experience virtual realities, to play, and to socialize. As he attempted to use social situations to bolster his self-esteem, he sometimes positioned himself in an authoritative role that made him unpopular among his peers. At these times his actions and his peers' responses had a negative impact on his already fragile self-concept. Overall though, the reading/viewing of informational books permitted Sean to display his learning for his teacher, to increase his growing knowledge base, and to experience the world beyond his grasp.
A Comparative Analysis of Three Children Making Meaning with Informational Picture Books

This study focused on three children's transactions with informational picture books. The preceding case reports delineated the affordances that they individually realized as they read/viewed the books. The case reports also presented the ways in which they made meaning with the pictures and the print. The use they made of the iconographic and orthographic features of books was embedded in each one. The following analysis across cases consists of three parts. Each one highlights similarities and differences in the children's reading/viewing of informational picture books. The first part deals with the children's realization of affordances, the second presents their construction of meaning, and the third highlights a process for reading/viewing informational picture books.

The Affordances of Informational Picture Books

Marcelita, Tanisha, and Sean approached informational picture books with specific intentions. The iconographic and orthographic features of the book offered potential opportunities to transact with them. The children's goal-directed behavior in relation to these features created affordances (Gibson, 1979; Heft, 1989; Lombardo, 1987). This part of the cross-case analysis addresses the relative dominance of the affordances for each child and the comparative dominance of the affordances across the children (see Figure 15).
<table>
<thead>
<tr>
<th>Marcelita</th>
<th>Tanisha</th>
<th>Sean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Viewing</td>
<td>1. Reading</td>
<td>1. Viewing</td>
</tr>
<tr>
<td>2. Socializing</td>
<td>2. Viewing</td>
<td>2. Socializing</td>
</tr>
<tr>
<td>5. Counting</td>
<td>5. Drawing</td>
<td></td>
</tr>
</tbody>
</table>

Figure 15. The dominance of affordances in three children's transactions with informational picture books.

I identified six affordances in the children's reading/viewing of informational books. The affordances are:

1. viewing
2. reading
3. socializing
4. playing
5. counting
6. drawing

Each child did not realize each of the affordances. Therefore, the affordance list for each child in Figure 15 consists of a different number of elements.

The determination of the dominance of each affordance for a child is part of my interpretive analysis of the data. An intuitive sense of quantity played a part in my interpretation, however, I did not make any conscious attempt to count the frequency of particular affordances in a child's reading/viewing. Rather my lived experience with the children in the context of this study led to my judgments about relative and comparative
dominance. Observation of the children's natural tendencies to construct certain affordances before others aided me in creating a prioritized list. Although a list hides the interconnected and embedded nature of the affordances, it does make comparison across children somewhat clearer. It is important, however, to keep in mind that the degree of dominance represented by a particular number in a list may vary across lists.

Viewing and Reading
For Marcelita and for Sean viewing was the primary affordance realized in transactions with informational books. Each constructed meaning from the images on the page. They scanned the pictures focusing on icons rather than the picture as a whole. Each assumed a predominantly aesthetic stance relative to an informational picture book. The lived-through experience, as Rosenblatt (1978) describes it, was the attentional focus of these children. They reveled in the world of a book. Sean savored the appearance of the pizza and could taste the broccoli topping in Pizza Man. Marcelita laughed at the appearance of a tarsier in Animals Born Alive and Well. The worlds of the books also repulsed the children at times. In Bears Marcelita found the images of a bear's skeleton and musculature revolting. Similarly, in Pizza Man Sean found the stickiness of the dough and the taste of mushrooms unappealing.

Although Sean and Marcelita's predominant stance relative to informational books was aesthetic, they also demonstrated efferent purposes. In See How It Works: Planes the parts of and types of planes grabbed Sean's attention. He inquired about these aspects of the topic in order to increase his
existing knowledge. Marcelita had an insatiable interest in the world around her. Embedded within her lived experiences were engagements with the information contained in the illustrations. She questioned what she saw and speculated about the images. For example, in Giant Pandas she inquired about the location of a panda in the illustration and speculated that the red pandas shown in it were cougars.

Informational picture books afforded Marcelita opportunities to read. It was the third most dominant affordance for her. On occasions her viewing purposes led to the intent to clarify or to confirm what she had seen. At these times, she used the print to help in her construction of meaning. For example, after speculating that the animals were cougars in the illustration referred to above, Marcelita read the picture caption and discovered that they were red pandas. Sean, on the other hand, rarely realized reading as an affordance of informational books. Even though the books contained orthographic displays, Sean's emerging literacy did not lead to this type of intentional behavior. Instead he clarified his thoughts through interaction with other people and through play.

While reading was a less dominant affordance of informational picture books for Marcelita and a virtually nonexistent one for Sean, it was for Tanisha the most dominant affordance that she realized in her transactions with these books. Attending to the printed word was extremely important to Tanisha. It was a means by which she could demonstrate her competence as a learner. It marked her as a reader.

As she engaged with print, Tanisha assumed a predominantly efferent stance. She was interested in the information that she could take from the
situation and use in another one. Most of the time this information related to sound-symbol correspondences and the recognition of words by sight. Tanisha had a clear focus on increasing her literacy. These aspects of dealing with print were, in her mind, the most important types of information to attend to. She did, however, on rare occasions, make inquiries but did not attempt to confirm her speculations by using the words or pictures. Her focus was on finding out about print more than the world.

Tanisha realized the opportunity to view also. She engaged with the illustrations in informational books as a secondary affordance to reading. She used the pictures to clarify, to expand, and to extend what she read in the print. She frequently assumed an aesthetic stance relative to the illustrations. Tanisha savored the lived experience that they afforded her. In *Animals Born Alive and Well* she found animals that she described as "cute." In *The Reason for a Flower* she feared that a squirrel would be hit by a bike. In *Eyes* she found the appearance of the tentacles to be "ugly." And in *The Reason for a Flower* she found the artist's picture composition and use of color to be beautiful. These lived-through experiences with the illustrations made her transactions with informational books to some degree aesthetic although they were predominantly efferent.

Across the cases comprising this study, reading and viewing were dominant affordances in children's transactions with informational picture books. The quality of the child's print literacy largely influenced the degree to which reading in comparison to viewing dominated. For Sean print was not yet useful in constructing meaning so reading was the least dominant affordance in his transactions. Viewing illustrations was his primary means
for making meaning. Tanisha felt that print afforded the opportunity to become a ‘reader.’ Consequently, reading was the dominant affordance in her transactions, but viewing was supportive of her reading and of her experiencing the virtual reality of a book. For Marcelita, who could read much of the print that she encountered, reading was a less dominant affordance than viewing. Her negative attitudes toward reading instruction influenced her use of print and her dependence on illustrations for constructing meaning. Marcelita used print as a means of clarifying and of confirming the meanings that she made from illustrations. The three children included in the final analysis of this study presented different pictures of the opportunities to read and to view that existed in transactions with informational picture books.

Socializing

As Cazden (1985) points out, reading is an activity that is embedded in social interactions with peers. To this idea I would add that viewing is similarly embedded in social interactions. For Marcelita, Tanisha, and Sean interactions with peers and adults were the second or third most dominant affordance realized. Although the relative dominance of socializing was similar for all three, the dynamics of the interaction was different.

Marcelita interacted with her friends as part of her lived experiences with informational books. As she viewed Giant Pandas, she brought the "killed" wild dog to Lanie's attention. As she looked at A Puppy Is Born, she told Beth and Sean about a life experience with a friend's dog. In each case
the interaction was an important aspect of her experiencing the virtual reality of the illustration. It contributed to the meanings that she made.

Marcelita and her friends exchanged control of the rhythms of the interactions. No one person dominated regularly. At times Marcelita's more advanced literacy, however, led to her assumption of a leadership role as she tried to help her friends or to inform them.

Unlike Marcelita, Tanisha's interactions with peers involved control. Tanisha strove to maintain a 'private' dimension to her reading of an informational book even in a group situation. She positioned others, peers and adults alike, as outsiders to her reading. When peers attempted to involve themselves in her reading experience, she withdrew from them, pushing them away and maintaining control of her reading. Tanisha's actions and her peer's acceptance of it kept the relationship in balance. As I worked with Tanisha one-on-one, she controlled the timing of and the degree of interaction that we had relative to a specific book. The way in which she positioned me and my acceptance of it kept our relationship in balance also. Thus, unlike Marcelita's interactions that primarily involved the exchange of ideas and responses, Tanisha's interactions primarily involved control of the literacy event (see Figure 16).

<table>
<thead>
<tr>
<th>Tanisha</th>
<th>Sean</th>
<th>Marcelita</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control of Event</td>
<td></td>
<td>Exchange of Thinking</td>
</tr>
</tbody>
</table>

Figure 16. Continuum of interactional styles for three children.
Like Tanisha, Sean's interactions with his peers involved a relatively high degree of control. Whereas Tanisha aimed to control her individual reading experience, Sean's focus was on controlling what others were doing in a literacy event. He attempted to control the time and place in which they could read/view the informational picture books. Unlike Tanisha and her peers who achieved homeostasis, Sean and the same peers were often struggling to find a balance in their relationship.

The one person with whom Sean consistently achieved balance was his teacher, Miss Benjamin. He bolstered his fragile self-esteem by displaying the connections that he made between the class's units of study and what he found in informational books. For example, when he discovered an anteater, a sloth, and a seal in the illustrations of Animals Born Alive and Well, Sean connected what he saw to the class's study of the rainforest and the polar regions. He immediately sought his teacher's attention in order to share his discovery with her. Unlike much of his socializing with peers, he knew that this social exchange would lead to praise and would make him feel that his status in the class had risen.

Infrequent occasions did arise that involved Sean in interactions with peers without the struggle for control. For example, when Marcelita shared the illustrations and her thinking related to the book, A Puppy Is Born, with Sean and when he played a game with two peers involving the location of an animal with which to identify, he shared control of the rhythms of the interaction. In these cases the interactions were more similar to those that Marcelita and her friends engaged in regularly. Although the interactions did not involve the exchange of thinking that characterized Marcelita's
interactions, they did involve interactional responses to the illustrations in informational picture books.

Playing

Sean and Marcelita played with the words and pictures in informational books. They improvised on the reading and viewing events that they observed around them. Sean fantasized that his father was a pizza man and Marcelita created a reading/viewing scenario in which she read an imaginary caption to go with the picture of a panda eating bamboo. By doing so they assisted themselves in meeting the demands of the real world. As Britton (1970) indicates this "storying" serves an assimilative function enabling children to reconcile their inner needs with the demands of the environment in which they live.

For Marcelita playing was a less dominant affordance, but that does not diminish its importance in understanding Marcelita's meaning-making. One of the environmental demands that Marcelita faced was the need to link words with pictures. As she looked at a double-page illustration of a panda lying on its back and eating bamboo without any caption to go with it, she strove to construct meaning in a manner similar to what she had seen others use. She tried to find a caption on the two pages that would confirm or expand on her observations. Since none existed, Marcelita played with the illustration.

As Vygotsky (1978) states, "the child satisfies certain needs in play.... Play seems to be invented at the point when the child begins to experience unrealizable tendencies" (pp. 92-93). In this case Marcelita was unable to
realize the construction of what she conceived of as a definitive meaning for the illustration. The need to define her meaning for the photograph was worked out through play. At the same time she worked out her need to link captions with illustrations. Vygotsky argues that "play creates a zone of proximal development of the child. In play a child always behaves beyond his average age, above his daily behavior; in play it is as though he were a head taller than himself" (p. 102). As Marcelita created an imaginary caption for the photograph, she worked out the link between word and picture. She captured what she perceived as the essence of the illustration in her created caption. In doing so, she stood a head taller than herself. She constructed meaning in a way that was not typical of her daily behavior. Rather than focusing on the details of the picture, she focused on the whole and captured the essential details in the process. Although the research by Elkind, Koegler, & Go (1964) indicates that this behavior is not common before the age of nine, Marcelita was operating in her zone of proximal development. Ultimately, what she learned from this play experience would lead to development (Vygotsky, 1978).

Comparatively play was a less dominant affordance for Sean than viewing and socializing were, but it was very important to his meaning-making with informational picture books. Play helped him to manage the events within his life, to satisfy his needs. He manipulated language for its meaning and sound values. As Sean became more aware of the semantic and phonological aspects of language, he developed a need to focus on the connections between words. He played with the multiple meanings of 'mole' and the phonological relationship between 'tapir' and 'tape.' In doing so, he
operated within his zone of proximal development. What he learned about language in the process would ultimately lead to his language development.

Sean also played with the icons in illustrations. With his peers he attempted to locate and to identify with an animal or an inanimate figure in a picture. The locational aspect of this game focused Sean's attention on the individual icons making up an illustration while the identification aspect brought him into the world of the book. These aspects of the game helped Sean to address his need to learn more about the structure and meaning of the parts of illustrations. They also created a relatively risk-free situation in which he could succeed and bolster his self-esteem.

Sean's "storying" (Britton, 1970) about his father, the pizza man, reflected his freedom to improvise on the events of the real world. It enabled him to return to real life and to deal with its demands. In his imaginary world his relationship to a pizza man made him an expert on pizza making. Thus, he became an expert on the content of the book, Pizza Man. Expert status contributed to the elevation of his self-esteem. In this way Sean used the illustrations and the words to connect his inner needs to the demands of the external world. He used elements from the book to accommodate his own self-esteem needs.

For Marcelita and for Sean play was a means to learn. The play structures that they created brought the demands of the external world within their zone of proximal development. It enabled them to deal with the new requirements that the structures of informational books placed upon them.
Counting

The potential existing in informational books combined with Tanisha and Marcelita's intention to quantify what they saw led to the affordance of counting. Each of the girls justified conclusions drawn or predictions made about the illustrations. Marcelita counted the nails on a black bear in Bears to prove that they "have more nails than any bear." Tanisha quantified the deer on the cover of Animals Born Alive and Well to support her predictions that the book dealt with animals in the woods. While both girls counted for this purpose, they each had individual reasons for counting too. Tanisha counted to identify the eyes on a spider in Eyes and to realize the measurement of a large flower that was given in The Reason for a Flower. Marcelita counted to support her opinion that there were too many dolphins in the illustrations in D is for Dolphin. She also counted as she investigated a panda's teeth in Giant Panda.

Drawing

The least dominant affordance for Tanisha and one that was unique to her was the affordance 'drawing.' Tanisha's intention to capture her so called "best animal" in artwork relative to the physical features of the illustrations in Eyes led to the realization of this affordance. For Tanisha drawing was a means by which meaning could be explored. As Vygotsky (1978) states, children draw "not what they see but what they know" (p. 112). They draw their own constructions. Drawing provided Tanisha with a way to experience the virtual reality of a book in her exploration of meaning.
Making Meaning with Informational Picture Books

During their transactions with informational picture books Marcelita, Tanisha, and Sean used the illustrations and the print to construct meaning. They approached them in five different ways in their transactions. They

1. made connections to prior knowledge, life experiences and other texts and media,
2. speculated about what they saw and what they read,
3. wondered and inquired about the content of illustrations and print,
4. analyzed the visual and textual aspects of the books,
5. and acted relative to the print and illustrations by using their bodies, senses and voices.

This part of the cross-case analysis addresses the relative dominance of each child’s strategies and the comparative dominance of the strategies across the children (see Figure 17). Each child did not use each of the strategies.

<table>
<thead>
<tr>
<th>Marcelita</th>
<th>Tanisha</th>
<th>Sean</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Speculating</td>
<td>2. Speculating</td>
<td>2. Questioning</td>
</tr>
<tr>
<td>5. Analyzing</td>
<td>5. Analyzing</td>
<td></td>
</tr>
</tbody>
</table>

Figure 17. The relative dominance of strategy use in three children’s transactions with illustrations and print in informational picture books.
Therefore, the strategy list for each child in Figure 17 consists of a different number of elements.

The determination of the dominance of each strategy for a child is part of my interpretive analysis of the data. An intuitive sense of quantity played a part in my interpretation, however, I did not make any conscious attempt to count the frequency of particular strategy use in a child's reading/viewing. Rather my lived experience with the children in the context of this study led to my judgments about relative and comparative dominance. Observation of the children's natural tendencies to use certain strategies before others aided me in creating a prioritized list. Although a list hides the interconnected and embedded nature of the strategies, it does make comparison across children somewhat clearer. It is important, however, to keep in mind that the degree of dominance represented by a particular number in a list may vary across lists.

**Connecting**

For Marcelita, Tanisha, and Sean the dominant means of constructing meaning was by connecting the current viewing/reading experience to their prior knowledge, to their life experiences and to other texts and media that they had encountered. Each of the children made connections to the class's curriculum, to experiences at home and to experiences in the world beyond the walls of the school and the home. Each of them also used experiences with images from television or cinematic film as they made meaning with the print and illustrations in informational books. While all of the children talked about intratextual connections among the illustrations in books (e.g.,
Marcelita - the birthing and nursing pictures of dolphins; Tanisha - comparison of the icons of plants' roots; Sean - comparison of the kite shop icons), Tanisha and Sean made extratextual connections also. Tanisha connected the adjoining pictures of a swan and a coyote to the duck in the story of Peter and the wolf as she determined the possible fate of the swan. Sean and Tanisha connected authors' names to other books that they had each read/viewed individually by the authors/illustrators. And Sean linked the man in one book by Gail Gibbons to that in another by the same author/illustrator. All of these connections to the texts of life, literature, and media were influential in the children's meaning-making processes.

Speculating

Speculation about what was seen or read was for Marcelita and Tanisha the second most dominant way in which they made meaning and for Sean the third most dominant means. At times each of the children made educated guesses about the meaning of what they saw in the books. They used their background knowledge, life experiences, and experiences with images and print to construct these meanings. Only Marcelita gave any indication of being aware of the speculative nature of her meaning-making.

For Tanisha and for Sean the process of speculating sometimes involved justifying the educated guess that had been made. This behavior usually closed the door on further consideration of the constructed meaning. However, while it bolted the door for Tanisha, it did not bolt the door for Sean. Marcelita, on the other hand, did not attempt to justify her speculations. Rather than closing the door, her speculations drove her to
seek verification. Her conjecturing tended to raise many questions that drove her constructive meaning-making process.

Sean and Marcelita sometimes confirmed or disconfirmed their speculations. The doors that Sean had closed were reopened in the light of new, related information. Both children became excited when they could return to a prior thought and explore it further. Marcelita reveled in the opportunity to prove or disprove her thinking. Sean beamed when he found evidence of thinking that he could confirm. This process bolstered his self-esteem. For Sean and Marcelita, then, speculative thinking often led to a reconsideration of thoughts at a later time, but for Tanisha conjecture was a terminal process. Once she risked speculating about meaning and perhaps justified it, the process was complete, the door was closed.

**Questioning**

The dominance of questioning varied tremendously among the children. For Sean it was the second most dominant way in which he constructed meaning with informational picture books. For Tanisha it was one of the least dominant means, and for Marcelita it fell in the middle.

Sean made meaning with the illustrations he viewed by asking many questions. Since he was not able to use the print in a consistent way to clarify or expand on what he saw, he took advantage of the social context of the one-on-one sessions. My availability afforded Sean a source of answers to his questions (Costall & Stiles, 1989; Gibson, 1979). He inquired about the identity of icons (e.g., pizza dough mixer) and labels (e.g., the word 'co-pilot') and the reasons for the existence of cultural objects (e.g., an oxygen mask). He also
sought explanations of functions (e.g., a blade on a propeller), the locations of items mentioned in the print (e.g., ailerons), and the meaning of language that he heard me read (e.g., wildflowers marching). These questions reflected the efferent stance that Sean sometimes adopted as he viewed informational picture books.

Unlike Sean, Tanisha asked very few questions. Those that she did raise most often centered on the graphophonic aspect of language. She used questions to increase her literacy. At other times she inquired about what she had read or seen as a last resort for making meaning. Only when she was extremely puzzled would Tanisha ask questions that got her information about the world.

Marcelita used questions to make meaning much more than Tanisha, but not as much as Sean. Since Marcelita was able to read, she could, if necessary, locate information to satisfy her desire to know. Marcelita was also satisfied to speculate about meaning. She was confident in her ability to understand most any informational book that she encountered. Definite answers were not as important to Marcelita. She enjoyed the speculative aspect of reading/viewing books. Nevertheless, she did ask five types of questions. Four types, identification, locations, reasons, and meanings, were similar to Sean's questions. The one type of question that she raised, that Sean did not, dealt with relationships. Marcelita sometimes inquired about her place in relation to the natural world. For example, she wondered whether a bear could hug her or whether there would be some other consequence if the bear tried. Like Sean, then, questions and the resulting answers that emerged in the social context in which Marcelita read/viewed
the informational books addressed the efferent purposes that she sometimes had.

**Acting**

The children in this study used their bodies and their voices to support their thinking as they made meaning with informational picture books. "Young children are likely to fuse action and speech when responding to both objects and social beings" (Vygotsky, 1978). For Tanisha and for Marcelita, respectively, acting was the third and the fourth most prevalent strategy out of five strategies. For Sean it was the fourth most dominant strategy out of four strategies that he used. The relatively lower ranking of this means of making meaning should not be interpreted to imply its unimportance. Compared to other strategies it was not as dominant, but it was critical to the children's meaning-making when it did occur. As Vygotsky (1978) states, these actions involving gesture "are writing in air" (p. 107). Used along with speech they demonstrate the internalization of a meaning making process, a move from a social or interpsychological plane to an individual or intrapsychological plane (Vygotsky, 1978).

Since Tanisha rarely used questions or analysis as she constructed meaning, acting was the third most dominant strategy that she employed. She demonstrated the meaning that she was making from the words and pictures (e.g., moving eyes back and forth like a fish), moved in response to what she saw (e.g., recoiling from picture that she interpreted to be an imminent collision of bike and squirrel), gestured to explain her interpretations (e.g., pointing at own face to compare appearance of bat and
tarsier), and used her senses to understand what she saw (e.g., rubbing fur on tiger icon). Each of these types of acting supported Tanisha's meaning-making.

Marcelita and Sean used their bodies to support their constructions of meaning in the same manner that Tanisha did. In addition, they also used their voices. For example, Marcelita's "woo:::zoop" helped her to construct the movement of a stunt kite and Sean's "v:: v:: v::" aided him in identifying the three parts of the same kite. Similarly, Sean's "Ar::::oo:::::::::" while looking at a photograph of a coyote and his "fd:::::::" while pointing at a turboprop engine added an auditory dimension to the lived experience of his transactions with Spring and See How It Works: Planes, respectively.

The children's use of their bodies and voices was a compensatory strategy. As Vygotsky (1978) points out, young children's "verbalized perception" is often limited by their language development. "The child embellishes his first words with very expressive gestures, which compensate for his difficulties in communicating meaningfully through language" (p. 32). In the cases of Marcelita, of Sean, and of Tanisha action became a mediator in the children's construction of meaning. Without the use of gesture, movement, demonstration, sensing and vocalization, their verbalized perception would have limited their expression of the meanings that they made with informational picture books.

Analyzing

The least dominant strategy for making meaning was analyzing. For Marcelita and for Tanisha it was at the bottom of the list of strategies. For
Sean it was nonexistent. The purpose of the girls' analysis was very different. While Marcelita made evaluative judgments about how satisfying the illustrations and print were, Tanisha simply determined the boundaries of a picture.

Marcelita evaluated the pictures and print that she encountered in some informational books. In the case of D Is for Dolphin she found the illustrations and words to be wanting. The overuse of dolphin icons and the color blue was not satisfying. Likewise, the single sentences on the pages within the body of the book did not satisfy Marcelita's desire to learn more about the ocean mammal. Her analysis of the blueprint for meaning that was created by the author and illustrator resulted in these evaluative judgments.

Tanisha's analysis was of a different nature. It was prompted by my inquiries about the pictures on the page. She analyzed double-page spreads to determine the number of pictures that were present. Frequently, book and illustration characteristics like the gutter and frames, respectively, were the determining factors in Tanisha's analysis of what she was seeing.

Although Marcelita and Tanisha engaged in very different types of analysis, they shared a focus on parts. In each case the whole was dissected into its components in order to make some judgment about it. Marcelita, however, demonstrated a sense of the whole also. Her evaluation that too much blue was used in D Is for Dolphins represented a judgment about the entire book.
The Process of Reading/Viewing an Informational Picture Book

The reading/viewing of a book is often envisioned as a linear process, a process in which the reader/viewer moves through the book from front cover to back cover. In their reading/viewing of informational books Marcelita, Tanisha, and Sean demonstrated that this conclusion has some validity. They each began looking at a book from the front cover, front endpaper, and title page. Generally they moved on to the body of the book progressing from page one to the higher numbered pages. As they read/viewed the print and illustrations in front of them, they made meaning of those elements that fit with their existing schemata. Each turn of the page exposed them to new material resulting in the tuning or restructuring of their respective schemata (Rumelhart & Norman, 1978). As they modified their schemata, illustrations that they had seen or words that they had read or heard me read, but made little sense of, became meaningful, or they developed a new meaning. As this tuning or restructuring occurred, the children abandoned their initial linear approach and adopted a recursive one involving the flipping back and forth among the pages.

At the end of the 'Connecting' part of the 'Making Meaning with Pictures' section of the case report on Marcelita, an example and discussion of her reordering of the sequence of images and print as she read/viewed Dolphins for Dolphins is provided. The following example shows how Sean viewed See How It Works: Planes.

Sean: ((turns to glossary))

Rick: ((pointing at entry)) cargo plane: a plane which carries goods instead of passengers.
Sean: ((turning pages and frowning)) Where is that? I thought it was that horsey one. ((points at plane on page 10, looks at researcher and smiles))

Rick: That's a cargo plane, yeah.

Sean: ((nods and smiles))

Sean had viewed the book from front to back. When he got to the glossary at the end of the book, he had me read each of the entries consisting of words but no pictures. As I did so, he flipped to various parts of the book, attempting to locate an image of what the entry presented. At this point his initial linear process, changed to a recursive process as his reading/viewing purpose warranted.

As Marcelita, Tanisha, and Sean read informational books, they made comparisons among the illustrations. They noted similarities in the icons from one picture to another. They used the meanings that they made with one illustration to understand a previous one. For example, as Marcelita moved from the 'M' page of *D Is for Dolphin* to the 'N' page she saw an image of a 'Mammal' (i.e., a dolphin) being born and a young dolphin 'Nursing.' She flipped back and forth between the illustrations to make sense of what she was seeing. In the process she decided that the nipples are located near the opening of the birth canal. The comparison of the illustrations led to a meaning that she could not have made with either picture alone.

Although all three children used a recursive process embedded within a linear one to read/view informational picture books, the recursive nature of Marcelita and Sean's reading/viewing was much more dominant. Tanisha's focus on increasing her literacy led her to adhere to a more linear process. She viewed reading a book as a left to right, front to back process.
Thus, flipping back and forth was a less common way of reading/viewing than it was for the other children.

When Tanisha did flip pages, the behavior often was related to sentences that ran from one page to the next or across more than two pages. The interruption that stopping to look at the pictures caused in the flow of thought as she read influenced her behavior. Tanisha turned back in the book to regain a sense of meaning as she read the print. Occasionally, she also flipped pages to make comparisons among illustrations, but compared to Marcelita and Sean this recursive behavior was much less dominant.

Summary

This chapter consisted of five parts. In the first the means by which I analyzed the data was described and the coding categories were identified. The next three were case reports providing detailed analysis of three children's construction of meaning with informational picture books. The final part was a cross-case analysis highlighting the similarities and differences in the children's meaning-making.

While each of the three children in this study had their own complex of affordances that they realized, their own set of strategies that they used in making meaning with illustrations and print, and their own process for reading/viewing informational picture books, they shared many of the same affordances, strategies, and processes. The individual case reports detail each child's meaning-making. The analysis across cases highlights the similarities and differences in each of the areas. It relates the behaviors of each child to that of the others.
CHAPTER V

CONCLUSION: VIEWING AND READING
INFORMATIONAL PICTURE BOOKS

... to make an end is to make a beginning.
The end is where we start from.

T. S. Eliot: Little Gidding

Recent educational reform agendas from The Holmes Group (1990) and the Commission on Reading (Anderson, Hiebert, Scott, & Wilkinson, 1985) call for the child's active participation in the learning process.

The deeper, generic task of education is teaching students how to make knowledge and meaning—to enact culture, not merely acquire it... We want schools to help students take an active, rather than a passive role. Curriculum needs to become a way of living and acting to make sense of experience... Learning emerges best from an active process of constructing public and private meaning in a community of discourse. (Holmes Group, 1990, pp. 10-11)

Echoing the view of John Dewey (1916/1944), they advance the idea that education should not only be preparation for life but should provide for the experiencing of life.

From the standpoint of the child, the great waste in school comes from his [sic] inability to utilize the experiences he [sic] gets outside of school in any complete and free way; while, on the other hand, he [sic] is unable to apply in daily life what he [sic] is learning at school. (Dewey, 1900, p. 75)

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Unlike the content-area-focused school curriculum, the world is not dissected into discrete disciplines. Life experiences possess the integration of linguistic, scientific, social, mathematical, and artistic dimensions. Attempting to reflect this worldview and to make academic learning more like natural learning which occurs outside of the classroom, some scholars are recommending and many elementary school teachers are adopting an integrated approach to curriculum and instruction (Crook & Lehman, 1991; Fogarty, 1991; Jardine, 1990; Mansfield, 1989; McGarry, 1986; Pappas, Kiefer & Levstik, 1990; Swenson, 1991; Workman & Anziano, 1993). In this process teachers deemphasize the use of textbooks for language and content area instruction. Instead trade books, which provide a rich and varied source of pleasure and information, become a primary resource for teachers' instruction and for children's exploration. Informational books take their place beside fictional material as a mainstay of the academic program (Kobrin, 1988). As a result, more children are reading and responding to more informational books.

Unlike other types of literature and art, picture books utilize a paired sign system. They depend on the potential for meaning that is created by a partnership between print and illustration. Together, words and pictures provide a blueprint for meaning that readers/viewers realize in their transactions with a book. However, the overwhelming focus and value placed on print instruction in our schools reflects a curriculum which provides children with "no guidance in how to read, interpret, and critically evaluate the images and information that they are exposed to" (Considine, 1987, p. 635). Like reading alone, reading and viewing together are a cultural
process for making meaning that warrants the attention of educators. In this study detailed descriptions and interpretations of the reading/viewing process emerged from the analysis of three children's engagement with informational picture books. The implications that these findings have for understanding the nature of reading/viewing informational books and for future research in visual and print literacy will be discussed in this chapter.

The Study

The purpose of this research was to explore young, school-aged children's transactions with informational picture books within the broad context of the classroom and within the narrower contexts of one-on-one sessions and quiet reading time. I sought to understand the ways in which these children used illustrations and print to make meaning.

Little research exists on children's responses to informational picture books in classroom contexts. That research focuses primarily on children's response to the print. The response to the illustrations in the books is not highlighted. The existing research also presents engagement with informational picture books in contexts where the reading of the genre has been long-standing and widespread. This research focuses on a context in which exposure to informational trade books was limited.

This interpretive study focused on the nature of three first-grade children's transactions with the visual and textual aspects of informational picture books. Each child engaged in one-on-one sessions with the researcher, a participant-observer in one classroom. During each session the
child read/viewed a single informational book. I videotaped and audiotaped each session and later transcribed the event. The children also had the opportunity to read informational picture books during quiet reading time each day. I videotaped and audiotaped each child's reading/viewing of informational books during this event also. Afterward, I transcribed the tapes of the reading/viewing.

The interpretive case studies and interpretation across cases that emerged from my analysis of the transcriptions, using a constant-comparative process, fill a gap in our understanding of what children do with illustrated informational text. They describe in detail the way in which child readers/viewers construct meaning from what they see and what they read. The cases identify six affordances that the children realized in their reading/viewing of informational books, and they present five strategies that the children used to make meaning. The cases also highlight various illustrative and textual features of informational picture books that the children used as they transacted with the books.

The contexts in which I collected data in this study are important to the findings. I was an integral part of creating two literacy events (Gumperz, 1986) in the life of the classroom. The creation of an informational book reading area during quiet reading time and the structuring of one-on-one sessions with me framed the reading/viewing in which the focal children engaged. Different contexts might have lead to similar or different results. The reading/viewing of informational picture books alone, with other adults, in other classroom settings, during other classroom events, and in contexts outside of school could have influenced the findings.
The results in this study also could have been influenced by the children's language development. Young children's ability to state what they perceive in illustrations and print could affect their verbalized apperception (Vygotsky, 1978). Alternatives to talk for the expression of constructed meanings might have lead to different findings.

Summary of the Findings

The three first-grade children included in the final analysis of this study provided windows to the ways in which readers/viewers use illustrations and print to construct meaning with informational picture books.

Affordances

Marcelita, Tanisha, and Sean realized six affordances of informational picture books as they read/viewed the books. These affordances were (1) viewing, (2) reading, (3) socializing, (4) playing, (5) counting, and (6) drawing. Each represented a different opportunity that the children found to link personal intention with the features of the book as they made meaning. All of the children did not realize each affordance. Differences in their reading/viewing purposes led to the realization of a different complex of affordances.
**Viewing and Reading**

Marcelita, Tanisha, and Sean realized the opportunity to view the world in their transactions with informational picture books. Marcelita and Tanisha and, on rare occasions, Sean also realized the affordance, reading, during these transactions with informational trade books. As they realized these affordances, each informed the other at various times. Just as print clarified and expanded the meaning of pictures, illustrations also clarified and expanded the meaning of print.

**Recursion.** Reading/viewing was a recursive process embedded within a linear process of engaging with an informational picture book. The children tended to move from the front of a book to the back as they read/viewed. However, as continued reading/viewing brought about a tuning or restructuring of their individual schemata, the children constructed meaning for aspects of print or illustrations that made little or no sense during early transactions with the book. This changing mental framework led to a process of flipping back and forth through the book in what appeared to be an 'out-of-order' fashion but in fact was a process 'in-order' with the individual child's purposes and schemata.

**Icons.** Marcelita, Tanisha, and Sean displayed a tendency to focus on the component parts of an illustration, namely icons, rather than the picture as a whole. This focus on details often led to observations that experienced viewers would have overlooked or would have spent little time focusing on. It also led to impressions of the illustrations that lacked the thematic unity of the whole.
'Picture' concept. As inexperienced viewers, the children’s meanings for the commonly used term ‘picture’ relative to a specific illustration did not match. They also varied from the meaning held by experienced viewers. The children often equated an icon with a picture. The range of illustrative structures used to establish boundaries for a picture in an informational book led to a changing conception of ‘picture’ as the children explored an illustration with an experienced viewer.

Alternative constructions. During the realization of the affordance, viewing, each of the children constructed alternative interpretations. The meanings made reflected their understandings of the visual factors and semiotic levels operating within a picture. As inexperienced viewers, Marcelita, Tanisha, and Sean's constructions sometimes diverged from those of experienced viewers. Since viewing is a cultural process, the children's more limited understanding of the conventions of pictures led to the construction of alternative meanings.

Stance. Marcelita, Tanisha, and Sean assumed stances toward informational picture books that focused on the virtual experience with the book as well as the information to be taken from it. Marcelita and Sean usually entered the virtual reality of an informational book first. At times they shifted their stance to focus on the information to be taken from the experience. Tanisha's focus on improving her literacy led her to assume an efferent stance most often. As she satisfied this need, she sometimes shifted her stance to engage in a book's virtual reality.
Socializing

Marcelita, Tanisha, and Sean realized the social affordance offered by informational books. For each child viewing/reading was embedded in an array of social interactions with peers and adults.

Exchange of thinking. For Marcelita and for Sean the affordance, socializing, involved the sharing of thoughts about illustrations and print with peers and with adults. Marcelita explored the virtual reality of informational trade books as she interacted with her friends. Sean primarily shared the meanings that he made with the one person in the classroom who was significant to him, his teacher, Miss Benjamin. While Marcelita's interactions led directly to continued engagement within the virtual reality of informational books, Sean's led to teacher praise, improved self-esteem, and then further exploration of informational books.

Control of event. For Tanisha and also for Sean the affordance, socializing, involved control of the viewing/reading event. Tanisha exerted a high degree of control during her engagement with informational books. Her interactions involved the positioning of herself and others in order to maintain control of and privacy within her reading/viewing. Her focus on what Meek (1988) refers to as "private lessons" in literacy made control of the viewing/reading event extremely important to her. Sean attempted to exert control on peers' engagement with informational trade books during quiet reading time. His attempt to limit what and when his peers could view/read the informational books represented an attempt to exert control over an environment that was relatively new to him. It often led to rejection by and isolation from his peers.
Playing

Marcelita and Sean realized the affordance to play with informational picture books. They improvised on literacy events and events of the world that they observed. Through play they created learning situations within their zones of proximal development (Vygotsky, 1978). These play situations enabled them to assimilate new experiences with illustrations and print and to meet the demands of the real world. Through play Marcelita explored the connections between illustrations and captions while Sean explored the semantic and phonological aspects of language.

Counting

Marcelita and Tanisha realized the affordance to count relative to the illustrations within informational picture books. Each of the girls used counting to support their speculations and predictions. In addition, Marcelita quantified what she saw to support her opinions and to explore intriguing dimensions of illustrations. Tanisha used counting to identify aspects of what she saw in illustrations and to realize icon size as stated in the print.

Drawing

Only Tanisha realized the affordance to draw as she read informational picture books. It represented a means of exploring what she knew, of exploring her own meanings.
Strategies

The three children demonstrated that the viewing/reading of informational picture books is a culturally based process that draws upon the texts of life, literature and media. They also showed that it involves speculative, inquiry, and analytic processes. Finally, their expression of meaning through action emphasized the importance of gesture in their thinking about illustrated informational books.

Connecting

Marcelita, Tanisha, and Sean constructed meaning with informational books by connecting their viewing/reading experiences to their prior knowledge, their life experiences, and to other literature and media. All of the children made intratextual connections among illustrations and extratextual connections with images from television or cinematic film. Only Sean and Tanisha made extratextual connections to other literature.

Speculating

For Marcelita, Tanisha, and Sean reading/viewing was a speculative process. They used their prior knowledge to speculate about meanings for what they saw and for what they read or heard me read. As part of this process Tanisha and Sean tried to justify their predictions and hypotheses. Sean and Marcelita attempted to confirm their speculations by linking illustrations and print that they encountered later with their previous speculative thoughts.
Questioning

In the social context of this study the three children raised questions about what they saw and about what they read or heard me read. The importance of this strategy for making meaning varied among the children. It was directly related to the child's reading/viewing purposes. Tanisha's questions were most often linked to her overriding purpose to improve her literacy. Sean and Marcelita's inquiries tended to be connected to an exploration of the world-at-large. They asked questions that involved identification, locations, reasons, and meanings. In addition, Marcelita also asked questions involving her relationship to the natural world.

Acting

Marcelita and Sean used their bodies and their voices to support their meaning making. Their gesturing, moving, demonstrating, sensing and vocalizing enabled them to compensate for the meanings that their language development made it difficult to express. Tanisha did the same except she did not use her voice to mediate the construction of meaning.

Analyzing

For Marcelita and Tanisha evaluating the images that they perceived was an integral part of their construction of meaning. Tanisha made meaning with illustrations based upon her analysis of the boundaries of pictures. Marcelita judged illustrations and text based on her satisfaction with them.
Implications of the Findings

The findings of this study are confined to the particular cases included in the research. However, teachers and other readers may find reflected in these cases children that they encounter in their educational settings. From the cases they may be able to develop an understanding of some of their children's meaning-making with the illustrations and print in informational picture books. It is important that readers of this study keep in mind that the findings are contextually bound as they consciously generalize them to new contexts.

Implications for the Classroom

The findings in this study have important implications for the nature of literacy experiences that teachers provide in classroom contexts. They raise questions about the nature of classroom reading material and the interactional opportunities provided. They also highlight the need to learn visual conventions and print conventions in order to become literate in our society. Finally, the findings have implications for teachers' kid-watching. They focus educators on the stances that children assume as they read informational books and on children's understanding of the language used to talk about pictures.

The three children in this study were students in a first-grade classroom in which exposure to informational books was limited. Their classroom library contained few books from this genre, and their teacher used them on a very limited basis for whole class or small group instruction.
Although their school library contained numerous informational trade books, these children were not permitted to check out books of this type before this research began. Their teacher believed that literacy was learned through engagement with fictional narratives. The findings of this research, however, indicate that these children learned about literacy through their engagement with informational picture books. They needed time and the opportunity to view/read these books for literacy learning to occur. Some of the understandings that they developed were unique to informational literature. For example, in informational trade books captions and labels are used unlike the orthographic displays found in fictional trade books. This point raises an important question for teachers. Without opportunities to explore informational books, as well as fiction and poetry, will children develop the schemata that they will need to read/view illustrated informational books or textbooks that become a major instructional tool in the upper elementary school, middle school, and high school classroom?

As the children in this study made meaning, they focused extensively on the illustrations. As inexperienced viewers, however, their interpretations of what they saw might have been very different from the meanings that an experienced viewer would have constructed. Their education at home and at school had prepared them to construct meaning from print, but their knowledge of picture conventions remained limited. To grow in their ability to make meaning from illustration, instruction in visual literacy was needed. Teachers should consider the conventions of illustration that children need to learn about and instructional approaches that would support children's learning.
This study revealed an incompatibility between inexperienced, child viewers' definitions for the term 'picture' and the definition commonly used by experienced viewers. In an even broader sense, the language that experienced viewers use as they talk about illustrations may not be shared by inexperienced viewers. In classrooms teachers should carefully listen to and observe each child's application of illustration-related language. This kid-watching will provided teachers with an understanding of a child's emerging concepts of illustration and aid teachers in talking with children about illustrations. Just as teachers need to be aware of and support children's emerging concepts of 'letter,' 'word,' 'sentence,' and 'paragraph' in relation to print, they must also support children's illustration concepts.

The findings of this study show that opportunities to play and to socialize are important to the children's meaning-making. Opportunities to work out in play what they are dealing with in their worlds (e.g., home, school, classroom, instructional group, viewing/reading of informational books) enable them to solidify their learning. The affordances realized through interaction with peers and adults are also supportive. For the children in this study the chance to play with aspects of informational books and to interact with others surrounding their transactions was important to the meanings that they made and the understandings about literacy that they developed. Could opportunities to self-select material and to play and socialize while viewing/reading be equally important for all children?

Although one might assume that efferent reading is the most natural way to deal with informational books, the findings in this study do not support that view. The children engaged with informational trade books for
the lived experience a large part of the time. As teachers integrate curricula and use more and more informational picture books, the danger that the aesthetic experience might be overwhelmed by the attempt to achieve content-based curricular objectives becomes real. Engaging with the virtual reality of informational books was an important means of constructing meaning for the children in this study. Could the same type of engagement be an important means of making meaning for other children? If so, teachers need to consider ways of using informational books that will allow for aesthetic engagement as well as a focus on information.

Implications for Teacher Education

At the present time print literacy is a major focus of the elementary school curriculum. Little attention is given to visual literacy yet the move toward integrated instruction has increased the use of informational books in the classroom. Since these books depend on the pairing of verbal and visual art, understanding them requires familiarity with the conventions of print and illustration. As the findings in this study indicate, children need educational experiences that expand their understandings of both words and pictures. While teachers are prepared to teach print literacy, are they equally prepared to teach students about the conventions of illustration? Teacher education programs need to prepare teachers to assist children in making meaning with images and with print.


Suggestions for Further Research

This study investigated children's construction of meaning in two contexts - quiet reading time and one-on-one sessions. The case study design permitted me to take an intensive look at how children used the paired sign systems of pictures and words to make meaning with informational picture books. The research design and the settings studied did not enable me to explore the broad range of naturally occurring contexts in which children make meaning with informational books in a classroom nor the affordances realized and strategies used within them. To broaden our knowledge of children's meaning-making with informational books, future research needs to focus on the numerous, naturally occurring contexts in a first-grade classroom. Research also needs to consider children's construction of meaning with informational picture books at other educational levels (e.g., preschool, kindergarten, second grade, third grade, and so on) and in the home. Findings from such studies could add to what is known about when and how children use the pictures and words in informational books in their construction of meaning.

The findings in this study regarding the affordances realized and the strategies used to make meaning are temporally bound. They represent what the focal children did within a five month period. Research that focuses on the changes that occur in children's construction of meaning with the print and illustrations in informational books during an entire school year, across grades, or, in reference to out-of-school settings, as the children mature would provide valuable insights into children's emerging visual and print literacy. If linked to instructional practices in classrooms or to experiences in
the home with parents and siblings, it could help to identify instructional practices that foster children's growth in the literacies.

School curricula are dominated by an emphasis on print. Yet, in the primary grades pictures take up a large portion of the interior space of the books used. Similarly, in books used in other levels of schooling visual displays play prominent roles in the creation of potential meaning. It seems that teachers provide little guidance in making meaning with these displays though. It would be interesting to investigate the delivered curriculum as well as the written curriculum to paint a clearer picture of how, if at all, the conventions of illustration are taught. Investigation of the guidance provided by parents and siblings in the home would be another interesting dimension of this research.

This study produced information on children's attentional foci when looking at pictures. The data was dependent upon what the children said about what they saw. My impressions of their meaning-making depended on their language. Since the children's language development could influence the apparent meanings made, ways of expressing constructed meaning that are not dependent on language (e.g., pantomime, drawing, etc.) should be included in future research.

Finally, as this study points out, children's meaning-making with informational picture books involves the use of a paired sign system - words and icons. The relationship between the two systems in any particular book may be critical to the meanings that readers/viewers construct. Research that looks in detail at the structural relationships between text and illustration in a wide range of informational picture books would provide valuable insights
into commonly found structures and into unusual connections between the systems. It would extend Pappas' (1986, 1987, 1990, 1991) research on text structure and Levin's (1981) description of the function of pictures in prose and more clearly define the structure of informational books. This information would enable researchers to take a more complex look at the way in which children make meaning with words and pictures in informational books.
APPENDIX A

SAMPLE FIELD NOTES
Sean rushes to the table. He opens *Farming*, sees the tedder spreading hay to dry, makes "t-t t-t t-t" sound and moves finger in spinning motion on the page.

Jim comes to the table and picks up *How Much Is A Million*.

Sean turns 3 pages, recognizes combine and explains its processing movement to himself. I ask him about the combine, and he abandons *Farming* and joins Jim in the counting of people stacked on top of one another.

Finished counting, Sean searches books on table for another book to look at. He responds to the cold feel of the books that came out of my cold car trunk. He sounds out words in *Ouch*.

Asking questions during quiet reading time seems to chase the children away from the table or to stop their looking at a page. May be it moves the activity from something that is fun into "work." Perhaps my agenda imposes on their purposes. I get in the way of their looking. Their purposes drive their looking.

Marcelita and Jamal arrive. Marcelita opens *Common Frog*. She comments on frog egg, "The frog is stuck in a bubble."

She points out the long frog tongue to Jamal and then shows him a porcupine eating a frog.

Marcelita abandons *Common Frog* and picks up *Bear*, the same book she looked at last week during the one-on-one session. She tells me that she wants to read it because she liked reading it with me.

When the children read with me, we tend to respond to what the other has said or done, although at times our individual agendas do not match. Then our conversations seem to contain nonsequiturs, but in reviewing tapes I can see that this is not the case. It's just that we are not aware or choose not to focus on what the other is doing. When the kids read at the table together, they have multiple conversations going at once and participate in each of them. At other times they seem to ignore what's happening around them, momentarily or for long periods, and focus on what they are doing. A linear transcript for the one-on-one sessions is probably still okay, but what about the quiet reading transcripts? They need to show more parallel activity.
APPENDIX B

SAMPLE TRANSCRIPT OF ONE-ON-ONE SESSION
Rick: Well, shall we open it up?

Sean: ((nods and opens to first see-through page))

Rick: Hm. What are you finding out about here?

Sean: You can see through the pictures.

Rick: You can see through?

Sean: ((nods))

Rick: What are you seeing?

Sean: ((pointing at passenger stairs)) Um you can see some more steps. ((turns first see-through page and then lifts second))

Rick: What disappears when you lift ((touching first see-through page)) this page?

Sean: That? ((turns back to first see-through page))

Rick: What are you taking off?

Sean: ((runs fingers the length of the shell)) The front, the whole thing. ((turns to second see-through page))

Rick: The front of the whole thing?

Sean: Yeah.

Rick: What can you see now that you couldn't see before?

Sean: ((turning back to first see-through page, speaking in babyish tone and pointing at label)) What is the outside? Can you read it?

Rick: Where?

Sean: ((runs fingers across text at bottom of page)) Um (.5) the words.

Rick: Yeah. Point to what you want me to read.
APPENDIX C
SAMPLE TRANSCRIPT OF QUIET READING SESSION
Cecilia has Lanie move beside her at the table so she can read to Lanie. Sean and Jamal sit across from them and have their own books to read.

<table>
<thead>
<tr>
<th>Lanie</th>
<th>Marcelita</th>
<th>Sean</th>
<th>Jamal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>((opens book <em>Time To</em> to title page; tapping each word)) <em>Time To</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time To</td>
<td></td>
<td>((tapping pencil while looking at his book)) We have to do a lot of ( ).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>((turns page; points at digital time representation)) Do you wanna read that?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**7:00 p.m.**

|       | ((shakes head side to side)) a.m. |       |       |

**7:00 a. (1.5) 7:00 in the morning. Time to wake up. You go ahh**

| Here ((pointing at page)) I read the time | Oh boy, that 's a ( ) |       | This is how I wake up. ((leans back in chair, opens mouth wide and exhales; looks at Sean)) |

|       |       |       |       |

|       |       |       |       |

|       |       |       |       |

|       |       |       |       |

<p>| | | | |
|       |       |       |       |</p>
<table>
<thead>
<tr>
<th>Time</th>
<th>Action and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 a.m.</td>
<td>((holding left page up toward camera)) Camera that's a teddy bear. Look at that. ((smiles))</td>
</tr>
<tr>
<td>8:00 a.m.</td>
<td>((looks up from book)) This is how I wake up. ((scrunches face, makes staring, high pitched grunt and gives the 'raspberries')) And then I sneeze like this. Then I sneeze like (.) uh ((leaning toward and behind Jamal and gives 'raspberries'))</td>
</tr>
<tr>
<td>8:00 in the morning</td>
<td>Time to eat breakfast. ((turning page; frowning)) I watch cartoons at 8:00. I eat at 7:00.</td>
</tr>
</tbody>
</table>

Figure 18. Sample transcript of quiet reading session.
APPENDIX D

NOTATIONAL SCHEME FOR TRANSCRIPTION
NOTATIONAL SCHEME FOR TRANSCRIPTION

The notations found in the transcripts are based on the conventions developed by Sacks, Schegloff & Jefferson (1974). They attempt to capture the language as it sounds as well as the nonverbal language that occurs.

// notes point of overlap in speakers' language
=
notes ending of one utterance and beginning of next without any overlap or any gap.
-
notes cut-off point in word production
* * notes softly spoken utterance
: notes continued utterance
( ) notes an unheard utterance (if filled, indicates an uncertain hearing)
> notes quickened pace of utterance
(( )) notes nonverbal behavior
(.) notes micro pauses in utterances

Pauses in utterances are noted in seconds, e.g., (2).

Italicized words indicate words read aloud.
APPENDIX E

CODING CATEGORIES AND SUBCATEGORIES
<table>
<thead>
<tr>
<th>A Affordance</th>
<th>S Strategies</th>
<th>BC Book Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC Counting</td>
<td>SAC Acting</td>
<td>BCT Illustrations</td>
</tr>
<tr>
<td>AD Drawing</td>
<td>SACg Gesturing</td>
<td>BCIn Inset</td>
</tr>
<tr>
<td>AP Playing</td>
<td>SACm Moving</td>
<td>BClov Overlay</td>
</tr>
<tr>
<td>APlo Locating</td>
<td>SACs Sensing</td>
<td>BClc Icon</td>
</tr>
<tr>
<td>APs Storying</td>
<td>SACd Demonstrating</td>
<td>BClsy Symbols</td>
</tr>
<tr>
<td>APR Reading</td>
<td>SACv Vocalizing</td>
<td>BCId Diagram</td>
</tr>
<tr>
<td>AR Reading</td>
<td>SAN Analyzing</td>
<td>BClcv Cover</td>
</tr>
<tr>
<td>AREvr Experiencing virtual reality</td>
<td>SANt Truthfulness</td>
<td>BCIep Endpapers</td>
</tr>
<tr>
<td>ARsi Seeking information</td>
<td>SANs Structure</td>
<td>BCItp Title page</td>
</tr>
<tr>
<td>ARp Reading</td>
<td>SANpil Print-illustration linkage</td>
<td>BCIs Sectioned</td>
</tr>
<tr>
<td>AS Socializing</td>
<td>SC Connecting</td>
<td>BCII2p 2 page spread</td>
</tr>
<tr>
<td>AV Viewing</td>
<td>SCbk Background knowledge</td>
<td>BCIIp 1 page picture</td>
</tr>
<tr>
<td>AVevr Experiencing virtual reality</td>
<td>SCI Life</td>
<td>BCI1.5 1.5 page picture</td>
</tr>
<tr>
<td>AVsi Seeking information</td>
<td>SCTin Text-intratextual</td>
<td>BCP Print</td>
</tr>
<tr>
<td>SC Viewiing</td>
<td>SCtex Text-extratextual</td>
<td>BCPla Body</td>
</tr>
<tr>
<td>SCmin Media-</td>
<td>SCmex Media-</td>
<td>BCPCa Caption</td>
</tr>
<tr>
<td>SCmex Media-</td>
<td>extratextual</td>
<td>BCPla Label</td>
</tr>
<tr>
<td>SCP Peer writing</td>
<td>SCP Peer writing</td>
<td>BCPlt Titles</td>
</tr>
<tr>
<td>SCal Alternative construction</td>
<td>SCal Alternative construction</td>
<td>BCPli List</td>
</tr>
<tr>
<td>SO Questioning</td>
<td>SC Questioning</td>
<td>BCPev Environmental</td>
</tr>
<tr>
<td>SSP Speculating</td>
<td>SSP Speculating</td>
<td>BCPcv Cover</td>
</tr>
<tr>
<td>SSPc Confirming</td>
<td>SSP Speculating</td>
<td>BCPep Endpapers</td>
</tr>
<tr>
<td>SSPj Justifying</td>
<td>SSP Speculating</td>
<td>BCPTp Title page</td>
</tr>
<tr>
<td>SSP Speculating</td>
<td>SSP Speculating</td>
<td>BCPco Copyright page</td>
</tr>
<tr>
<td>SSP Speculating</td>
<td>SSP Speculating</td>
<td>BCPin Index</td>
</tr>
<tr>
<td>SSP Speculating</td>
<td>SSP Speculating</td>
<td>BCPgl Glossary</td>
</tr>
<tr>
<td>SSP Speculating</td>
<td>SSP Speculating</td>
<td>BCPd Dedication</td>
</tr>
</tbody>
</table>

**Figure 19.** Coding categories and subcategories.
BIBLIOGRAPHY

List of References


Bishop, R. S., & Hickman, J. (1992). Four or fourteen or forty: Picture books are for everyone. In S. Benedict & L. Carlisle (Eds.), *Beyond words: Picture books for older readers and writers* (pp. 1-10). Portsmouth, NH: Heinemann.


Erickson, F. (1986). Qualitative methods in research on teaching. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (3rd ed.) (pp. 119-161). New York: Macmillan Publishing Co.


List of Children's Books Cited


