

Spring 1988

Authors of pictures, draughtsmen of words

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**AUTHORS OF PICTURES,
DRAUGHTSMEN OF WORDS**

BY

RUTH SHAGOURY HUBBARD

**B.A., Colby College, 1972
M.Ed., University of New Hampshire, 1982**

DISSERTATION

**Submitted to the University of New Hampshire
in partial Fulfillment of
the Requirements for the Degree of**

Doctor of Philosophy

in

Reading and Writing Instruction

May, 1988

This dissertation has been examined and approved.

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April 22, 1988.

Date

for Jim

"There is always you at my side
the words flashing light and shadow.
What was grey ripples scarlet and golden;
what was bland reeks of ginger and brandy;
what was empty roars like a packed stadium;
what slept gallops for miles."

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I am also grateful to my Dissertation Committee, especially Jane Hansen, for their encouragement and support in finding my own form for this dissertation. Rather than prescribing a traditional format, they urged me to investigate what I was interested in, explore what I was learning through my writing, and abandon the traditional five chapter format. When we would meet to discuss the work-in-progress, the conversations I had

with our diverse group--Jane Hansen, Donald Graves, Tom Newkirk, Deborah Stone, Doug Fricke, Pat McLure, and Brenda Miller--stimulated and nudged me forward me.

I learned important writing and research lessons from Donald Murray, who encouraged me when I first began to look at visual and verbal literacy links. He taught me to follow what intrigues and surprises me, helping foster my love for research.

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Warm thanks to Win Rhoades and Tom Romano for providing the perfect jazz tapes to write dissertations by--they got me through many a rough transition.

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ABSTRACT

AUTHORS OF PICTURES, DRAUGHTSMEN OF WORDS

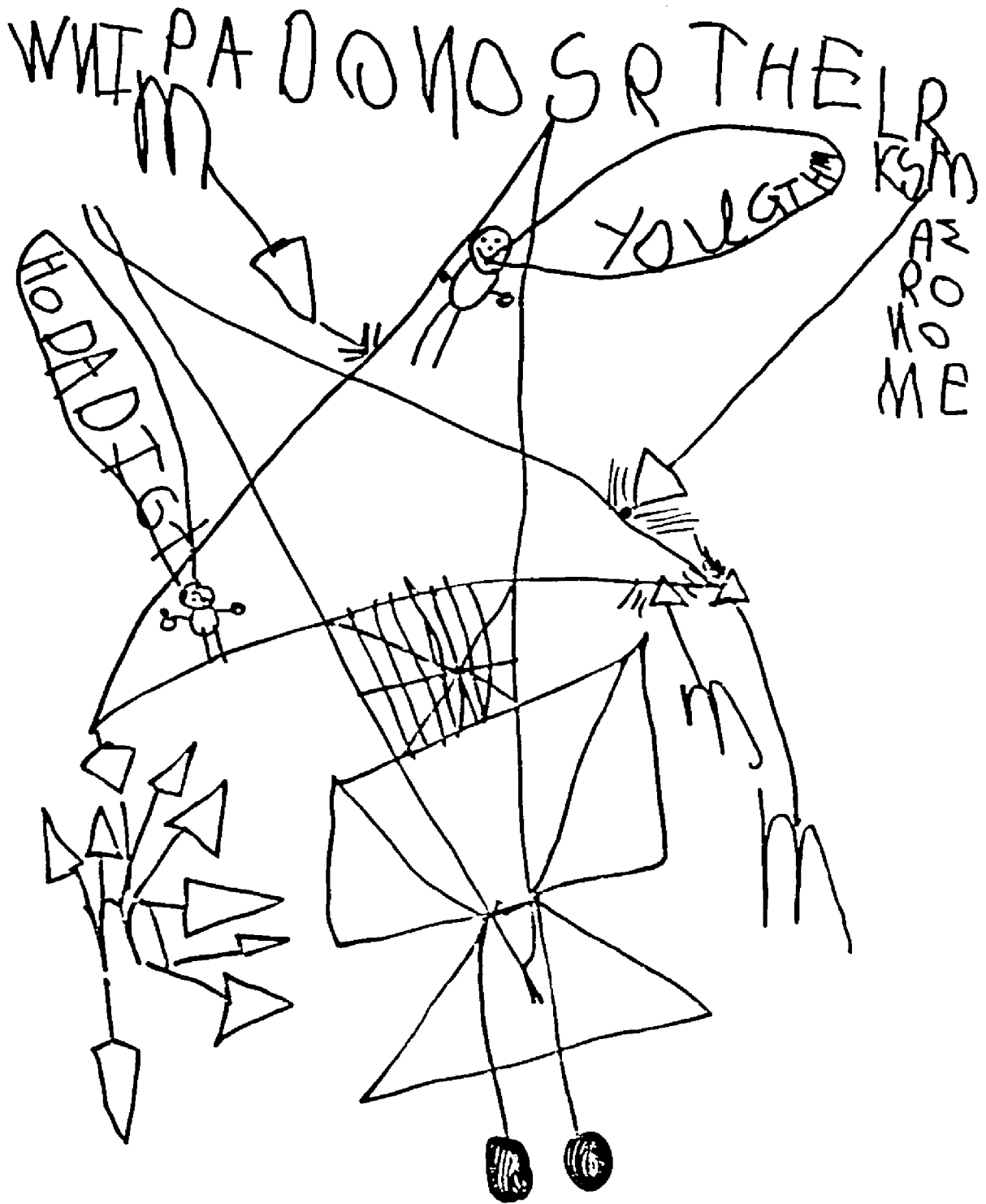
by

Ruth Shagoury Hubbard
University of New Hampshire, May, 1988

Human thought is unique. We have the ability to create and share meaning through the use of various kinds of symbol systems. This study explored the shared dynamics of visual and verbal symbolic thought processes and their consequences for the acquisition of literacy. In particular, the study focused on the writing, reading, and drawing processes of the children in a process-based first-grade classroom.

Research methods included participant/observations, open-ended interviews, audio-taped classroom discussions and interviews, and samples of the writing and drawing of the children in the entire class, with a special focus on five of the students. A detailed analysis of the data revealed that young children strive to transfer the many dimensions of their mental images to the page, especially the dimensions of time, space, movement, and color. As they transfer these images, they rely on both words and pictures in a complementary manner, depending on the task at hand and the "cognitive bias" of the child.

This research calls for an extension of the definition of literacy to include multi-literacies, and further investigations of the fine-tuning of these literacies that occurs beyond elementary school into adulthood.



When I play dinosaucers, the lower-case "m" is our enemy.

INTRODUCTION

WORDS AND PICTURES: "THEY BOTH HAVE THEIR UVANTAGES"

Nick looks up from his writing and reads it out loud to the other three six-year-old boys who are working at the table with him: "When I play Dinosaucers, the lower case 'm' is our enemy." He puts down the paper and explains, "I learned to make lower case 'm.' I like to make it, but it isn't really the Dinosaucers' enemy. The pictures don't usually have letters, unless you have word bubbles."

Eugene takes a break coloring in his harvest moon to comment, "If you do the picture first, then you have something in your mind that you could write. If I do the words first, then I don't know what to draw. But I think words can tell the story better."

"I don't think you can really read pictures," Paul comments "Sometimes pictures can make it move, though, and the words don't do that."

"Words can tell a story a little better," is Ethan's comment. "But they both have their own uvantages. Pictures are sorta. . .they go together."

Eugene reconsiders. "I guess there's things pictures can do that. . .they really *can* tell the story, ya know. Sometimes, see, the pictures, like this one," he points to his moon, and reads, "'The day is over.' See, it looks like what the words do, but at a different angle."

In order to understand what they see and hear, young children have to attach meaning to the different patterns of light, shape and color that they see, as well as organize the sounds into a linguistic system. By the time they

come to school, children, like Nick, Eugene, Paul, and Ethan, are able to create, and then share, this meaning through the use of various kinds of symbol systems. As they acquire literacy, they are hard at work, experimenting with, creating, and discussing the symbols they use to help formulate and communicate their ideas. And this is a difficult task, for "the blank sheet and salient edges of the page provide an immense number of potential 'degrees of freedom' which have to be reduced to workable order" (Freeman, 1977, p. 4).

As each of us attempts our search for meaning, we need a medium so our ideas can take shape. But there is not just one medium; productive thought does not follow a uniform pattern. Instead, our ideas may take form in images, movement, or inner speech. And the search begins young; crucial foundations for thinking patterns begin in childhood. In her pioneer work on creative thinking, Vera John-Steiner (1985) discusses the "inner language" and symbol systems that adults employ as they think, but little investigation has been done of the symbolic strategies that young children use, and these strategies have enormous influence on emerging literacy skills.

In my dissertation, I am exploring the symbol systems that children create in relation to the process of writing and reading.¹ But more specifically, I am narrowing my focus to two important systems: 1) pictorial, or visual, and 2) linguistic, or verbal. How do these patterns work together? What influences help shape these symbol systems?

¹The symbol systems that children use are not limited to visual and verbal; other important symbol systems include movement and gesture, music, and mathematical languages. By focusing my attention on only two for the sake of this dissertation, I do not mean to infer that other symbols have no impact on literacy, nor that they are lesser in importance.

Symbols in Literacy:

Too Much "Spinning Words about Words"

Educators, linguists, and cognitive psychologists alike have been stressing the importance of symbols and symbol theory in literacy for years. But the stress is almost always of the verbal symbol systems. As writer/artist Leo Lionni complains, "The study of literacy is all too often a matter of spinning words about words, without looking back to the images that precede words and to the feelings that precede both" (Lionni, 1984, p. 732).

And it isn't surprising that the field of literacy spends so much time "spinning words about words"; the supremacy of verbal thinking is the dominant view in this field. Hannah Arendt (1976) is not alone when she conjectures that "no speechless thought exists" (p. 100). Language is assumed in the literature to be the best vehicle for thought--perhaps even indispensable. Early in the century, for example, Wilhelm Herder(1901) asserted that reflection is "only made possible by speech,"² and later Edward Sapir (1921), in his book on language, said that "thought may be a natural domain apart form the artificial one of speech, but speech would seem to be the only one we know of that leads to it" (p. 18). Benjamin Whorf (1956), too, stresses the primary role of language on thinking: "The world is presented in a kaleidoscope of impressions which has to be organized in our minds--and that means largely by a linguistic system" (p. 25).

Whorf touches on an important concept--the need for an organizational system to sort out the influx of stimuli we are exposed to. In essence, what we need is an inner symbol system to store and organize our

² W. G. Herder is quoted by Rudolf Arnheim in Visual thinking (1969).

thoughts. Most psychologists and educators stress the use of language in organizing thought (Vygotsky, 1978; Bruner, 1983). Jerome Bruner's work, in fact, depends only on models of thought that stress verbal stages. But does that inner system **need** to be linguistically based? There are voices of dissent.

Rudolf Arnheim (1969) stresses the importance of looking at visual as well as verbal thought. He contends, in fact, that the image is supreme: "Truly productive thinking in whatever area of cognition takes place in the realm of imagery" (from "Preface", p.v). Like Whorf, Vygotsky, and Bruner, Arnheim believes that in order to cope with the world, the mind must gather information and process it, but he stresses that objects and events must be available in the mind in some way to think about them; he believes that verbal thought--words alone--are secondary in shaping thought.

Visual thinking is considered by some psychologists to be as "wired-in" and pre-programmed as language. When infants explore their visual field, they scan the entire environment both for a perceptual context and to focus on specific details. They need to go back and forth between figure and foreground in order to "see." That whirling confusion of vision needs to be organized, and as psychologist Ralph Haber (1966) points out, "to achieve knowledge of what they see, children have to attach meaning to the different patterns of light they perceive" (p. 338). This raw material of vision needs to be built into a mental framework. British psychologist Richard Gregory (1970) defines perception in those terms: "Perception must, it seems, be a matter of seeing the present with stored objects of the past"(p. 10). And in a comprehensive review of symbolic representation theory, Gier Kauffman concludes that "the ability to construct and act upon mental representations

is regarded as the most fundamental property of human cognition"
 (Kauffman, 1985, p. 51) ³

But the division between visual and verbal oversimplifies the problem of how we shape and organize our thoughts. Most current theories fail to investigate the influences that help shape symbols systems, how these different systems change depending on the task at hand, or how they work together to **complement** each other.

Practitioners, on the other hand, often *do* stress the way words and pictures are intimately related. I take my title, for example, from e.e.cummings, who called himself "an author of pictures, a draughtsman of words." Besides practicing the craft of writing, cummings sketched and painted daily: oil portraits of his wife and himself, watercolors of his farmhouse, line drawings of elephants, anatomical studies of animals and people. When asked by an interviewer, "Tell me, doesn't your painting interfere with your writing?" He replied, "Quite the contrary: they love each other dearly" (Hjerter, 1986, p. 109). And it was parallels like this that I could draw to my own work as well as that of young children, that first intrigued me, enticing me to begin to investigate the importance of picture as well as word symbols in literacy.

Literacy Takes on New Meanings

At the time, I was struggling with the relationship between words and images in my own work--trying to create a documentary videotape. Looking back in my journal, I can trace the genesis of this dissertation study.

³ In his thorough review of Symbolist theory, Kaufmann traces its roots from Aristotle through Vygotsky and Luria, ending with the recent theories of Paivio and Kosslyn. The work of these current theorists is discussed in the body of this paper.

Journal Excerpt, (February 28, 1985)

[I had just read an interview with French film-maker Jean Rouch, and was inspired by it.]

...Rouch explains some of the problems he wrestles with in composing his films. I was especially interested in his discussion of the visual image and the narrative line--that they must work together and each have a special role in imparting the message. More than the struggles I'm having with [the videotape script], I thought of the kids in Pat's class--learning to read and write through creating picture books and reading those of adult authors. Just like I am, these children are discovering the relationship between verbal and visual language. What is the relationship between these words and images? . . . What are the limitations and opportunities of these relationships? Is anybody out there in Cognition Land looking at this stuff?

I was fortunate to be taking a writing seminar, and with the encouragement of Professor Donald Murray and the members of my writing group, I began to explore that relationship, in my own video work, in the writing of adult authors and illustrators, in interviews with college students, and most importantly, in the emerging literacy of the six-year-old children in whose classroom I was working. Sprinkled through my journal, I find quotes which continue to fascinate me:

I am finding that within my own mind there is a storehouse of images that can slowly be pulled out. . . I can't insist on establishing a design or structure before writing because the inner images seem harder to see than those of objects outside. Writing is like pulling for minutes or hours on end on a fishing line. Something is coming up, but I don't always know what it will be. In this case, perhaps it's best to try freewriting as when the drawing hand guides itself across the page. (J.T., 401 student)

First I put the whole picture in my head--a whole lot of pictures. Then, I put them on paper, one by one. I already have the words planned. I already know what I'm going to write about in the morning. I make myself remember it all the time. I say it in my head so people won't hear

it. . . I believe there's a wall in my head, like this (she demonstrates)-- there's halves--and there's words on one side and pictures on the other. (N.D., six-year-old student)

The pictures for me are a passionate affair with the words. . . [In picture books] you must never illustrate exactly what is written. You must find a space in the text so that pictures can do the work. Then you must let the words take over where words do it best. I like to think of myself as setting words to pictures, for a true picture book is a visual poem. (Maurice Sendak, writer/illustrator)

I was immersed in, fascinated with, . . . and, unfortunately, overwhelmed by the information I was collecting. The pilot study which grew out of this exploration pointed the way to a more organized and disciplined research study.

What's Ahead in this Dissertation

The chapters that follow describe the research I conducted in order to more systematically explore the visual and verbal symbol systems that children create in the process of writing and reading. This dissertation has both a theoretical and methodological bias. My view of artistic activity as basically a cognitive activity is shaped largely by Ellen Winner (1982), Rudolf Arnheim (1974), Nelson Goodman (1968), and Suzanne Langer (1942). As Winner writes, "Both producing and perceiving art require the ability to process and manipulate symbols and to make extremely subtle discriminations. . . [T]he arts are . . . viewed as fundamental ways of knowing the world" (p. 12).

Another theoretical bias is in my view of the abilities of children. As I worked with and investigated what children are able to do, I have found

their abilities to be underestimated by the prevailing developmentalist school of thought, largely influenced by the work of Jean Piaget. No research study dealing with the cognitive abilities of young children can ignore the work of this giant in the field of child psychology. Jean Piaget's theories are extremely complex, and therefore difficult to present briefly without distortion. Instead, I have chosen to discuss--and criticize-- aspects of his theories and work in the chapters where his experiments pertain to the specific topic I am addressing.

It would be a mistake, however, to assume that I disagree with all aspects of Piaget's work. I believe his most important contribution to be his assertion that learning is an **active process**, not a matter of passive absorption; this is a key tenet in which I strongly believe. Piaget also states that children think differently from adults. Again, I agree, although I believe those differences to be quantitative, not qualitative.

My two major disagreements with Piaget's theories are themes which recur throughout this dissertation. First, his view of learning is more solitary than mine. Piaget believes, for instance, that adults play a minor role in a child's development until he or she is around six or seven years old. I believe, on the other hand, that even much younger children are both intrigued and strongly influenced by the adult world that surrounds them.⁴ Secondly, my work with young children has convinced me that they are not as intellectually limited as Piaget claimed; I find them to be neither illogical nor egocentric. Chapter I discusses more fully the world of children, and also explains my methodological bias, which is clearly for qualitative, field-based research.

⁴ For a fine review of this aspect of Piaget's theories, see B.Tizard & M.Hughes (1984).

In Chapter II, I share the methodology of this dissertation in some detail, discussing the problems I encountered, such as working out my role as a participant-observer, analyzing the mountain of data I accumulated, and learning to incorporate the background research of others into my own work.

The following four chapters-III through VI--are the real "meat" of this dissertation, discussing my four main findings. Each of these chapters deal with ways that children create symbols in their writing and their drawing in order to add important dimensions to their communications. Although these four findings are presented in separate chapters, dealing with time, space, movement, and color, in reality these dimensions are difficult to separate from one another. Many of the examples from the children's work could have been placed in more than one chapter, but for the sake of examining each more fully, I have somewhat artificially separated them.

Finally, my concluding chapter--Chapter VII--deals with the implications of this study: reviewing my conclusions, reflecting on future areas for study, and most importantly, discussing the implications of this work on the field of literacy and in our educational system.

CHAPTER I

**REVISITING THE WORLD OF CHILDREN:
MYTHS, METAPHORS, AND NEW DIRECTIONS FOR RESEARCH**

Once when I was six years old I saw a magnificent picture in a book, called True Stories from Nature, about the primeval forest. It was a picture of a boa constrictor in the act of swallowing an animal. Here is a copy of the drawing.

In the book it said: "Boa constrictors swallow their prey whole, without chewing it. After that they are not able to move, and they sleep through the six months that they need for digestion."

I pondered deeply, then over the adventures of the jungle. And after some work with a colored pencil I succeeded in making my first drawing. My Drawing Number One. It looked like this:



I showed my masterpiece to the grown-ups, and asked them whether the drawing frightened them.

But they answered, "Frighten? Why should anyone be frightened by a hat?"

My drawing was not a picture of a hat. It was a picture of a boa constrictor digesting an elephant. But since the grown-ups were not able to understand it, I made another drawing: I drew the inside of the boa constrictor, so that the grown-ups could see it clearly. They always need to have things explained. My Drawing Number Two looked like this:



The grown-ups' response, this time, was to advise me to lay aside my drawing of boa constrictors, whether from the inside or the outside, and devote myself instead to geography, history, arithmetic, and grammar. (Antoinette de Saint Exupery, 1942, p. 3-4)

When adults look at the world of children, they are necessarily outsiders examining a land they cannot be a part of. And yet the terrain seems so familiar. As Jenks (1982) writes, "The child is familiar to us, yet strange, he inhabits our world and yet appears to answer to another, he is essentially of ourselves and yet appears to display a different order of being" (p. 7).

In interpreting the behaviors and motives of children, adults are liable to approach the task from their own world views and conceptions; they are often quite "adult-centric." Consider, for example, this interpretation of a child's drawing by psychiatrist Robert Burns (see Figure 1):

"A Baby in the family is an event which usually causes jealousy in other siblings. K-F-D 77 [Figure 1] reflects many of the dynamics in the reactions of a child to a new favored baby. This drawing was done by seven-and-one-half-year old Billy, and we note how the baby is the center of the family's attention. Billy is upside down; apparently, this is the way his world is at this time, with a three-month-old baby in the family. We note the crib in which the baby is placed has repetitive lines and some elements of the cross-hatching seen in more obsessive-compulsive cases. In addition, Billy is throwing something in the garbage can. This is a

[symbolic] recurrent method of evicting the intruder on the family's peace and quiet. Little children get rid of things in the house that are 'nasty' or 'dirty' by throwing them in the garbage can. . . This is a repeated symbol in the new baby syndrome. . ." (Burns and Kaufman, 1972, p. 174).

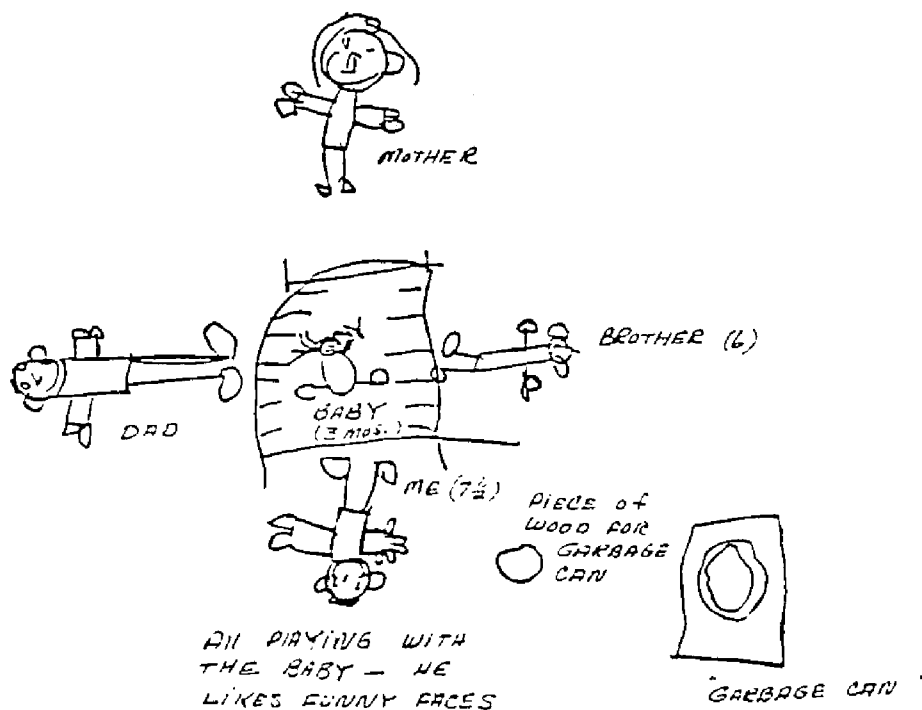


Figure 1
Billy's Family Drawing

Burns and Kaufman are basing their interpretation of Billy's drawing on several assumptions, all coming from the particular symbolic framework in which they are steeped. Before even looking at Billy's drawing, they assume he is jealous and will fit nicely into their pre-conceived "new baby syndrome." And in a very egocentric manner, they assume that Billy is using the two-dimensional space of the page the way they have been conditioned to, and that Billy, is, in fact depicting himself as upside down.

Without asking Billy about the picture and his own interpretations, we can't know, of course, what he had in mind, but six-year-old Bobby used space in a similar way in his drawing about playing a new card game when he visited his friend Barry (see Figure 2).



Figure 2
Bobby's New Card Game

"First he wanted to provide a context for his readers. 'That's the T.V. That's one of Barry's robotic things. That's the couch and chair--you know, one of those chairs where you lean it back,' he explained as he pointed to different objects on the page. 'I'm going to need to make more furniture.'

His classmate Josh leaned over the picture. 'Oh! It's a top view. Is he looking up or down at the cards?'

'At the cards. See, that's the card,' Bobby pointed to the rectangle in the center of the card players. 'You put some in the middle to get points. You have to have them to face the other people. You put all the cards down but only one partner keeps it down' " (Hubbard, 1987, p. 62).

Instead of using a simple vertical plane of top and bottom, ground and sky, as most adults do, Bobby unfolded the scene into, as Josh immediately perceived, a top view. Bobby does not feel his world is upside down because he is playing a card game! I shudder to think of the interpretation Burns and Kaufman might give to the crossed legs, or fists full of cards. Nowhere in

their book of drawing interpretations do the voices of the children appear, explaining the meaning and intentions in their drawings. Instead, the authors rely exclusively on their own assumptions about the world of childhood and the abilities of children.

Unfortunately, they are not alone and this adult-centric view of children pervades our education system. The double thesis of this chapter--and one of the theoretical bases underlying this dissertation--is that there has been a distorted portrayal of the world of childhood in general **and** a systematic underestimation by researchers and educational theorists of the true abilities of children.

The Social History of Childhood

The traditional and still prevailing concept of childhood is that it is a natural state. Yet the line between childhood and adulthood is culturally drawn, evolving to fit the needs of the community (Goldstone, 1986). As the community changes, the metaphors and myths surrounding childhood shift as well.

Research by Phillipe Aries (1962) and Neil Postman (1981) show that childhood itself is a fairly recent cultural invention, virtually non-existent in the Middle Ages. Medieval artists, for example, did not depict children; they did not "know childhood" or attempt to portray it. Their renderings of young subjects do not resemble children as we would view them, but look more like miniature adults. In a typical medieval Bible picture of Jesus speaking with children, he seems to be surrounded by dwarves: their clothes, postures, and facial expressions are those of tiny adults.

In many ways, this "child as miniature adult" metaphor was a true representation of the concept of children. Until the sixteenth century,

children dressed exactly as adults and were a part of the adult society as soon as they could be independent of their nanny or mother. According to Postman, this typically occurred around age seven, and after that, "[c]hildren worked beside adults, drank in taverns with adults, gambled with adults, went to war with adults, and shared beds with adults. Children and adults played the same games. . .there were no topics or words or activities from which children were supposed to be shielded" (Meyrowitz, 1985, p. 258). Lawrence Stone (1977), in his history of the family in England, offers more evidence of the lack of separation of the child's world from the adult's: "Children saw deaths and executions, witnessed sexual activities, and often engaged in sex play themselves" (p. 84).

But beginning in the sixteenth century, a new concept of the child--and of childhood emerged. Aries traces it to the rise of the middle class.¹ Stone believes it was first discussed by Renaissance humanists, and Elizabeth Eisenstein (1979) puts forth an intriguing theory that links the invention of childhood with literacy. Whatever the cause, sixteenth-century children became a separate class, at first as a source of amusement and relaxation for the adults that surrounded them in the home--a cuddly and innocent plaything.

But the seventeenth century moralists also discovered childhood, but for them, children were not charming toys; they were creatures of God in need of safeguard. . .and reform. The Puritans stressed protecting children from the pollution of life, mainly by accepting the unquestioned authority of their parents. Stone found a determination to "break the will of the child,

¹There is a large body of research devoted to the literature of middle class concepts of childhood beginning in the nineteenth century. For more information, see: M. Mead & M. Wolfenstein, 1955; P. G. Slater, 1977, and R. H. Bloch, 1978.

and to enforce his utter subjection to the authority of his elders and superiors, and most especially, of his parents" (p. 162). The state of Massachusetts went so far as to make disobedience to parents punishable by death. (Not to worry, though. Stone assures us that "only a handful of children were actually executed under this law" (p. 175)).

This concept of the child quickly merged with the family attitudes and melded into the dominant view of the unspoiled child in need of protection and moral authority--a concept which has influenced the education of children beginning in the seventeenth century. Geoffrey Summerfield (1984) traces the first influential book on the rearing and education of young people to philosopher John Locke's Some Thoughts Concerning Education (1693) . Among other things, Locke recommended that, with young children "all their innocent Folly, Playing, and Childish Actions, are to be left perfectly free and unrestrained, as far as they can consist with Respect to those that are present" (p. 156). These "thoughts" influenced later Western writers and philosophers, notably, Wordsworth (The Prelude, 1805), William Blake (Songs of Innocence and Experience), and even Rousseau (Emile, 1792) --a philosopher who disagreed with Locke on many points, but, according to Summerfield, did not escape his philosophical influence. Cherish children for their own sake, is the message of these works; protect their innocence and uniqueness without contaminating them with adult biases.²

A complete review tracing the view of the child in educational theory is beyond the scope of this paper; what emerges from this philosophy that

² See Geoffrey Summerfield's Fantasy and Reason (1984) for a complete discussion of the factors--"philosophical, social, and moral"--bearing on children's development in the eighteenth century.

has remained a tradition into the twentieth century is the image of the "child as redeemer." Robert Coles (The Moral Lives of Children, 1986) would like to view the child as a moral protagonist. Rather than respecting their reasonableness, he instead admires their innate "goodness" in the tradition of Locke and Wordsworth. Seen in this light, children are expected, according to Madeleine Grumet (1986), to lead and heal our troubled world; they are a special class bearing the burden of saving the universe. "[The child's] education brings him from sentimental kindergartens and authoritarian classrooms to sun-dappled commencements where we exhort him [or her] to make the world a better place" (Grumet, 1986, 91).³

This brief history shows how our current understanding of children rests on a network of undefended assumptions. As William Kessen reminds us, the child is "essentially and eternally a cultural invention" (Kessen, 1979, p. 815).⁴

³"The child as redeemer" occurs often in the literature. In James Axtell's account of education, he discusses the "child redeemer [who] has become the adorable symbol of society's self-deception, a means of foisting the mission of our own liberation upon those least able to effect it" (Axtell, 1976). Also Madeleine Grumet cites Bernard Wishy at length: "Bernard Wishy portrays the child redeemer as an innocent figure who emerged from the rubble of the Civil War to save Americans from the pluralism of urban industrial life. He points to Huck Finn as the child redeemer par excellence, menaced by civilization, fighting to resist its evil lures by escaping to the river" (Grumet, 1986, p. 90).

⁴ Kessen demonstrates how the conception of children has changed by quoting messages from our history (Kessen, 1979, p. 815). He cites these three examples, for instance, which span American history:

"The first duties of children are in a great measure mechanical: an obedient child makes a Bow, comes and goes, speaks or is silent, just as he is bid, before he knows any other Reason for so doing than that he is bid" (Nelson, 1753).

"The rule that parents should not play with their parents may seem hard but it is without doubt a safe one" (West, 1914).

Kessen compares this shifting advice to hearing a parent of the 1970's speak of her six-year-old:

"LuAnn liked the school in California best--the only rules were no chemical additives in the food and no balling in the hallways" (Rothchild and Wolf, 1976).

Reassessing Children's Strengths

Children are typically assessed in terms of what they cannot yet do. In child psychology and development theory, children are viewed as deficient, or at least, incomplete (Speier, 1976). The prevailing metaphor is that of growth: vines and plants growing, buds not yet ready to bloom. "[C]hildhood finds voice only as a distant echo of what is yet to come" (Jenks, 1982, p. 14). This isn't surprising; none other than Charles Darwin is considered to be the Godfather of child psychology (Kessen, 1979), followed by G. Stanley Hall and Arnold Gesell, who constantly tied cognitive development to the biological growth of children. In the twentieth century, major figures in child psychology like Piaget, Kagan, and Bruner have worked from a developmental model, plotting the different stages through which children pass on their way to adulthood. They believe that there are qualitative differences between the cognitive abilities of children and adults. Piaget has probably been the most influential, with his central belief in the egocentrism of children, which he feels interferes with their ability to successfully negotiate the world.

In the last decade, many researchers have begun to challenge these notions about children's abilities. Psychologists Sheldon and Barbara White attack the notion of age-related developmental stages (White & White, 1980). They suggest that Piaget's age-related cognitive stages are the weakest part of this theory. Since most of these studies are not longitudinal, children are not compared with themselves at a later age. For example, children at age five might be compared to children who are nine years old now. And there is no evidence that in four years, these five-year-olds will respond the way the nine-year-olds do now, nor that these nine-year-olds would have responded as today's five-year-olds, four years ago.

Marilyn Shatz is another researcher who finds different stages of thinking for different ages simplistic (1977) . Instead, she looks for similarities in the thinking of people at different ages and has found that children seem to vary in their mastery of a skill depending on the nature of the situation.

Margaret Donaldson, in her award-winning book Children's Minds (1978), also refuted many aspects of Piaget's theories. She found that when tasks were presented to children within meaningful contexts, they were able to accomplish the same Piagetian tasks they traditionally failed to perform in experimental situations. (see also Black, 1981; Hughes and Grieve, 1979; and McGarrigle and Donaldson, 1974)

Paul Light builds on the work of Donaldson et al, challenging Piaget's belief in the egocentrism of children. In an interesting series of experiments concerning children's abilities to empathize and play another's part in a situation, he finds that a child's growing social sensitivity is at the core of his or her development. For Light, role-taking rather than egocentrism is that "concept which bridges social and individual aspects of cognition" (Light, 1979, p. 117).

These studies concern the abilities of young children, but the world of infant psychology is changing as well. Daniel Stern (1985) contends that infants are not nearly as passive as has been previously believed. In a longitudinal study where he videotaped the interactions between parents and infants, and later the same parents with these children, he found that the infants had taught their parents to adjust to the degree of stimulation they needed. For example, one infant had a more passive temperament than her mother, and would break eye contact when in danger of being over-stimulated. She also developed other patterns of behavior to train the

mother to slow down--patterns which remained intact over the years. On the other hand, eager, active babies found ways to stimulate too-passive mothers and fathers.

Infant specialist Dr. T. Berry Brazelton has also begun to take another look at videotaped interactions between parents and children and to reinterpret the behavior on the tapes. "We used to see the parents shaping the child," he states, "but now we see the child also helping to shape the parents" (quoted in Freidrich, 1983, p. 57).

Unfortunately, not enough researchers have been willing to "take another look" at the capabilities of children. Too many are like Burns and Kaufman, trapped within their mental frameworks and unable to break out. Dr. Rochel Gelman wrote that she and many of her colleagues were blind for many years to the evidence of pre-schoolers cognitive--and social--abilities because they were unwilling to "recognize facts that contradict existing theories" (Gelman, 1981, p. 161).

Consider the research of Howard Gardner, for example--a leading cognitive psychologist working with Project Zero at Harvard University. He consistently designs experimental tasks to test children's artistic concepts, but all from his pre-existing developmental framework. He asks children standard sets of questions, never taking into account Donaldson's work, realizing the the child, in trying to make sense of the situation, is pondering, "What does this adult want? Why is he asking me this?"

One of his conclusions is that children don't have a sense of an artist's style (Gardner, 1982). His experimental method was to show the children two paintings--a traditional, realistic painting of a horse by Goya, and an abstract Kandinski. He then asked the children if the two paintings could have been painted by the same man. Most said yes, although some

reasoned, "No, because he'd be too tired after painting the first one." If I had been one of the children and never seen the works of either artist before, I might make the same judgement. Artists **do**, after all, change in their styles; what if Gardner had chosen instead two Picasso's--one from his very early realistic phase and another from his cubist period?

And, in fact, researchers who observe children in a classroom setting as they draw for their own purposes in meaningful contexts have evidence that they **can** recognize artistic style. Patricia McLure notes that the six-year-old children in her class recognize and comment on the distinct styles of the other children in the classroom. They also recognize the works of adult artists they are familiar with--picture-book illustrators like Frank Asch, Steven Kellogg, and Trina Shart Hyman. One morning, for example, as Ms. McLure read from E.B. White's Charlotte's Web, Roger commented that the pictures were done by Garth Williams, who had illustrated another class favorite--The Chick Story. And after the chapter had been read, Barry brought it up again: "I think the background looks like Stuart Little. Did Garth Williams illustrate that, too?" (Hubbard, 1985, p. 157)

Gardner's work is also fraught with the phrase "children cannot yet. . ." For example, he claims that children in the pre-operational stage cannot manipulate mental images (Gardner, 1982). Yet Allan Paivio proved that they can turn things they are familiar with, such as letters, in their minds effortlessly (Paivio, 1983). (see also Chapter III, "Coping with Flatland")

The point of this criticism is to highlight the drawbacks of too-narrow assumptions about children and their abilities, drawbacks I hope to avoid in this dissertation. And this calls for a new research methodology, as well as a new metaphor, for children.

The Child as Ethnographic Informant

"Method is not innocent or neutral. It not only presupposes an understanding of what constitutes social and political life; it has also become a powerful factor in shaping (or rather misshaping) human life in the modern world" (Bernstein, 1983, p. 45).

Until recently, educational research has been dominated by positivist traditions, but many researchers are finding this world view getting in the way of a full understanding of human behavior and especially, human potential.⁵ . A methodological shift is underway, from the quantitative research of the past to a more holistic view. This shift is not necessarily a graceful one, and has sometimes even occurred in the midst of a study.

Jerome Harste and his colleagues at Indiana University, for example, began a study of young children acquiring written language (1985). Although Harste et al began the study under an experimental framework, it became more and more naturalistic. A sensible compromise appeared to be to meld the two designs, which the researchers attempted, but soon abandoned, reasoning that the two methods ultimately represented different and incompatible world views. Their tasks became more and more open-ended and they came to view the children as their "curricular informants," showing the researchers the process of their learning (Harste and Rowe, 1986).

More and more educational researchers are making similar shifts, researchers like James Britton, Kenneth and Yetta Goodman, Donald Graves, Jane Hansen, Don Holdaway, and Frank Smith. But I propose a more radical step: to study the world of children anthropologically, viewing that world as

⁵ Ton Beekman declares that "postivism is dead," while Lous Heshesius provides a bibliography of the accounts of the dissatisfaction in science, philosophy, education, social science, and psychology with the positivistic tradition. For her critical view, see: *Pedagogy, special education, and the lives of young children*, 1986.

its own culture, and expanding Harste's metaphor so that children can teach us as "ethnographic informants."

Ethnography is the work of describing a culture. As Malinowski explains it, the goal is "to grasp the native's point of view, his relation to life, to realize *his* vision of *his* world" (Malinowski, 1922, p. 25). And the way the ethnographer learns this culture is through his or her informant, a native speaker who acts as a source of information. The informant literally becomes the teacher for the ethnographer. If we invite children to become our ethnographic informants, we can begin to understand their world on their terms, without falling prey to pre-existing assumptions about their abilities. In this new role, the child is not the passive "subject" of the research, but an active collaborator.

When we shift to an ethnographic perspective, another fundamental difference is implied. In traditional research, the unit of study is the single child, in keeping with the still prevailing Piagetian notion of the individual child constructing and reinventing concepts of her world. Some psychologists, such as William Kessen, argue that this is a difficult model to escape because it is the core of our American culture: "The child--like the Pilgrim, the cowboy, the detective on television--is invariably seen as a free-standing isolable being who moves through development as a self-contained and complete individual" (Kessen, 1979, p. 819). Ethnographic research, on the other hand, with its emphasis on the wider culture takes seriously the notion that development is largely a social construction, stressed by researchers like Paul Light (1979), Lev Vygotsky (1978), and Berger and Luckman (1966).

In reviewing the ethnographic literature, I found that anthropologists have indeed relied on children as informants in the past. James Spradley,

for example, who has studied cultures as diverse as Skid Row tramps and cocktail waitresses, recalls Laurie as one of his best informants. "She answered my questions with the calm assurance of an expert. She recalled incidents that had happened and told me stories that brought to life the cultural scene she knew so well. It didn't matter that she had just passed her fourth birthday; she had mastered the complex culture of her kindergarten class" (Spradley, 1976, p. 26).

Ton Beekman is another researcher who "stepped inside the landscape of the child" (Beekman, 1986, p. 39) in order to find out more about his world. A clinical psychologist from the Netherlands, she had been studying children's experiences of time and space, but found the research limited. She writes, "We read the literature about these issues, but the emphasis there was only on the cognitive aspects of the children's experiences. In the standard texts we can discover all the things children still don't know, and what adult-defined developmental stage they are in. But as phenomenologists, we realize that in order to understand children's experiences, we need to observe them directly, not through the myopic lenses of our adult-centered theories" (Beekman, p. 41). Beekman and her associates found that the best way to discover the time and space experiences of the Netherlands children was to enter their world, joining them in their daily games of Hide 'n Seek.

There are, of course, stumbling blocks in opening up the ethnographer-informant relationship. Typically, adults hold a position of authority over children; even innocent questions might be interpreted as requiring deferential answers. But adults can show by joining in children's routines and by an attitude of genuine respect that they truly do want to be accepted and learn from their child informants. Researcher William Corsaro

found that he was referred to as "that big kid--he has to go to school, too," and "Big Bill" (Corsaro, 1981, p. 117). In my own work in a first grade, I knew I had been accepted as a somewhat bigger classmate when six-year-old Noa called me up to invite me over to play one afternoon.

Above all, this type of research requires time and the patience to learn the recipes of behavior that guide the culture of the children we are studying. Looking at the symbol systems that the children create as they learn to read and write means learning to see "*their* vision from *their* point of view." For it is only from the perspective of the children themselves that we can learn to see the elephants inside boa constrictors rather than ordinary, every day hats.

CHAPTER II

METHODOLOGY

Ethnographic Context and Population

The Setting

Mast Way School, in Lee, New Hampshire is a small elementary school, with children from kindergarten through grade five. The backgrounds of the children's parents range from blue-collar and farming families to professionals, with the majority of the children coming from middle- and upper-middle-class families. Several years ago, this school was the site of a reading and writing project conducted by a state university team. As a researcher on that team, I spent eighteen months in one of the first-grade classrooms, working collaboratively with the teacher, Patricia McLure. Our history of working together, as well as my familiarity with the classroom context, led me to return to this site.¹

This year, Pat's class is one of three first grades, all heterogeneously grouped--a class which began with twenty-one students and grew to twenty-four (eleven boys and thirteen girls) by December. Besides Pat, there are other adults in the classroom on a regular basis: two researchers (Brenda Miller and me, who are both conducting our doctoral research); Mrs. Krieg, an ESL tutor who works with one of the children within the classroom

¹ The names used above--Mast Way Elementary School, and teacher Patricia McLure--are *not* pseudo-nyms, but are used with Ms. McLure's and the school principal's permission. All other names pertaining to this classroom, and any children's names used throughout the text *are* pseudo-nyms, however, in accordance with requirements set by the University of New Hampshire Human Subjects Review Board.

a few mornings a week; Mrs. Kohlberg, a Chapter I tutor who also works within the classroom a few mornings a week; and Mrs. Strong, a school aide, who meets regularly with small groups of children, often reading them stories and monitoring their "listening skills."

Since the first day of school, I have been a researcher in this classroom, investigating the literacy events of the children during the morning, the part of the day devoted largely to reading and writing instruction.²

Classroom Context

Patricia McLure's classroom has the atmosphere of a productive studio workshop. When the six-year-olds enter her classroom at 8:35 in the morning, they go directly to their writing folders. They choose what they wish to write about, what type of paper they will use, and where they wish to write. There are various places to sit and work--long tables, round tables, desks in clusters, and individual desks the children can move together. At the front of the room is a large carpeted meeting area, bordered by a well-stocked class library (see Figure 1).

Plants and microscopes, scales and weights, polliwogs and seashells--every available shelf and wall space beckons exploration. Stacks of paper, single sheets, and stapled booklets are available, as well as a variety of writing utensils and other art supplies; the "Beautiful Junk" bin overflows with scrap materials ranging from pieces of cloth to left-over wrapping paper. The walls are covered with the children's experiments, notes, projects, graphs, and artwork.

² The concept "literacy event" was used in this study as a conceptual tool. Shirley Brice Heath describes a literacy event as "one in which written materials are integral to the nature of the participants' interactions and their interpretive processes" (1983).

Pat McLure's First-Grade Classroom

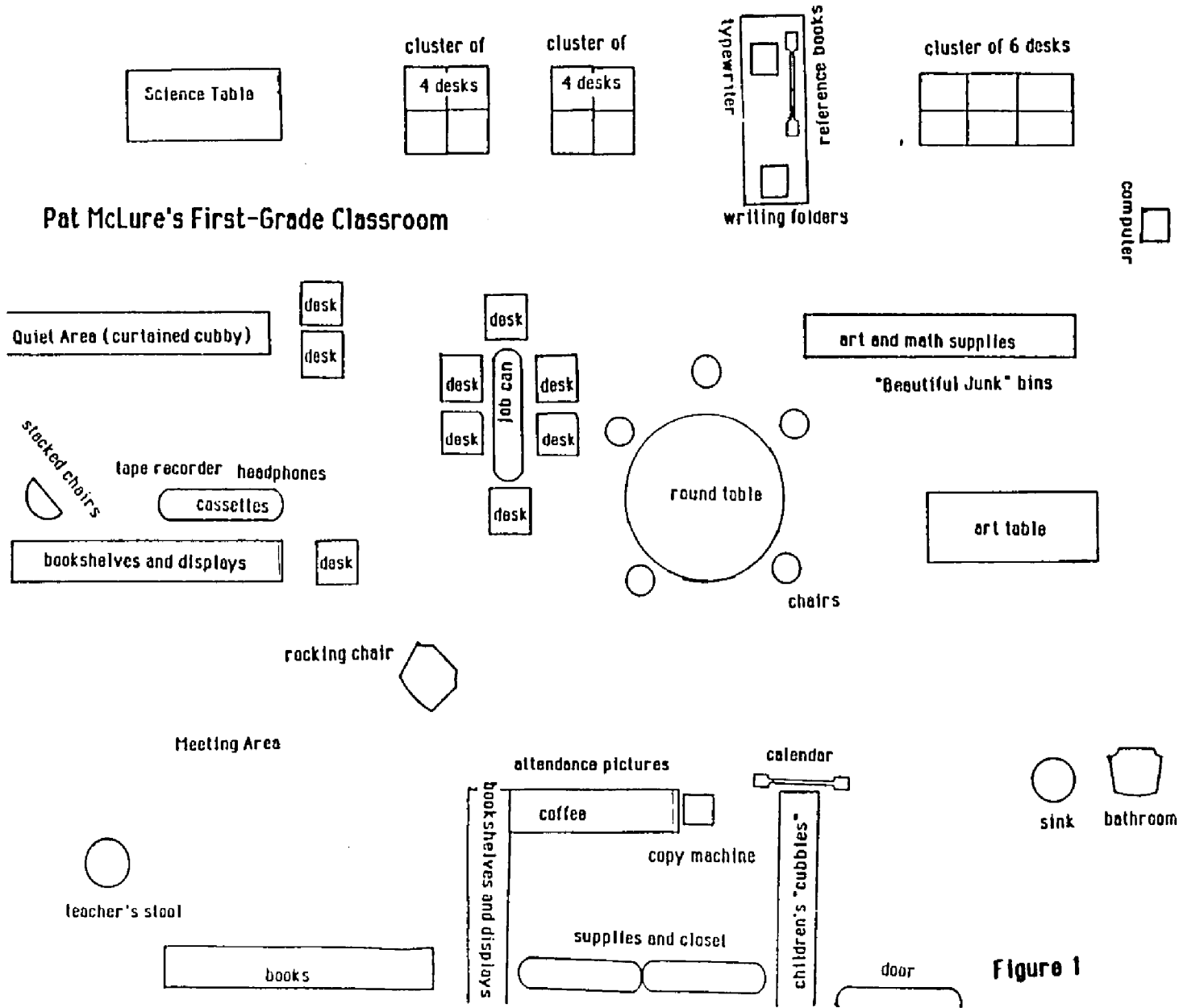


Figure 1

Figure 1

On the first day of school, Pat explained the routine for the first part of the morning as she sat with them in the meeting area:

Excerpt from Field Notes (9/2/1987)

Pat: The first thing every day, we'll spend time writing.

Kelly: I like writing stories.

Pat: We made some booklets for you to choose from. . .

Kelly: We did this in kindergarten! We started big, then got smaller.

Ming: Mrs. Dunn [the kindergarten teacher] tricked us like that.

Pat: And I'll bring around folders for you to keep your writing in.

Ethan: And we can't bring them home.

TJ: Until the end of the year.

Kelly: Will we make books like those?

(She points to the carton of published books by child authors from last year.)

Pat: (smiles) Yes.

(Happy noises from the children)

Graham: I saw a book *that* small: (Holds up fingers about one inch apart)

Paul: I bet I could make one that small.

Megan: You'd only use one staple for that!

Pat: Books are different sizes . . . and they can be different colors, too. On most of the desks, there are crayons. There are some markers you can share, too. In the art area, there are more markers you can take to your desk to share. Try to use the pencils for the writing. It's easier to erase if you need to.

Ashley: I write a lot at home.

Nick: Me, too, I write and draw pictures at home,

Kelly: I have even more with pictures.

Ashley: I made a butterfly once, and cut it out and glued it on paper.

Pat: Well, that's what we'll do now--and tomorrow, first thing. Now, till the big hand is on the nine [15 minutes away] you can work on your writing, then we'll come back to the meeting area, and some of you may want to share.

During this "morning writing time," Pat circulates around the room, conferring with children about the writing and drawing they are doing. Because she wishes to establish a community in her class, she encouraged them from the start to turn to each other for help. Kelly is a child who likes to have a lot of attention--especially adult attention, but Pat made it clear to

her that she needs to talk with the other children, not just the teacher, about her writing and drawing.

One morning, early in September, Kelly saw that Pat was busy and turned to TJ--a returning veteran of last year's first grade--as she worked on her writing. First, she explained her drawing: "This is my brother with a stick running after me. I wanted people to know we were running, so I made them [the legs] up like that. My brother's funny. He likes to blend in with the woods. Sometimes we get lost when we play Hide 'n Seek."

TJ looked up from his writing interestedly, and asked good, content-based questions. "How do you find him?" he began.

"Sometimes we find him by poking a stick in the woods. If it says, 'Ow,' it's Jacob. "

TJ laughed. "When you do that, does he get mad?"

"No," Kelly shook her head. "'Cause he wants to be found."

"So did you ever not find him?"

Kelly thought a minute before answering. "Yeah, once it took till supper time to find him."

"What place was he hiding in?" TJ probed, drawing out more information.

"Behind my climbing tree." Kelly turned back to her writing now, with lots to say in the next few pages, drawing the dark night and her family looking and calling for Jacob--information brought out in her conference with TJ.

Just as the children learn to depend on each other as well as the teacher, they also depend on the underlying structures of the class which they soon internalize.

"The hand's on the two. Time for the meeting area." With these words, Susan put away her writing folder and headed for the meeting area where the class always meets at 9:10 a.m. Without a word from Pat, the first-graders were all closing folders, shuffling papers, and returning crayons to boxes. The routine has been established; by early fall, they know what to expect.

This is the time of day that the children share their writing and receive questions and comments from their classmates. Even at the beginning of the year, the children's simple stories--often pictures with one line of text--prompt participation from the class. Sometimes, the stories the children share have *no* written text, but Pat and the other children accept the drawing itself as the text.

Early in the year, for example, Jimmy shared his writing--a picture of his house, which he held up for the class to see, saying, "This is my house." Kelly commented that she liked his story, and several other children commented that they liked the picture. But other questions brought out more information about his house. Ming wanted to know why he decided to write about his house, for example, and when the discussion turned to how this house was different from his old house, many children joined in to comment about the merits of porches and the numbers of floors in houses, as this excerpt from my field notes shows:

Excerpt from Field Notes (9/16/87)

Jimmy: It's got a porch.

Pat: It's got a porch?

Megan: My house has a front porch, but it has stairs, but I never use them, because there's two sliding doors here and one here and I always slide right through down here. Because I have. . .and I don't want to go all the way around back here, and then down, I can just slip through there and go to my friend's house. She has a back door, too.

Brad: I have three floors.

Pat: Three floors?

Nick: I have four. I have a basement, a medium one, a upstairs, and then a attic. . .

Eugene: I've got a porch.

Nick: I have a porch, too

Pat: Thank you for sharing your story, Jimmy. You did a nice job.

One of the most important aspects of these sessions is the event itself--a chance for the children to validate the stories within them with an opportunity for talk and for further refinement of thinking. In these whole-class shares, the written and drawn text is often a kind of conversation starter, and the sheer event of speaking is the most important thing.³

After the children share their pieces, the class begins its "first working time." This is primarily a "reading time," especially on Monday mornings when the children choose a new book to practice reading and record that choice in their reading folders. (For a sample of a book list, see Figure 2) Pat introduced the book list in early October, adding an explanation of them to her usual directions:

Pat: We need to have people who are ready for listening to directions. It's Monday morning and people need to find a new book to work on for their reading work. They need to write the title, and the author on the book list, and today's date because you are choosing it. In your folder, this is your book list (shows) . That's where you need to write your title and the author and the date that you choose it. Today is the day you choose it. Do not do any other writing about the book. You aren't doing the sentence paper. Just choosing a book, and practicing reading it. You need to use today's working time to practice reading.

³ For an analysis of the whole-class sharing sessions in Pat McLure's first-grade classroom, and their importance in her language arts curriculum, see: R. Hubbard, *Write-and-tell* (1985).

Kelly's Book List

The books Kelly is reading

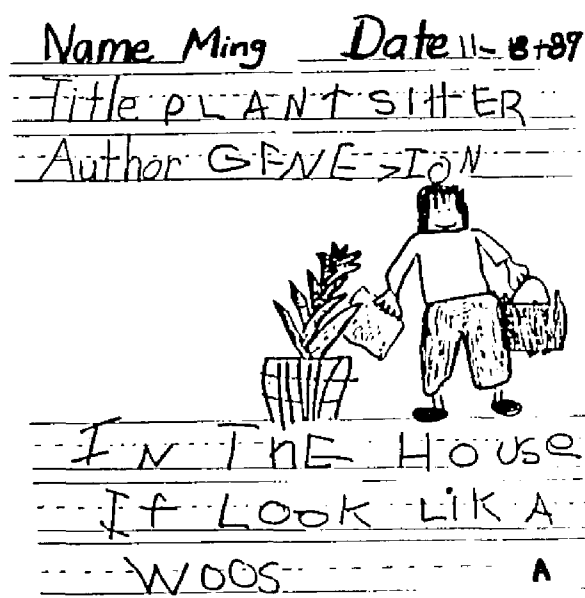
Title	ONE MORNING IN MAINE	Date
Author	ROBERT MECLOSKEY	9-21-87
Title	CHICKEN SOUP WITH RICE	Date
Author	MAURICE SENDAK	9-24-87
Title	CITY SONG	Date
Author	LAMES-STEEL	9-28-87
Title	A SHAR FOR MY MAMA	Date
Author	VERA B. WILLIAMS	9-28-87
Title	P IN OCKPIO	Date
Author	Barbara Shook Hazen	
Title		Date
Author		

Figure 2

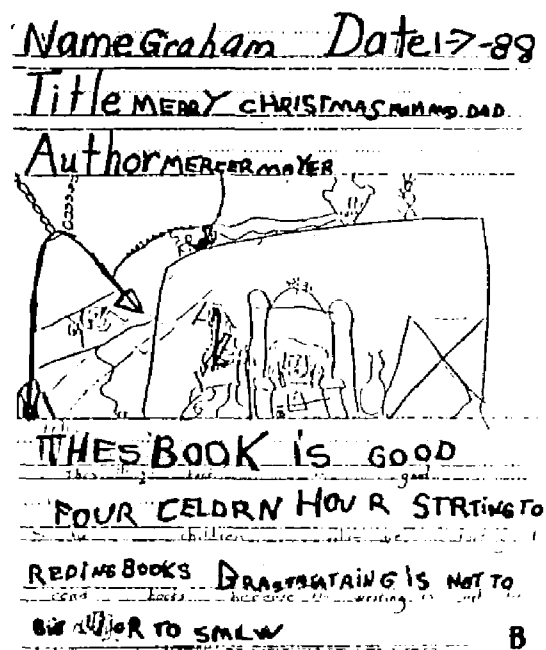
During the rest of the week, the children practice reading their books with a friend, then write a "sentence paper" about the book. On these sentence papers, the children are expected to "tell something about the book," and they usually use a combination of words and pictures to do this. (see Figure 3 A & B)

Finally, they share their books in small group reading conferences with a few other children and Pat (or with Brenda or me, during the course of the research project). In these conferences, each child brings the book he or she is reading and reads a section of it, or the whole thing if it is short. The others ask questions and make comments about the book, sometimes focusing their discussions on the content--other times discussing the strategies they used in order to be able to read it. One morning, I joined

Nick, Paul, and Gwen as they shared their reading with Pat. Nick had chosen the group members, so he was the designated "leader."



"In the house, it looks like a woods."



"This book is good for children who are starting to read book because the writing is not too big or too small."

Figure 3

Excerpt from Field Notes (9/24/87)

Some children come over to ask Pat a question

Pat: I'm trying to have a reading group. You don't bother me unless it's an emergency. Nick, who's first?

Nick: Paul, then me, then Gwen.

Paul: A Ghost Story. I already read it to the whole class. I'll tell you the title first. (He reads it, then shows pictures, with lots of exclamations, "See? See?")

Gwen: I see it.

Pat: I see it.

Paul: (reads the whole ghost story, then, in a louder voice, ends with): "He's got ya!"

Pat: I like the way you made your voice sound scary, then surprised at the end.

Nick: How did you learn to read it?

Paul: I picked it up during quiet reading time. I couldn't read it all, then I tried again and I got a few more words, and then the third time, I read it all.

Gwen: Why did you pick it?

Paul: I just explained. I picked it on the red rug. It was just quiet reading.

Pat: I think you read another one of the same set. When it Rains, it Pours.

Do you like that kind of book?

Paul: It was in a different box. I read two other scary ones. I think they're all by the same man.

Pat: Thank you, Nick?

Nick shares the pictures in Creatures Small and Furry . . .

The sharing group continued, with each child having a turn to share and receiving the questions and comments of the others in the group.

Sometimes, the children have only reading during this "working time," but more often, they have two tasks to be completed. One day, for example, Pat said, "For our working times today, you need to think about reading work, and math work. Some people have some booklets in their math folders. For your reading work, some more people will have turns to share at the round table, and you need to start working on your sentence papers. So, your sentence papers, your math papers, and some people will be sharing at the round table. You can either start with math or reading" (October 22, 1987).

This working time continues until 10:00, when the children know it's time to put away what they're working on and have their morning snack before going out to play for recess at 10:15.

Their morning schedule continues with a whole class reading share after recess. One child signs up every day for this reading share, and he or she reads either a part of a book, or the entire story, if it's short. And, like in the writing shares, the reader of the story then accepts comments and

questions from the others in the class. One morning in October, Megan read a picture book to the class about being lost:

Excerpt from Field Notes (10/27/87)

Megan: (reads) *Lost. Lost. I don't want an ice cream. I want my daddy. I don't want a rabbit. I want my daddy. I don't want a ride. I want my daddy. I want my dad. There he is! Daddy, daddy. Don't get lost again, daddy.* It was funny when I showed you that, 'cause she got lost! I bet it was funny when I showed you this.

Paul: That's just white paper with letters and stuff.

Megan: I know. Comments and questions? Joshua?

Joshua: Why did you pick that book?

Megan: Well, it's the first one I saw. Ethan?

Ethan: I like the part where he says, "I don't want a rabbit. I want my daddy."

Megan: Claudia?

Claudia: I like how you showed. . .

Megan: What?

Jenny: (finishing for Claudia) I like how you showed the pictures.

Claudia: No!

Sarah: the story?

Claudia: Right.

Megan: Sarah?

Sarah: I like how you showed the pictures. They're--you need them.

Megan: Yeah, like, I think this one's really a picture thing and when it's in front up here you don't need that word in there. You don't need the word, you don't need it for a lot of things, like, let me see. The first page, it **looks** like he's lost without saying lost. Sally?

Sally: I like the part where he says, "Don't get lost again, daddy!"

...

Ruth: Have you ever been lost, Megan?

Megan: Once I thought I was lost, but my dad always finds me.

Ruth: How did he find you?

Megan: He was turning around corners really fast and I wanted to follow, but I got lost.

Paul: I got lost a million times in all these stores. . .

In this fairly typical share session, the children ask Megan how she chose the book, comment on their favorite parts, discuss the choices of both

words and pictures, and relate their own personal experiences to the events in the story. Some of the same picture books and stories become class favorites and are repeated often, building the confidence in some readers to pick up those books on their own and choosing them to add to their book lists.

After this whole class reading share, the regular classroom routine is for another "working time" similar to the one just before snack and recess. Again, the children typically have a choice of the order in which to complete their tasks which are usually math and reading, but might also be special projects, such as the "Rotten Jack" unit, (explained in detail in Chapter 4).

Table 1 summarizes the morning time frame in the class:

8:35-9:10	"Writing Time"
9:10-9:30	Whole-group Share (Writing)
9:30-10:00	"Working Time" (Usually reading, and often a choice of math or reading or another activity, such as graphs or apple books.)
10:00-10:15	Snack
10:15-10:30	Recess
10:30-10:45	Whole-group Share (Reading)
10:45-11:15	"Working Time" (Similar to first--reading-sharing groups, math, other work projects.)

As the activities described in this section show, the classroom community consists of both the teacher and the children. Although Pat McLure is the recognized authority in this social hierarchy, she shares most of the activities with the children, and much of the decision-making is negotiated; within the classroom structure, the children have a great deal of responsibility for their learning.

Field Entry and Data Collection

In the spring of 1987, I contacted Patricia McLure to secure her formal permission to conduct my research in her classroom. This was by no means a surprise, as we had discussed it ever since I had conducted my pilot study in her classroom.⁴ The interrelationships of the children's drawing and writing are interests that we share, so even though I was not a researcher in her classroom for the 1986-1987 school year, we had talked often about the work the children in her class were doing. (In December of 1986, we even put together a slide show of the children's work to share with other interested teachers and researchers.)

I also secured permission of the principal, John Lowy, in June of 1987. As he was the principal when the Reading/Writing Project was conducted through the University of New Hampshire, our professional relationship had been established. At his request, I had also shared my pilot study, as well as the slide-show Pat and I had created, with interested parents one evening at Mast Way. Mr. Lowy did everything to ease our formal entry into the field, approving our parent permission slips, and even inviting us to attend the school's open house to be available for parent inquiries.

⁴ For a summary of the pilot research project, see: R. Hubbard, *Transferring images: Not just glued on the page.* (1987)

I say "we" because I was fortunate to have a colleague in the field with me: Brenda Miller, a fellow doctoral student who conducted her research (on the emergence of children's genres) in Pat McLure's first-grade classroom at the same time.⁵ Because both Brenda and I knew we would do field-based research for our dissertations, we decided to build into our research design a strategy suggested by Michael Agar (1980). Agar stresses the importance of "bias awareness" in good ethnographic fieldwork: "If several people examine a similar area, the differences in their biases will generate contradictions in their reports. Contradictions, rather than being viewed as threatening, should be seen as the beginning of a better question, a signpost pointing to a more sensitive understanding" (Agar, 1980, p. 49). In order to bring into the open these biases--as well as discuss interesting or puzzling data points--Pat, Brenda, and I met three times a week. Brenda and I also met every Monday noon for a "research lunch," swapping copies of our field notes, discussing our categories, and often sharing written memos.

Since the first day of school, I was a member of the first-grade community for three mornings a week--Monday, Tuesday, and Thursday, from approximately 8:00-11:15 a.m. For four months--September through December--I adhered to this schedule, and starting in January, I began a withdrawal from the field, spending one morning a week in the classroom instead of three. The main data gathering, then, covered a four-month period, and the remaining two served to confirm patterns which had emerged in the data and to remain in contact with the members of the classroom community.

⁵ Brenda also had a research and collegial history with Pat McLure. For more information on Brenda's pilot research study, see B. Miller, *Types of worlds*. (1987)

From the first day of school, I followed a fairly regular routine: during the morning, I read and wrote with the children, and circulated around the room talking with the children about the pieces they were reading or writing, and interviewing them about their composing processes. I also audio-taped conversations that children had among themselves and with me, as well as the daily whole group writing and reading share sessions. And each day, I sketched the classroom set-up, documenting where and with whom the children chose to work during both writing and reading (see Figure 4).

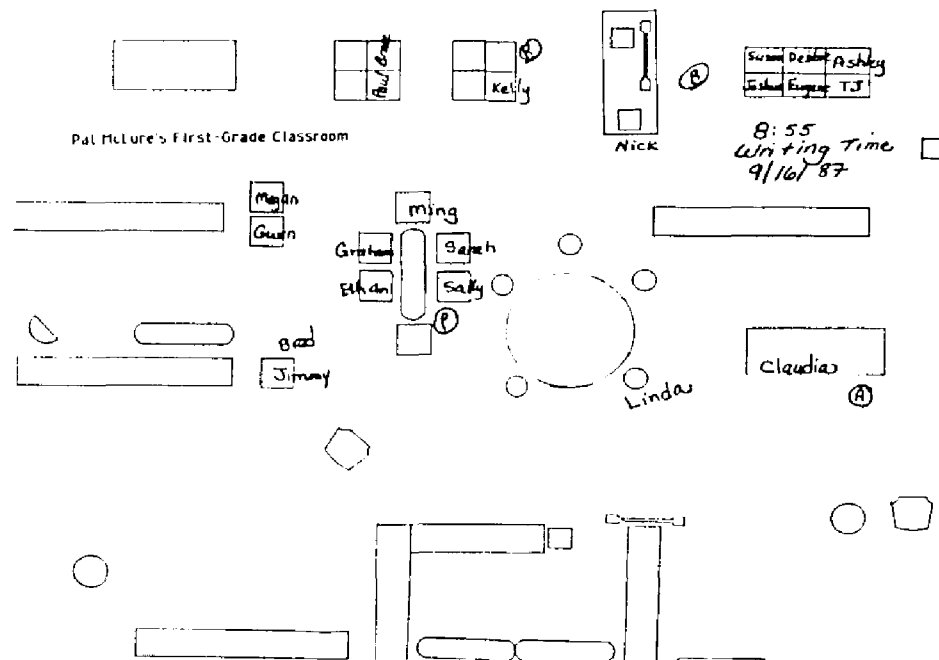


Figure 4
Field Notes Diagram

The field-notes were usually hand-recorded while I was in the classroom, although I often taped interviews as well. There were also conversations with children and with Pat where I needed to be an active participant--asking questions quickly and maintaining eye contact--making

immediate note-taking impossible. These conversations were recorded as soon after they took place as possible. The notes, interviews, and share sessions were transcribed and recorded into more formal field notes and stored on word-processor within twenty-four hours. When I sat down at the computer to record my field notes, I tried to concentrate on remembering everything that these notes triggered for me, so that these typed notes would be as complete records as possible. These fieldnotes also recorded personal, theoretical, and methodological musings, as the following (edited) example shows:

FN Field Note
PN Personal Note

MN Methodological Note
TN Theoretical Note

FN: I sit down next to Kelly, who is busy writing and drawing.

Ruth: Can you read this to me?

Kelly: **You** read it.

The words are: "MORE ERCH KMAK"

Ruth: I can read 'more.' Is this 'er'?

Kelly: (smiles) You guess the clues.

PN: I felt frustrated. I wasn't sure what she had written and I **couldn't** guess the clues. She just kept smiling! So I tried to read, "Kmmak?"

FN: Kelly finally gave in and told me it said, "More earthquakes."

Kelly: I saw it on TV. You're supposed to sit in doorways when there's an earth quake, then it won't hurt you. This was on a new TV show. You had trouble, but Mom and Dad will guess very quickly 'cause they saw the show with me. It's an episode.

TN: Kelly understands that knowing the context is an important part of decoding a text. Interesting the way she wanted to turn the tables on me and have me "guess the clues."

...

FN: I go over to Paul and try to ask him about his writing, but he tells me, "It's a secret." Susan is writing about her brother. At 9:10, she loudly announces, "Better stop writing, the big hand's on the two."

TN: Susan seems to be a class-organizer--self-proclaimed. She takes on the role of making sure that everything runs according to schedule.

FN: After recess, Linda shared reading with the whole class, which is on tape, as is the whole class writing share.

MN: As recess closed, I was finishing up some copies on the xeroxing machine, and the children were intrigued: **too intrigued**. I think it delayed whole group reading share and I need to remember **not** to do copying while class is in session.

These recording conventions were employed by William Corsaro (1981) and are also similar to those presented in Schatzman and Strauss (1973, 99-100). The chief advantage of these conventions, as Corsaro notes, is that "it allows the researcher to separate out different types of information in the data (FN, PN, MN, TN) while insuring that varying types of data are tied to the specific interactive context in which they occurred. As the study proceeds, the researcher can search for patterns in field notes over time and across interactive episodes" (Corsaro, 1981, p. 129).

These typed fieldnotes were then housed in large three-ring binders and numbered consecutively. After each day's fieldnotes' section, copies of any of the children's writing and drawing that were alluded to were included, dated and numbered as well. After the first week of school, we found it necessary to purchase a small personal copier to have right in the classroom, so that we could make copies of the children's work "in progress" and on-the-spot.

Once a week, I reread the field notes, writing tentative categories in the wide (two inch) margins I left on the right side of the pages. These emerging categories were shared with both Brenda and Pat, and other categories suggested or modified. By the end of December, the three-ring binders had grown to four in number: Field Notes I and II (with over 500

pages--255 pages of typed field notes and an approximately equal number of children's samples); and Whole-Class Share Transcripts I and II (with a total of approximately 400 pages of the transcripts of the recordings and samples of the writing and drawing of the children who shared that day.) Besides these collections, I also had copies of the whole class's science journals for a class project on Rotten Jack (analyzed within this report) and a separate binder for information on the five children in the class with whom I spent the most time--my "nisbas."

The Nisbas

"What happens, then, if we choose to begin with our knowledge that we are essentially creatures made in symbolic interchange, created in the process of sharing intentions, values, meanings; in fact, more like each other than different, more valuable in our commonality than in our ideosyncracies: not, in fact, anything at all when considered separately from our relations? What happens if we think of ourselves as essentially participants in a field or process or mode of *being persons together*?" (Wayne Booth, 1974, p.134)

Wayne Booth proposes that we revise our Western notions about the isolated individual; Karen Lefevre (1987) suggests we need to reconceptualize "the self as a social entity"; and Gregory Bateson (1972) describes a "self not bounded by skin but interacting constantly with the environment." In order to move beyond the "isolated individual" as a unit of study in this research project, I chose instead to borrow a term from Geertz's work (1983) and study five "nisbas" in the social context of their classroom.⁶

Anthropologist Clifford Geertz describes how Morroccans refer to a person not with a unique name, but instead, with a "nisba"--a term that

⁶ The coining of this term is a good example of "invention as a social act." I am indebted to Brenda Miller for suggesting this name for the concept. She, in turn, claims to be indebted to Karen Lefevre's discussion of the term "nisba" in Invention as a social act (1987).

changes to show that person's relation to certain social groups or contexts. The nisba is incorporated into the personal name by adding *i* (female, *iyā*). (For example, *Susi* is a man coming from the region *Sus*; *Hrari* is a silk merchant, or one who sells *hrar*, silk.) Geertz claims that the use of the nisba suggests a different understanding of the individual, where persons are not regarded as "bounded psychic entities detached from their backgrounds and singularly named, [but rather as] selves that gain their definition from associative relations they . . . have with the society that surrounds them. They are contextualized persons" (Geertz, 1983, p.66).

I chose to modify this Moroccan term, using it to describe the "contextualized persons" in this research study. Although I did select five children to look at more closely, I did not examine them as typical case studies. Rather than describe them as individuals, in separate chapters, instead, I chose examples throughout this report where their processes are reported in the context in which they occurred, against the backdrop of the first-grade classroom culture. And, although I spent more time with these particular children, I also interviewed, observed, and interacted with all the children, so the whole class is represented within the dissertation.

After being in the class a month, I chose five children as nisbas who were very different from one another, both in their literacy strategies, and in their social roles within the classroom. They *were* alike in their willingness to talk with me, sharing their work in progress and their strategies for making meaning. Kelly was the first child I chose, noting her interest in combining pictures and print in her early writing booklets. From the first day of school, she kept up a running protocol of her process as she worked. A bright, affectionate girl, I soon learned that she had a "whim of

iron," and if I were not immediately available when she wanted to share something with me, the incident was not soon forgotten.

Her strategies were clearly different from Paul: his first booklets had few drawings and were full of carefully printed letters and words. My original hypothesis--that words could communicate his meaning best--proved to be way off-base. Instead, he eventually described vivid memories and mental images to me which he did attempt to capture through pictures, but his perfectionist tendencies often got in the way. "When I put the pictures on paper, they're not like in my head," he complained.

Ming was one of the social stars of the classroom, always knowing how to capture the attention of her neighbors with just the right story about "yucky dog biscuits my brother eats" or intriguing references to her arrival in America from Korea. Adept at reading social situations, she would gauge her audience's reactions carefully at whole-class share sessions to judge what kinds of topics and story-telling methods would continue to bring approval.

There's a child like Graham in most classes--a bright, verbal little boy in a perpetual state of disorganization. His writing at the beginning of the year tended to be a lot of motion and movement acted out as it happened on the page--tales of Ghostbusters and transformers with little story line, but lots of action! I chose Graham, because teachers often ask about the processes and progress of such a child.

And for my final nisba, I settled on Claudia, an orphan from Portugal who had been adopted only a few months earlier and was still learning the basics of a new language, culture, and climate. She initially coped with the demands of "writing time" by using clues from the classroom environment, carefully copying words like "red crayon", "Mrs. McLure", and letters of the

alphabet with their corresponding pictures from the illustrated alphabets around the room.

Over the next few months, these children shared their learning processes with me. Through the samples of their work, the stories from their classroom, and the transcripts of their conversations, I hope readers of this paper will come to know these children--not in isolation, but as "contextualized persons."

Field Relations

The role of the participant observer is a difficult one, which often requires playing a dual role. As Stephen Doheny-Farina points out, "On the one hand, he or she must develop an empathetic relationship with the individuals under study in order to see from the participants' perspective. At other times, the investigator must distance himself or herself to view the action from the observer's outside perspective" (Doheny-Farina, 1986, p. 163).

My role in this first grade class continued to evolve and change over the course of the research project, shifting back and forth between these dual roles. My colleague and I were introduced by Pat our first morning in the classroom, as "Brenda and Ruth, who will be with us this year learning about your reading and writing." TJ nodded knowingly, and whispered to me, "So you're sort of a helper-servant like Brenda was last year?" Sort of. . .

In previous research settings, I had usually been called Mrs. Hubbard by the children in the classroom, and although I was not considered a teacher, my role was perceived as more close to that of a teacher than student, because I sometimes demonstrated writing strategies, and filled in as a substitute teacher on occasion. For this project, I wanted my class role to shift in the other direction. Although neither a teacher nor student in the

first grade, I wanted to avoid any of the authority role associated with the teacher, and I felt that being called by my first name would help to establish for me a non-authoritarian niche.

This "non-authoritarian stance" was not without its problems. After two weeks of school, it was still troubling to Susan that Brenda and I were not fulfilling the roles that she wanted to assign to us. She would repeatedly ask for "help" and was appalled at our at our apparent ignorance. "You're supposed to be able to ask a teacher. That's what they're here for," she muttered to Ashley.

After it was accepted that I was *not* a teacher, the testing began, as this excerpt from my field notes demonstrates:

Excerpt from Field Notes (9/16/87)

FN: I go to the table where four boys are working: Paul, Bruce, Nick, and Eugene. They are telling stories about hobos. They put some spots on their hands with markers.

Paul: I'm gonna color Montana blue.

Nick hits Eugene with a crayon.

Eugene tells me.

Ruth: What could you do so he won't do it again?

Eugene: I don't know.

Nick and Bruce start to throw crayons at each other.

PN: I felt in a quandry. I didn't want to discipline them because we had talked about "researchers not being disciplinarians." Yet, I was uncomfortable and didn't know how to handle it because I knew they shouldn't continue. After a couple of minutes, Pat came over and put the boys in time-out and spoke to them. I knew I had not handled the situation right.

My role in the class clearly needed to be re-negotiated. At recess, I talked with Pat, and she explained that she felt uncomfortable with my present role. for two main reasons: 1) The children would think that some

adults will allow them to behave that way; and 2) The children would get some reinforcement if I continued to write notes as they misbehaved, as if it's interesting that they acted in that way. I agreed with Pat's appraisal of the situation, and we decided that in the future, I wouldn't actively discipline them (put them in "time-out" and so forth), but I would let them know when their behavior was inappropriate, and try not to reinforce their negative behavior by writing notes about it.

By October, we all felt more comfortable with my role in the class as someone who conferred with the children about their writing, drawing, and reading; joined the whole-class shares, sometimes adding my own comments and questions; wrote notes to the children in their mailboxes and writing folders; swapped snacks at recess; acted as "the adult" during small-group reading conferences; and "made tons of copies" of their work.

A drawing made by Ming sums up my role in the class. In her "Friend's Book" she did a page of adults, carefully drawing Pat, Brenda, and me, above the text: "My friend is Mrs. McLure, is Ruth, is Brenda."

"Mrs. McLure is *big*," Ming emphasized. "I'll draw her in the middle, the biggest."

Although Pat is actually a petite woman, smaller than Brenda or me, Ming drew her the largest--the authority "in the middle." We're all connected--all "holding hands," Ming says--but Pat is the most important, the largest in her life (see Figure 5).

Data Analysis

My beginning data analysis followed the Constant Comparison Method of Glaser and Strauss (1967): My data was organized chronologically, and I reviewed the categories in the margins of my field notes, then established properties for these categories in order to further analyze them. Some of the

categories were unique to this particular study, such as "time symbols and concepts" or "pre-planning strategies." Others, such as "field relations" defined categories that would be part of the analysis at any site.



Figure 5
Ming's Friends

In order to look at these emerging categories in relation to my nisbas, I created a fifth notebook, with a section marked for each child. Then, each week, as I reread my field notes, I highlighted each child's words and interactions in his or her designated color. (Kelly-orange, Paul-green, Ming-pink, Graham-blue, and Claudia-yellow). This way, I could very easily find references to these children when I needed to. For example, in reviewing the way the children responded to others in the whole-class share sessions, I

could quickly find the comments they had made in response to others, as well as the stories they had shared themselves.

At the end of each week, I turned to the highlighted sections, and recorded on index cards the categories with the corresponding field notes' page numbers for each child. For example, in Kelly's section, I recorded the page numbers (FN 8,9,10) and the categories ("writing concept/context"; "writing history"; "home/school"),(see Figure 6). These acted as a modified "table of contents" for the data on each child. Other information in the "nisba notebook" included self-portraits, samples from reading folders, excerpts from special projects, as well as any memos I wrote about these children.

Kelly	
FN 8,9,10	writing concept/context writing history home/school
FN 14,17,18	drawing/movement color reading concept (small group) T.T
FN 40	Reading choice
FN 31	Picture book strategies
FN 34	color
FN 35-36	Reading/drawing process (Paul Baayen)
FN 40	Drawing/drawing process (w/ Paul)

Figure 6
Nisba Index Card

In mid-October, after six weeks in the classroom, I reviewed all my field notes and preliminary categories and began to narrow my focus. In order to build theory out of the mountain of data I was accumulating, I created a conceptual framework through an exercise suggested by Miles and Huberman (1984) called "binning": "Bins come from theory and experience, and (often) from the general objectives of the study envisioned. Laying out those bins, giving each a descriptive or inferential name, and getting some

clarity about their interrelationships is what a conceptual framework is all about. Doing that exercise also forces the researcher to be more selective--to decide which dimensions are more important, which relationships are likely to be most meaningful, and, as a consequence, what information should be collected and analyzed" (p. 28).

At first, my categories seemd to be a maze of interrelationships which defied being packaged neatly into bins. Like messy strands of spaghetti, they resisted untangling. I recognized that areas like "the influence of the electronic media," "use of tools," "depictions of movement," "concepts of time," or "the image in thought" influenced each other, but how? A framework began to emerge for me when I returned to the communication intentions of the children. What seemed to be the key areas in which the children were creating visual and verbal symbols? The answer was in my fieldnotes: time, space, movement, and color. The children's mental images and memories are multi-dimensional, and when they want to communicate them on the blankness of a flat page, they create symbols to add the texture and dimensions they envision.

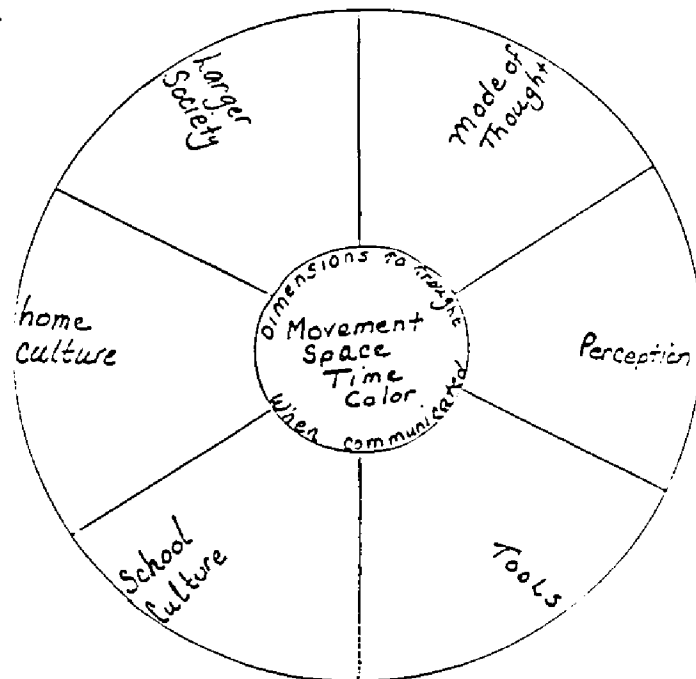


Figure 7
Conceptual Framework
Stage One

The core of my conceptual framework--and of my study--became those four categories. Surrounding this core are the influences which help shape the children's symbols--influences like the larger culture, perception abilities, and modes of thought (see Figure 7).

Then, overlaying the cultural influences of the larger society, home, and the school, are the influences of art as a cultural system, from the electronic media to the picture books that are part of the school curriculum (see Figure 8).

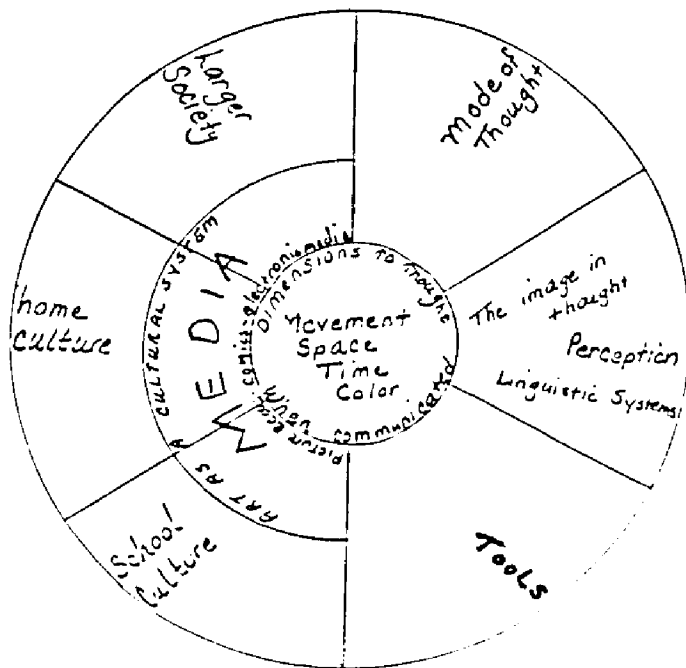


Figure 8
Conceptual Framework
Stage Two

My conceptual framework almost complete, I took it one step further than Miles and Huberman suggest--I mapped out a direction for a literature review, seeking researchers who had studied those areas I would be investigating (see Figure 9). In this way, I was able to integrate current theory with my own new findings as they emerged.

**Conceptual Framework
Stage Three**

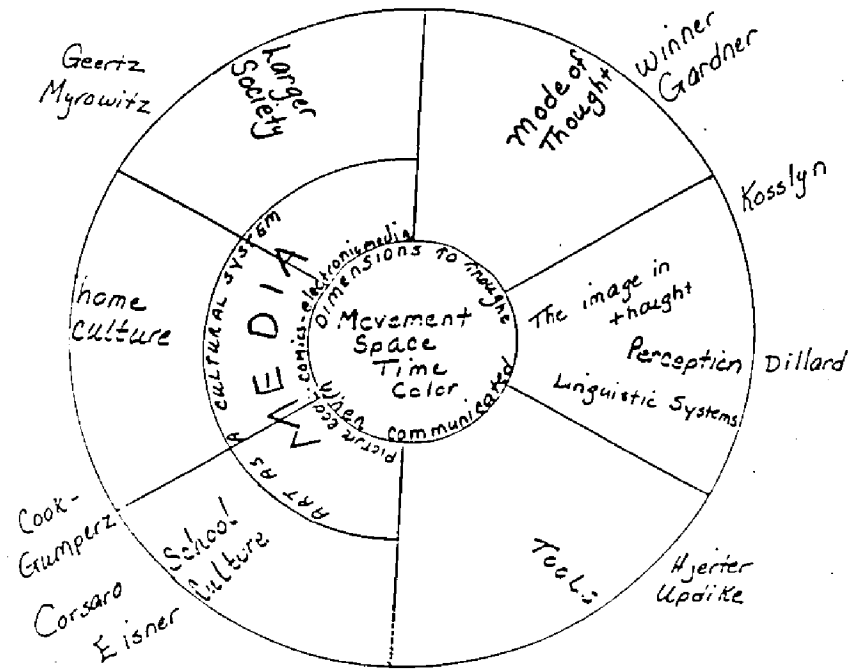


Figure 9

The following four chapters explore in more depth the core findings of this study: the visual and verbal symbols that children create in order to communicate the important dimensions of time, space, movement, and color.

CHAPTER III

SIGNS OF THE TIMES

"... What, then, is time? If no one asks me, I know: if I wish to explain to one that asketh, I know not."

Augustine, The confessions of St. Augustine

One of the ways we order our existence is to mark time segments. We remember the past, observe the present, and anticipate the future. And we use the symbols of time in our everyday speech and actions. But, as sociologist Michael Flaherty points out, "Our clocks mark time, but they do not make time" (1987, p. 313).

Children's Concepts of Time

We think of children as coming into the world with a sense of time; yet the development of time perception is actually an adaptive process--one that is culturally developed.¹ From the moment of birth, infants are influenced by the tempo-rhythms around them (Akhundov, 1986). But it's difficult to study time perception: we hear with our ears and see with our eyes, but there is no sense organ for time perception (Fraser, 1975).

Perhaps because of these inherent difficulties, children's conceptions of time have largely been ignored, even by the leading child psychologists and child developmentalists. Jerome Kagan's The nature of the child (1984)

¹For a fascinating review of the development of time perception and research difficulties in gathering data in this field, see J. T. Fraser, 1975. Also, for historical changes in the concept of time, see M. Akhundov, 1986. Akhundov notes that time did not begin to organize events until the thirteenth century, and he also gives an interesting analysis in the differences in conceptions of past, present, and future, as reflected by the use of verbs.

does not even mention time concepts. And the idea of time is little more than a footnote for both Margaret Donaldson (1978) and Lev Vygotsky (1978). Both look at time only in relation to print--concluding that making meaning permanent through writing can help develop a child's sense of past and future.²

Only Jean Piaget was brave enough to attempt to study that fourth dimension, and the children's understanding of it. Piaget believed that time could only be studied in relation to velocity: "The hypothesis I should like to defend is that, psychologically, time depends on velocity" (1946, p. 202). Because he was studying it from this point of view, his question became, "How does the child arrive at the idea of velocity?" (1946, p. 203)

Basing his results on a series of experiments with young children, Piaget concluded that children are not able to have a concept of time until they are able to conserve velocity.³ Therefore, the pre-operational child will imagine that when he begins to run, the clock goes more slowly than he does, or that when he walks, the clock goes faster.

Although I believe we owe a great debt to Piaget for tackling difficult issues in child psychology, I find several problems with this pioneer work in children's concepts of time. First, the experiments themselves have the same problems of validity that recent researchers have found in other areas of

² Both Donaldson and Vygotsky focus on the writing as a tangible record of the present. Vygotsky views written language as a tool which can unite elements of the past with the present, and even help to extend a child's time field both forward and backward. Donaldson considers children's written versions both aids to memory and a means of communicating from a distance of time or space. Neither psychologist deals with children's actual concepts of time, however.

³ The terms "conserve" and "pre-operational" are both important aspects of Piagetian developmental theory. For a concise explanation of Piaget's developmental stages, see the helpful appendix in Margaret Donaldson's Children's minds, 1978. For a clear explanation of Piaget's cognitive theories, see B. Wadsworth, Piaget's theory of cognitive and affective development, 1984.

Piaget's work (see Chapter I, Revisiting the world of children). Consider this example of one of Piaget's experiments to study a child's logical concepts of time:

To study this is a simple matter. One uses the flow of water from a pyriform glass into a cylindrical glass placed beneath the first one. The child will have to reconstruct the order of events by ordering a series of cards showing the levels of water at different stages of flow. In addition, we ask the child whether the time that has passed is the same, or greater, or less, than that between two other given stages. Thus the task is a problem of classification of the intervals posed before any measurement of time can take place (Piaget, 1946, p. 215).

There is no reason to believe that this task makes "human sense" to the child subjects: that they understand what it is they are to do, and why. Just like in some of the Piagetian experiments discussed by Donaldson and her colleagues, within this task, "there is no play of interpersonal motives of such a kind as to make it instantly intelligible. . . There is the question of the experimenter's motives in asking the child to do it and the child's motives in responding" (Donaldson, 1978, p. 17).

Another difficulty underlying Piaget's studies in this area is his definition of time. He argues that all time can be tied to an understanding of velocity, but I find this concept quite narrow. What about the phenomena of different experiences with "lived time," for example? We are all familiar with days which have dragged by, each minute seeming interminable, or vacations where weeks have seemed like hours. Or concepts of the future or past, which can hardly be fit into Piaget's neat mathematical formula, "according to which time equals work divided by power" (Piaget, 1946, p. 212).

But to me, the most damaging criticism of Piaget's ideas of time conception is his assumption that the principles of Western logic, Western mathematics, **and** Western concept of time are universals. There is a strong

body of research which demonstrates that concepts of time are not natural, but culturally tied.⁴ Although Piaget--and most Europeans and Americans--tend to think of time as something fixed in nature, and very linear, other cultures view it quite differently.

Edward Hall explains the great differences between "white time" and "Hopi time," giving examples of how these differences completely ruined the building of a government sponsored dam (Hall, 1983) . Some of the differences were fundamental and immediately recognizable: for whites, time is a noun; for the Hopi, time is a verb. Other differences were more subtle: "white time allows for loss of collective memory; Hopi time does not."⁵

In Southern Asia, the view of the future is quite different from our concept of future: while we think of the foreseeable future, the Eastern concept involves centuries. According to Hall (1959), they would think it quite realistic to think of "a long time" in terms of thousands of years, or even an endless period. At the opposite extreme are the Navajo, where the present is of utmost importance and the future has little reality to it (Hall, 1959) .

Besides length of time, other concepts can have quite an effect. Imagine the difficulties of living on Truk (in the Southwest Pacific) where time does not heal! Even disputes and disagreements which occurred years

⁴ For a recent review of sociological aspects of time study, see the special edition of The Sociological Quarterly, whose feature is: Conceptions of temporality in sociological theory. , Fall, 1987.

⁵ Hall writes about other important differences in time, which he considers a language and primary organizer of human activity. Besides differences between cultures in time concepts, Hall also describes differences within cultures. He theorizes that there are important gender differences in the way time is interpreted, for example. For a detailed, and very readable discussion, see E.T. Hall, , 1983.

ago are treated as if they just happened--they stack up and weigh on the present (Hall, 1959).

American time has its own special cultural aspects. "As a rule, Americans tend to think of time as a road or a ribbon stretching into the future, along which one progresses. The road has segments or compartments which are to be kept discrete" (Hall, 1959, p. 7).⁶ But this is only one aspect of our concept of time--the linear end of what Stephen Jay Gould call our "crucial dichotomy" (Gould, 1987, p. 10) . He contends that while on the one hand, we have "time's arrow"--with every moment part of an irreversible sequence of events--at the other end, we have "time's cycle." In this circular aspect of time, it has no direction: "Apparent motions are parts of repeating cycles, and differences of the past will be realities of the future" (Gould, 1987, p.11).

Children in our American culture are learning these two important concepts of time. But if they are not born with a particular time perception "hard-wired" in, and aren't developmentally progressing toward a cognitive "time" universal, how do they acquire "our" concept of time? I believe that children are actively constructing a social world around them, using their growing mastery of language--and of interactional strategies--to become socialized to the cultural world of which they are a part.⁷ And since "time's

⁶ Hall also defines other aspects of "American time." He claims that we are oriented almost exclusively toward the future, to the point where we are preoccupied with change. Another important aspect is the whole concept of waiting and appropriate wait times. For example, if people are not prompt, it is considered an insult--or an offense by someone who is not behaving responsibly. These other aspects of "American time," while interesting, are beyond the scope of this paper.

⁷ For purposes of this paper, I will use Cook-Gumperz's definition of socialization as "the growth of social understanding and of the capabilities for the maintenance of social relations that develop throughout childhood" (1986, p. 42). Her view of the child as an active constructor of a "socially meaningful and cognitively apprehensible world" is one that I support.

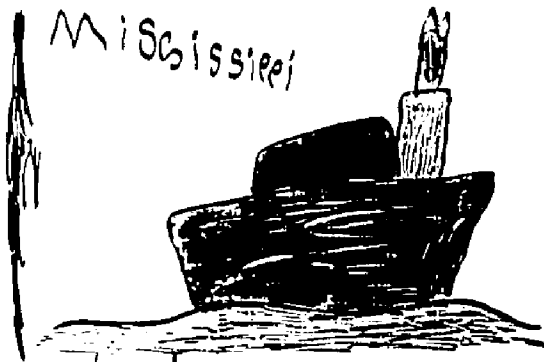
arrow and time's cycle" are integral parts of their social world, they are working hard to understand it. I see evidence of their struggles in the signs and symbols they create to depict both these concepts of time.

Time's Arrow

The children construct many kinds of symbols as they work out the linear progression of time the adults around them use regularly and take for granted.

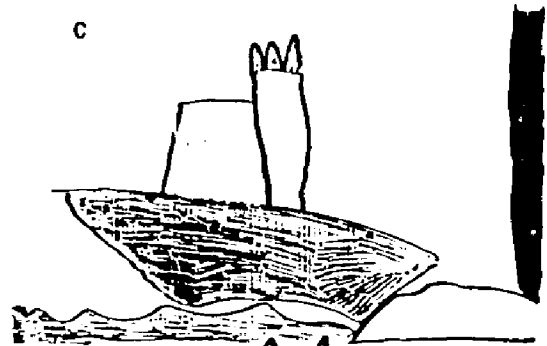
Early in the year, Kelly used a combination of print and pictures to get across the concept of passing time (see Figure 1 A-C). Her story's words hint at the passage of time: "The Mississippi River in a storm.," places the time as "in" the present, and "A Mississippi River boat docks after a storm," uses the linguistic time marker "after." But Kelly has created a more powerful symbol to show the sequence of events through her drawing itself. She uses the black of the coming and going storm quite consciously to reinforce and extend the words she has written. And when she explained her story to me, she began with the present, then worked backward and forward.

"You see, the steamboat here is **in** the storm," she began. "This is the water coming down here. (B) On the page before, you can see, the storm is just coming. (A) I'll make the black on the other side now, going away to show the storm is going away." (C)

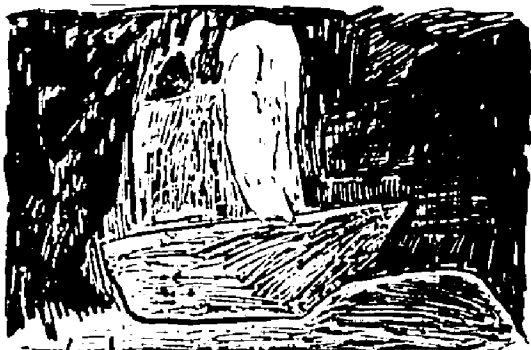


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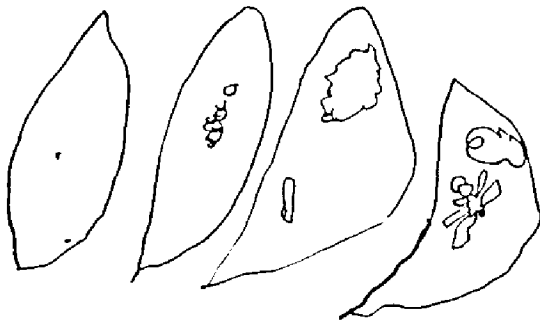


The Mississippi
river in p st
orom.

B

Figure 1
Kelly's Steamboat

Eugene used a very different system to show progression of time (see Figure 2). In this story about butterflies, he used a kind of time line to show the sequence of events. Once again, the words and pictures work together to show the four stages Eugene wanted to demonstrate: First, there's the egg, which hatches into a caterpillar (2); then the caterpillar spins a cocoon (3); and finally, the cocoon hatches into a butterfly (4). Just like in Kelly's story, the words and pictures need to reinforce each other; neither could really stand alone and depict what the authors had in mind.



~~My story about butterflies~~
EGG HATCHES INTO A CATERPILLAR CATERPILLAR
SPIN A COCON COME OUT AS INTO BUTTERFLY

Figure 2
Eugene's Cocoon

Megan used an established convention--word bubbles with small circles--to denote thought, but she used them in an interesting way to show future events in her dog story. And once again, she needed verbal markers to make it clear to her audience that she is giving an added dimension to her word bubbles (see Figure 3 A-C).

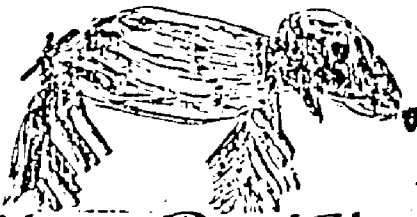


KK IS BRING A BIG BAG

A

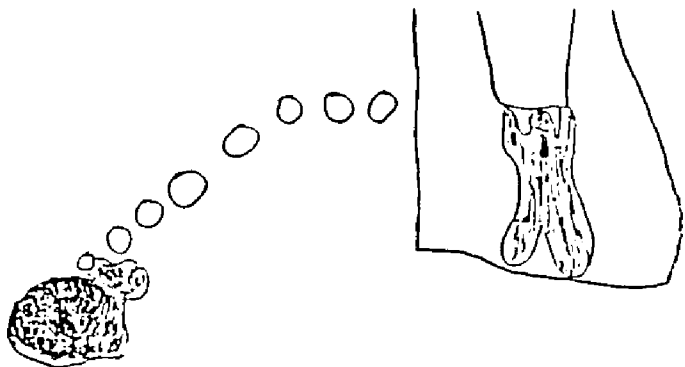
OF DOG FOOD

I LOVE DOG FOOD



B

WENE I GIT HOME -
MUM THE FOOD IS GOOD



C

Figure 3
Megan's Dog Story

NA WE I GO TO SLEEP
TO MARIAM GOING TO GO TO
THE SRCOS

One page of her story is grounded in the present, where "K.K. is **buying** a bag of dog food" (A). The dog is imagining the future by picturing himself there in his thoughts. And Megan doesn't leave it to chance that we will figure out her use of this convention: on the next page of her story, she reinforces it linguistically: "When I get home, 'Mmmm' the food is good."; the future has come to pass (B). And later in the story, she again uses the thought bubble convention with the time markers "now" and "tomorrow," making it clear that once again, the dog is projecting himself into the future: "Now I go to sleep. Tomorrow I am going to go to the circus" (C).

Some children rely almost exclusively on linguistic symbols to note the sequence of events and the linear progression of time. Paul's writing is full of markers like "tomorrow," "before," and especially, "We are going to." In his Cub Scout story, for example, he carefully recorded the sequence of events in his weekly scout meetings, reflecting on past, present, and future. He remembered the Halloween party and what everyone wore, he placed himself firmly in the present as a current scout member (see Figure 4 A)--"I go to Tiger Scouts"--and projects to future events (see Figure 4 B): "In the winter time we are going to go sledding."

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Figure 4 A
 Peter's Tiger Cub Writing

9-2-487

I LIKE BSKOUST+IS FUN WE GOON WACHR

WALKS AND IN THE WE+R FIMNE YGOING

to GO SLIDING

Figure 4 B
Peter's Tiger Cub Writing

Paul's use of time symbols is also affected by the electronic media, as his organization in the non-fiction story "T.V." shows. The first part of his story is about "good food": "Carrots are good for you and I like them. Yum. Yum"(see Figure 5A). The next page continued this story in the top half of the page, with the picture of a potato, captioned, "A potato in the ground." But just like a television announcer, Peter warned the reader that the story will be interrupted by an important message: "After this message, we'll be right back"(see Figure 5B). The important message? "Eight more days until Christmas" (see Figure 5C). Then, like at the end of a commercial, Paul continued with the main story: "Now we'll return to 'Good Food,' he began in writing, then the story continued. "But candy is bad for you" (see Figure 5D). As Paul's "T.V."story continues, it follows the time markers he sees on television, switching back between his three main stories--"Good Food," "Dinosaurs", and "Space", and important messages and announcements, like the amount of time left until Christmas, and the latest-breaking local news of a bus crash (See Figures 5E-H).

Paul's TV Story

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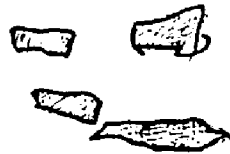
A

A POTATO IN
 THE GROUND

A P T T H S
 Mesigs WIL L Be
 nis H + B A C U K C A

B

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eight Mof DAYS UNTel
 CHRISTMAS

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BUT CANDY
 IS B A D f o r y o u

CUMING UP Next
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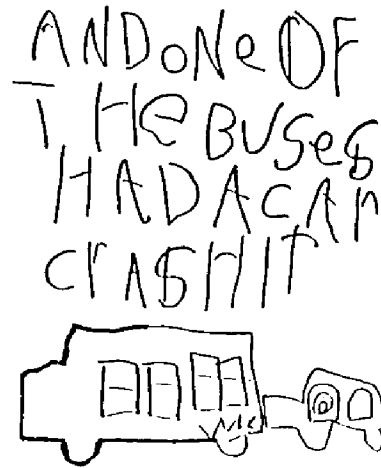
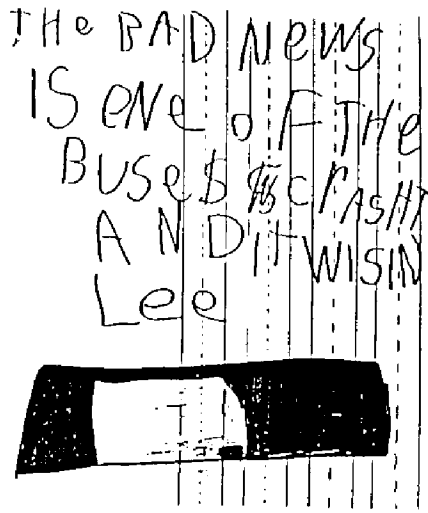
E

Now We Wee Lrytern
 IS GOOD FOOD

F

Figure 5

Paul's TV Story

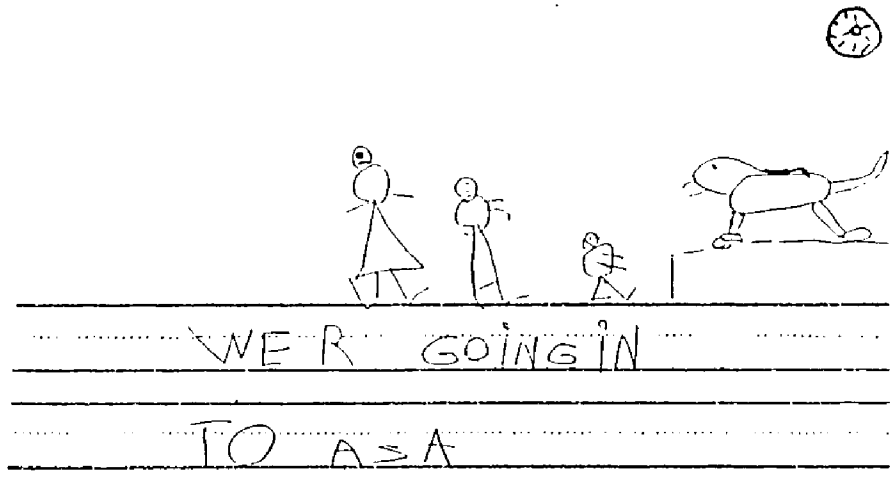


Figures 5 G & H

Other children, like Graham, use picture symbols with few linguistic markers to show time progression. Graham used tiny clocks to symbolize the order of events and the amount of time they took the day he and his family went to the Asia restaurant to eat. Again, he starts with the present, then works backward and forward (see Figure 6A & B).

Figure 6 A

Graham's Clocks



Graham's Clocks

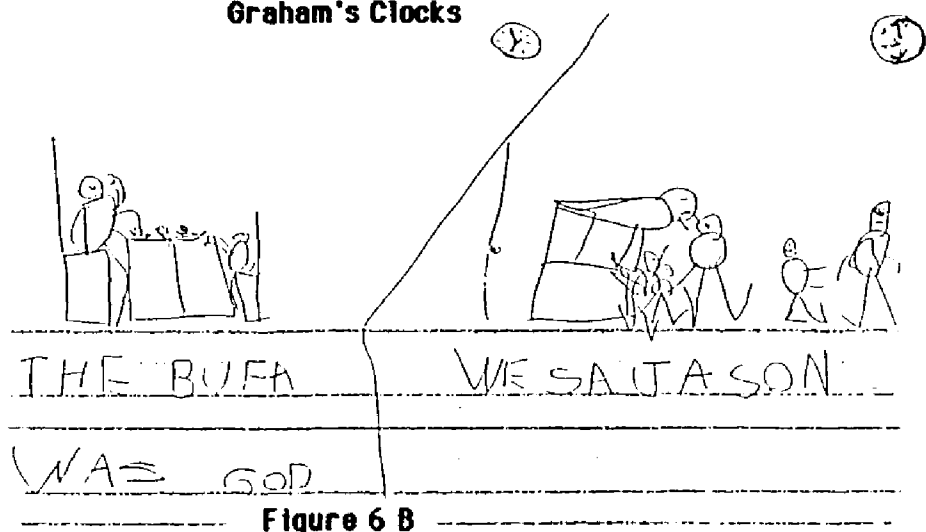


Figure 6 B

"I would think it was about that time," he explained to me, pointing to the second clock, "when we were eating, and I would say it was about this time," he continued, pointing to the clock on the previous page, "when we went in." He thought for a minute, drew the third clock, and then re-explained the time sequence, always pointing to the tiny clocks.

"It was about one o'clock, actually, when we went in, and here, it was about six o'clock, and here," Graham pointed to the last scene, "it was about seven o'clock."

Graham's written words alone would not have shown the passage of time--or the breakdown of time segments--that he had in mind. So he relied on an accepted cultural symbol to show that linear progression. But that linear arrow of time is not the only symbol in the children's writing and drawing; there is also the cycle of time.

Time's Cycle

"The sun also ariseth, and the sun goeth down, and hasteth to his place where he arose. . .The thing that hath been, it is what shall be; and that which is done is that which shall be done. . ."

Ecclesiastes 1:5 and 1:9

Although the notion of the cyclical nature of time is not the dominant view of our culture, it is nevertheless a deeply embedded one, and an important aspect of the Western concept of time that young children are coming to terms with.

Very early in the year, I began to notice examples of writing and drawing about the seasons. Many of these books were not about one season only, but the importance of these stories was in the inclusion of **each** season, and in the correct order. One of Ming's first writing topics was a season book, where she depicted winter, spring, summer, and fall each with an activity*symbol of that time of year (see Figures 7). On her first page, she wrote about winter: "The kids is going outside to play in the snow." But the rest of the book is more clearly a labeled concept book. "Summer time," she wrote under a picture of herself catching butterflies (A) and for "Fall time" (B), she is jumping in a pile of leaves.

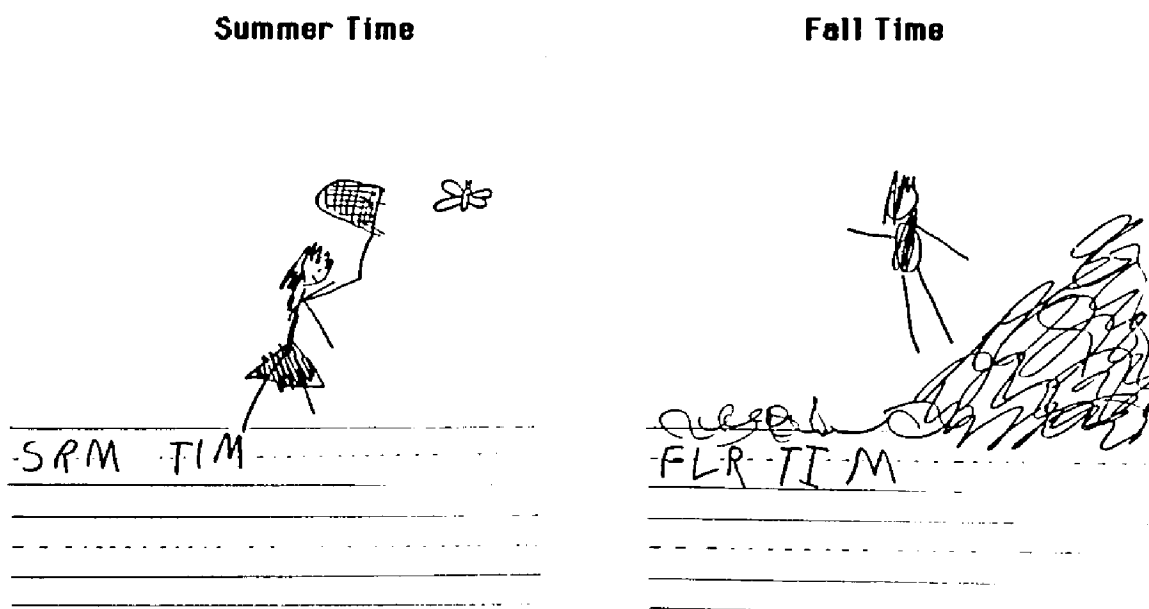


Figure 7 A & B

Sarah also begins with winter in her book entitled "Siznse" (seasons) (see Figures 8 A & B). In this book, she too places herself within the activities of the season she is writing about. And although the book is meant to span the entire year, she always writes about these activities in the present tense. In order to project herself to that past or future time, the pictures are not enough; she needs the words as well. In winter, for example, Sarah writes, "I like playing in the snow," while in spring, "I like to pick flowers." And each of her statements about an activity are prefaced with a marker of a season: "It is winter," for example, or "It is spring."

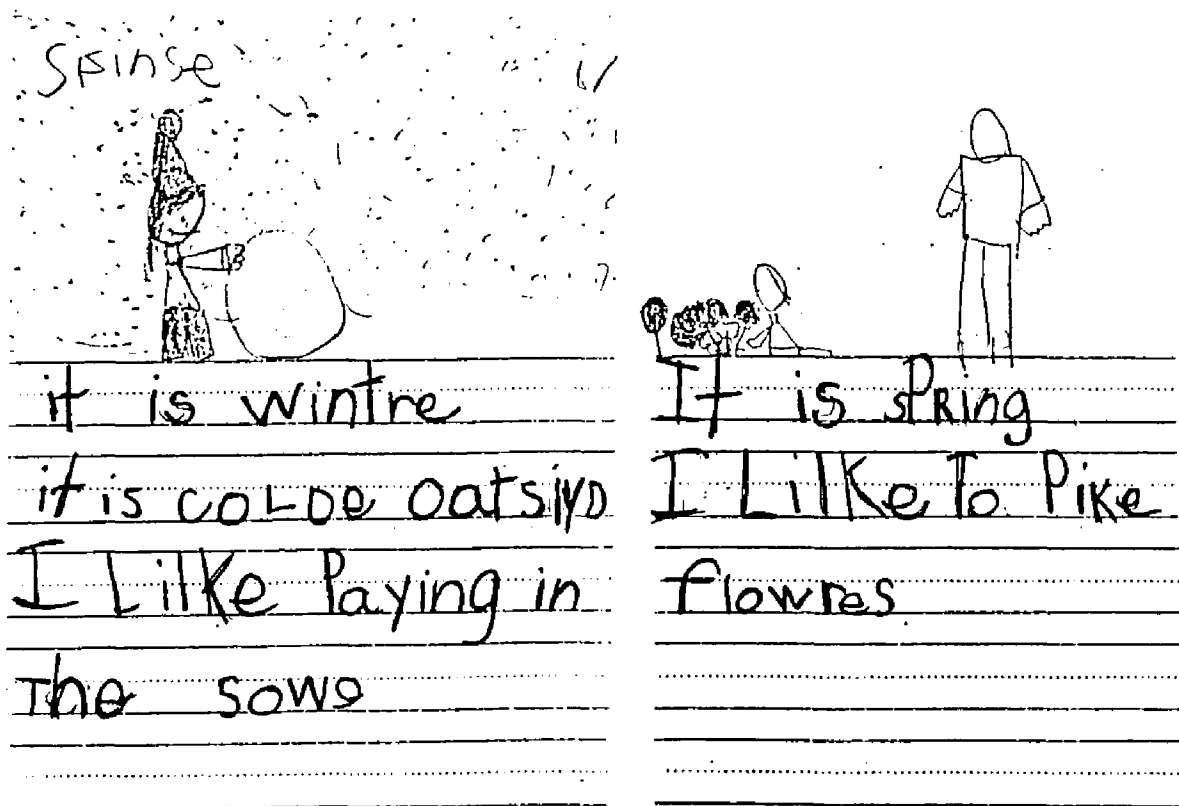


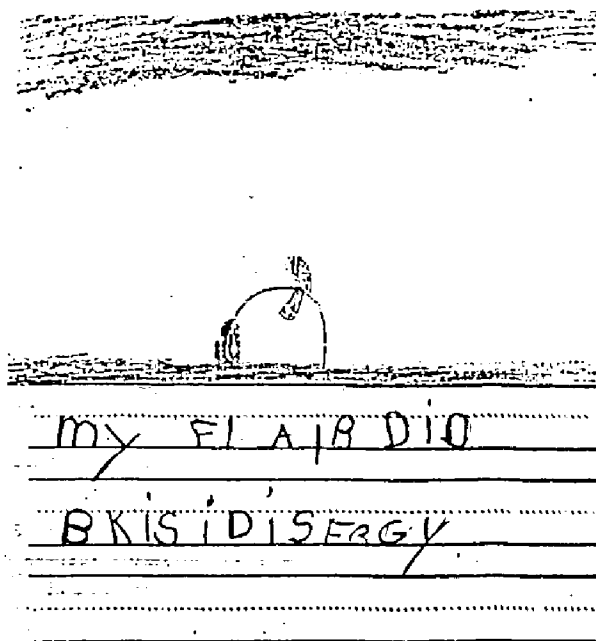
Figure 8 A & B

Sarah's Seasons

In October, when gardens were frosting over and flowers were dying, some children reflected on the cyclical nature of plant life. It was during this time that Linda wrote a story called "My Rose" (see Figure 9) and shared it with the class. In her book, the flower dies, yet on the next page, it's "all better." When the children questioned her about this, she was forced to explain what she meant in increasingly clearer terms. First, Sally asked her, "How could it get back to life?"

Linda's answer, "The flower is happy because it's raining and it's happy," had meaning to her, but not to others in the class. Nick refused to leave it at that, and asked again, "But how could your flower die and come alive again?" And this time, they were satisfied with her answer: "'Cause the seeds stay in the ground."

Figure 9
Linda's Flower



A few days later, Ming shared **her** dying flower story, which begins and ends with planting seeds (see Figure 10). This time, none of the children questioned her about the flower dying and reappearing. In fact, when Susan

asked her which part she liked best, Ming replied, "The part where it's dead," and instead of this remark causing any controversy, it sparked a lively discussion about other experiences of flowers dying.



Ming's Flower
Figure 10

The children are also working out the natural time cycles they observe in the skies. Several children wrote about watching the sun--or "my sun" as Kelly calls it. Claudia wrote about herself and her cat in relation to both the sun and the moon. And when she shared it with the class, the discussion focused on whether it was the sun or the moon. Eugene used the symbol of the harvest moon to indicate both that the season was fall, and that, as his text read, "The day is over." When Sarah wrote and drew about the differences between the sun and the moon, she compared what happens to these two heavenly bodies. First, she showed two pages from her story (see Figure 11 A & B)

"I went for a star walk with just my Mom. It was real late at night and that made me think about writing about this," she explained. "At the

beginning, the moon is kinda thin and it gets bigger and bigger. One side, like this, is flat sometimes. Then it's almost a full moon and you hafta wait. Then it comes back."

She turned to her page about the sun. "The sun doesn't change. It just comes up and goes down. Sometimes, I watch the sun go down," she looked up and me and stated emphatically, "but not up!"

Sarah's Sun and Moon

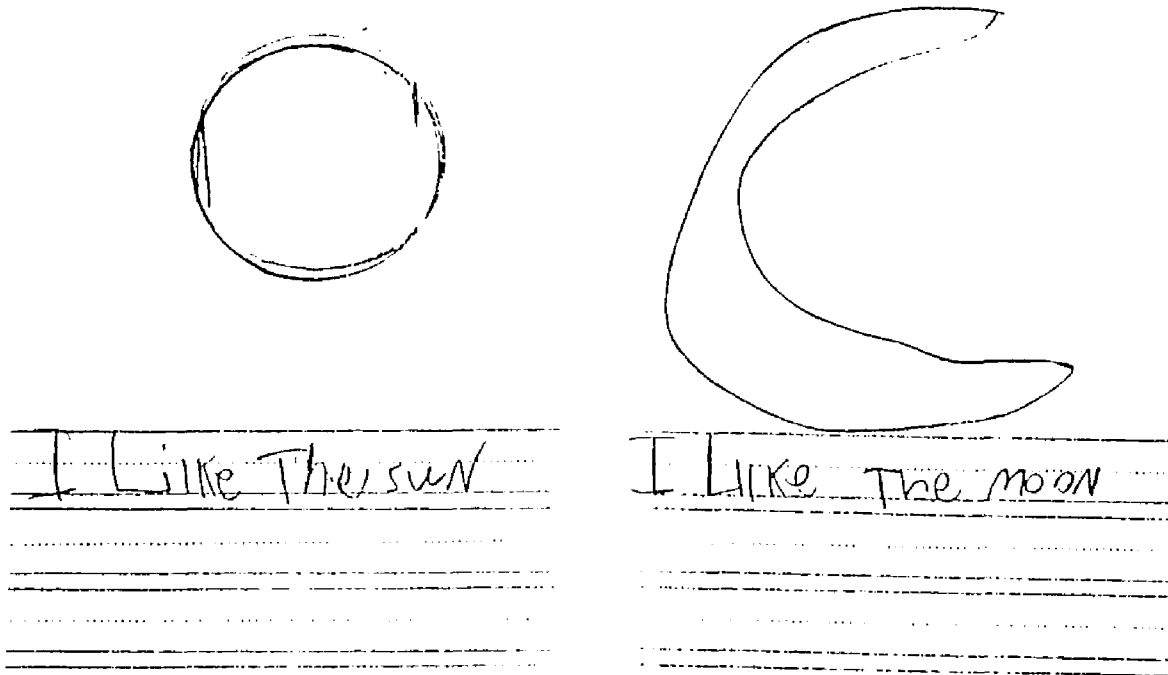


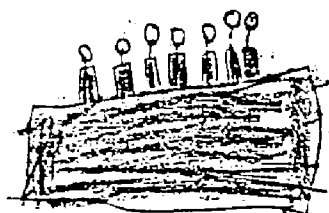
Figure 11 A & B

The children also write and draw about occasions and holidays that return every year. They anticipate certain rituals with these events, like Christmas and Hannukah. In December, Gwen and Sally talked together as they wrote about the up-coming holidays.

"I'm thinking of all the Christmases," Gwen confided, "but mostly the one that's coming up. I don't know why. I think of Santa and decorations and snow."

"You're complicating me up," Sally complained. "I'm thinking about last year's Hannukah. We always play dreddles and the first night, we light three candles on the Menorrah. I always know it's coming when Christmas is coming."

Birthday traditions are also a part of time's cycle in our culture. Many children, like Kelly reflect on the recurrence of that yearly celebration--the same each year, but slightly different. "Every time it is my birthday, we have chocolate cake," she wrote. "This year, I will have seven candles" (see Figure 12).



A every time it is
my Birthday we have
chocolate cake. This
year I will have seven candles

Figure 12
Kelly's Cake

The Role of the Teacher

The examples I have discussed are all from the writing topics the children choose themselves. But there are other parts of the day, and areas of the curriculum, where their teacher has more say in the topics they write about. Often, Pat McLure chooses areas to study which help acculturate the children to both "time's arrow" and "time's cycle." Although the time aspect is not a deliberate component of her curriculum, this teaching is nevertheless implicitly present. I found it most clearly demonstrated in the science assignments and the discussions Pat leads. What is conscious teaching on her part is the goal of helping the children learn to understand the time segments of her daily schedule, and the connectiveness of learning across yesterday, today, and tomorrow. This, in turn, will help them be successful in school beyond the first grade.

Reinforcing Time's Arrow: Rotten Jack

In October, Pat began a long-term unit on Jack O'Lanterns.⁸ One of the components was for the children to each write directions for how to carve a Jack O'Lantern.--directions that could be understood by a partner. And the children were given the latitude to use combinations of words and pictures in order to convey these directions. To make their directions work, they learned that it was essential to break the operations into segments--which were to be kept discrete. This exercise is consistent with our cultural view of the necessity of "one thing at a time" (Hall, 1959, p. 6).

⁸ This unit included more than the pumpkin carving directions and science journals discussed in this paper. The children also brought in pumpkins, designed ways to decorate them, and then carried out their plans. They learned the concept of "secret ballot" when they were asked to vote on a design for their carved pumpkin: the curtained "Quiet Cubby" became a voting booth, and the children were told that their votes--which were by number, not name--could be a secret.

The following four examples show the range of solutions the children used with their symbols--both pictorial and written--in order to complete their directions. Some children, like Nick, relied almost exclusively on the picture. His only other symbols were dashes, numbers, and arrows to show the operations and the order in which to perform them (see Figure 13). Megan's figure is just as prominent in her directions, but the words play a more significant role as she explains her six-step procedure (Figure 14). Kelly and Debbie both rely more heavily on the print in their papers (Figures 15 & 16). Debbie's drawings, in fact, are more for decoration than to actually show **how** to carve the pumpkin.

Figure 13
Nick's Directions

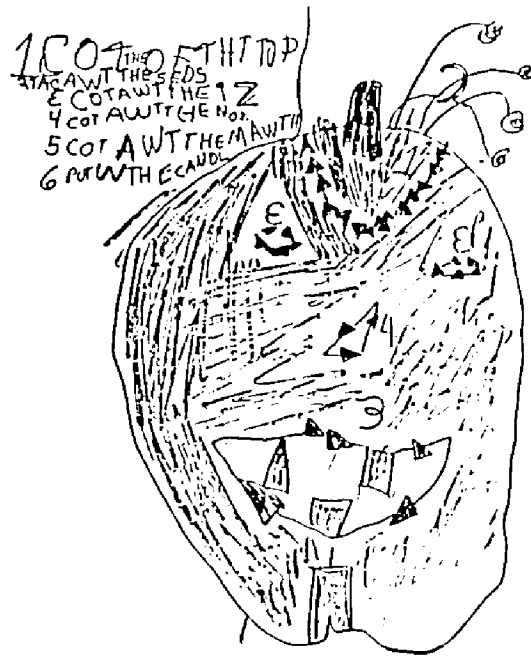
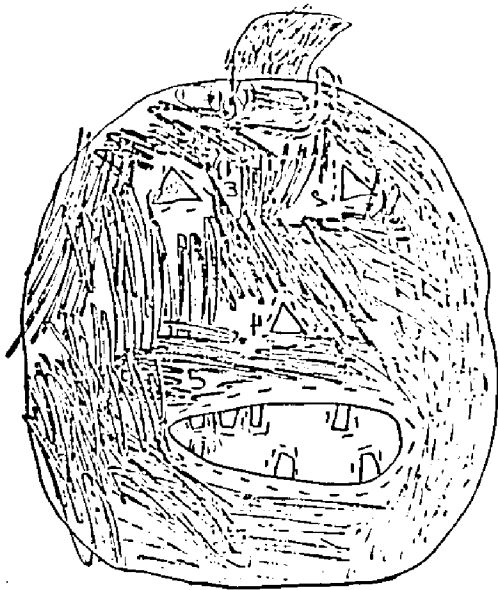


Figure 14
Megan's Directions

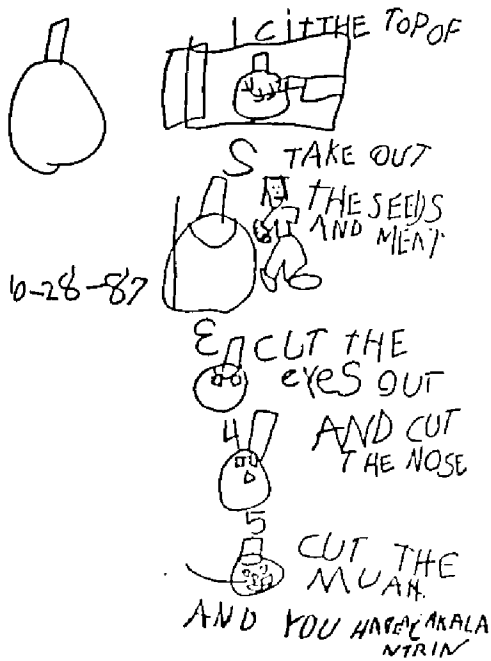
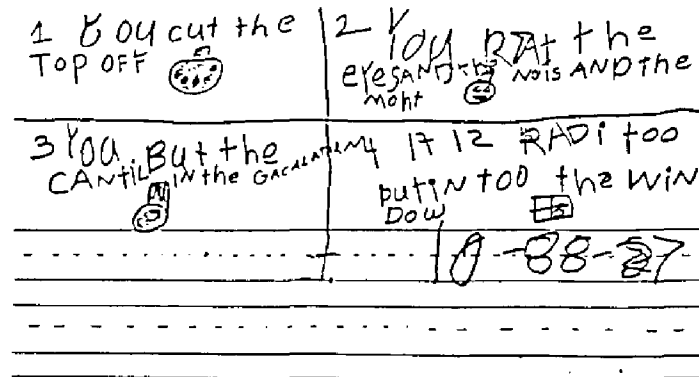


Figure 15
Kelly's Directions

Figure 16
Debbie's Directions



When the directions were completed and the children had decided on how they wanted Jack carved, the next phase of the unit began. Pat supervised the actual carving, and then the children were given science journals in which to observe and record the daily changes in Jack--who was soon renamed "Rotten Jack." The nature of the project seemed to help the children relate past time segments to the present, and ultimately, to the future. Kelly noticed details, like the changes in his eyes: "Rotten Jack's eyes are not as pointy as they were before" (see Figure 17). Nick focused on some

of the bigger changes, when he drew a large crack in Rotten Jack and reinforced it with the words, "It is much bigger than yesterday" (see Figure 18). And it was the changes in color that Eugene focused on: "Jack is getting blacker every day inside" (see Figure 19).

Rotten Jack Journals

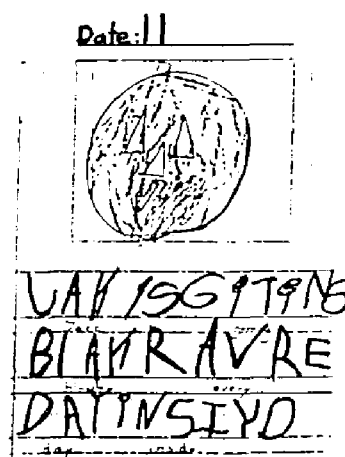
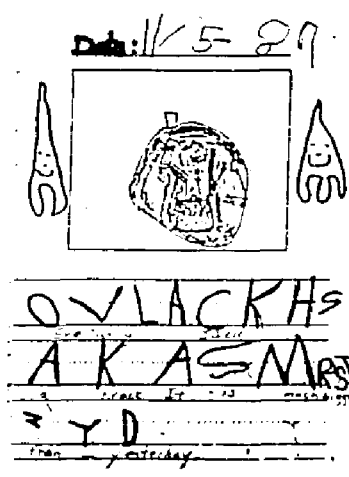
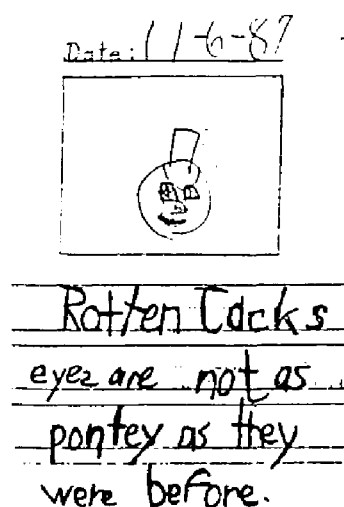


Figure 17

Figure 18

Figure 19

Megan, too noticed the color changes in relation to how Jack used to be:

"Jack is starting to get black inside" (see Figure 20). But on other days, she needed to write in the past tense to show what happened when she wasn't there: "On the week end, all the pieces fell." (see Figure 21) And while most of Graham's observations focus on the present in relation to the past--"Jack is not hard any more." (see Figure 22)--these observations also help him project into the future: "Jack is getting rotten. What could happen next?" (see Figure 23)

Rotten Jack Journals

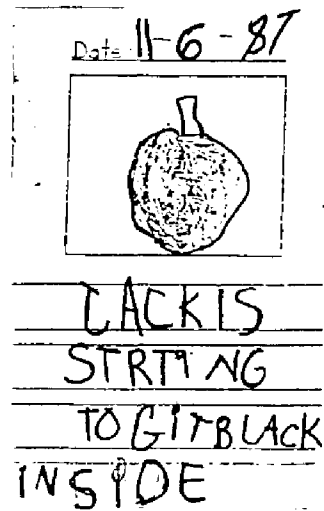


Figure 20

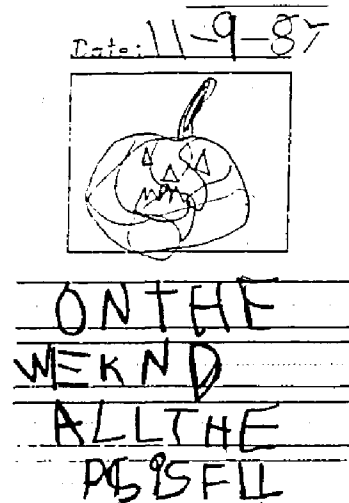


Figure 21

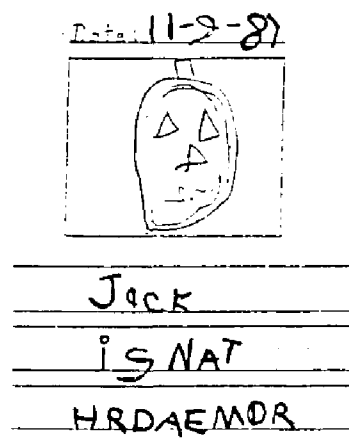


Figure 22

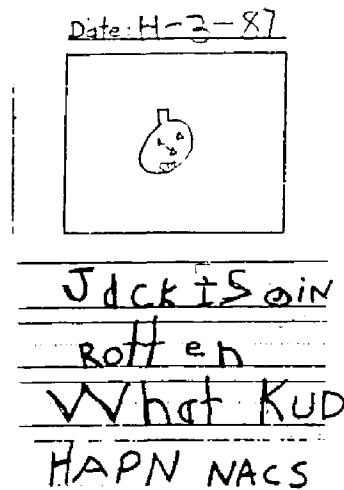


Figure 23

Hypothesizing about what happened and why, as well as guessing what will happen next, were important components of Pat's Rotten Jack unit. When the project ended abruptly one Monday morning--Jack had gotten so rotten he fell off the shelf over the week end--Pat expected the children to reflect on what had happened. And their hypotheses needed to be based on

what they had seen, for when Jimmy guessed, "I think he tripped over hisself," Pat gently corrected him, reminding the children, "We need to think very carefully about this being true information. Just what we've seen." The children **did** think very carefully, putting together the daily changes they had observed and recorded in the past to explain this present event, as this excerpt from the field notes shows:

Excerpt from Transcript (11/9/87)

Pat: What has happened to [Rotten Jack]? Eugene?

Eugene.: I think that it looks like he got a little too much soft on the inside.

Pat: Um-hm. He did get very soft on the inside.

Nick.: I think the top got all squishy and stuff and he collapsed.

Pat: He did collapse. That's true. It was hard to tell. When I came in this morning and it was on the ground, it was hard to tell what had happened on the top. The stem had broken off from the top.

Claudia: um, I tink he, I know why the pumpkin fell down.

Pat: Why did the pumpkin fall down?

Claudia: Um, because, um, all brown, and black, and white.

Pat: That's right. And all of that made it very soft.

Claudia: And then it fall down.

Paul: Um, I think maybe the top fell in there and then it jiggled it so it fell down. And it's just, so, uh, loose, it just fell apart, or maybe, it was the stem that was a little heavy and the top was so heavy and the sides were so soft that it pushed it down, it was so heavy. . .

Claudia: I tink, I tink the pumpkin fall down all by itself because he because the soft stuff move. . .

Pat: Mmm-hmm. Eugene?

Eugene: I, I, I think Paul's theory that the top fell in, except first I think it might have fallen apart and then fell down.

When the discussion ended, the children wrote their final entries in their science journals. And Kelly took Pat's reminder about "true" observations very much to heart. When I asked her what she thought she would write, she thought she might write about what would happen in the

future to Rotten Jack. But, she emphasized, "We could write what we think's gonna happen as long as it really **could** happen. Like, I think he's gonna get thrown out, or I think Mr. Remick is gonna throw him out. . ." Although Kelly's pumpkin journal is grounded in present observations, she uses it to reflect, not only on the past, but to project into the future.

Table 1 summarizes the children's uses of time in their "Rotten Jack" journals, to provide a class-wide picture. The most common tense to write in was the present, and all children in the class used this tense on some days. This is not surprising data, but what **is** impressive is that more than half the class (12 out of 22 children) used a more complicated verb structure in order to represent the present in relation to the past. (For example, Kelly's "Rotten Jack's eyes are not as pointy as they were before." see Figure 17)

Table 1

	Time References in Rotten Jack			
	<i>Past</i>	<i>Present</i>	<i>Present in Relation to Past</i>	<i>Future</i>
Brad	X	X		
Ming		X	X	
Kelly	X	X	X	
Nick		X	X	
Joshua	X	X		
Eugene.		X	X	
Debbie	X	X	X	
Ethan		X	X	
Gwen		X	X	
TJ		X	X	
Julie		X		
Jimmy		X		
Sally		X		
Paul	X	X	X	
Claudia	X	X		
Sarah	X	X	X	
Susan	X	X		
Graham	X	X	X	X
Ashley		X	X	
Bruce		X		
Linda	X	X		

Reinforcing Time's Cycle: Calendars and Seasons

For much of recorded history the calendar ruled over human affairs. It served as the primary instrument of social control, regulating the duration, sequence, rhythm, and tempo of life and coordinating and synchronizing the shared group activities of the culture. . . In calendar cultures, the future takes its meaning from the past. Humanity organizes the future by continually resurrecting and honoring its past experiences (Rifkin, 1987, p. 79).

Pat McLure also reinforces our cultural view of the cyclical nature of time in the curriculum she plans for the children. In January, when they returned from their winter vacation, the class began a unit on calendars. Different corners of the room displayed examples of calendars from around the world and from past years as well as 1988, and the months of the year were listed in large letters, as well on a circular, never-ending chart (see Figures 24 & 25).

Classroom Displays

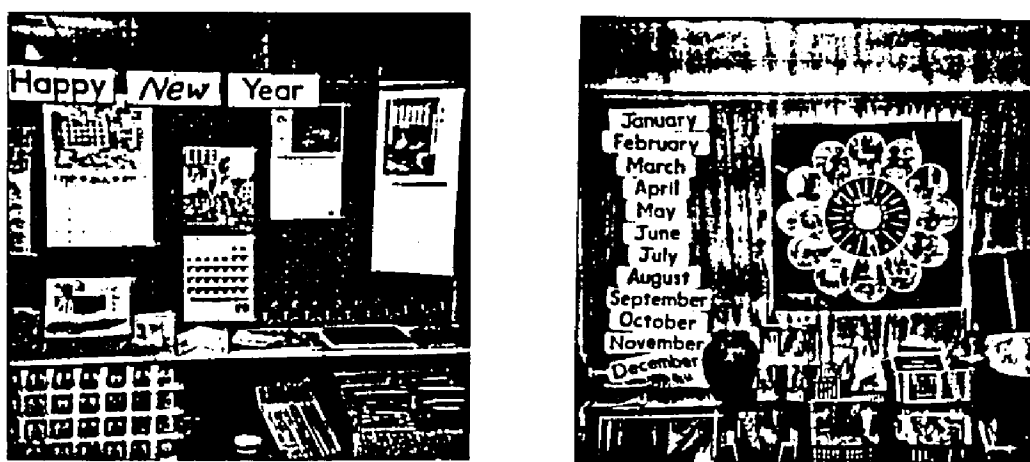


Figure 24 & 25

As the children created their own calendars, drawing pictures for each month, and filling in the correct days on the month attached, they had other

assignments that drew attention to the yearly return of certain important dates. On January sixth, the children brought letters home to their parents asking for help with important dates that should be included on their calendars. Although some were the same for each child--holidays like Halloween, for example--many were important to individual families only.

The birthdays were different for each family, of course, with some children, like Claudia, including the births of her cats--Smoky and Mathilda--for celebration. April seventeenth marks an important event in her home, too--LaBelle Family Day--the day that Claudia and her younger sister were adopted (see Figure 26).

1-6-88

Dear Mama!
 We have started working on calendars for the
 new year - 1988. Can you please help me with important
 dates?
 Signed, CLAUDIA

Figure 26
Claudia's Letter

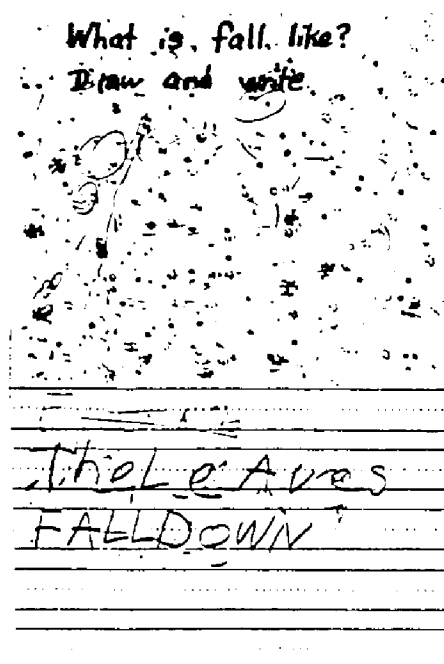
Birthdays: CLAUDIA: January 30
PAPA: MARCH 17
ROSE: JULY 3
MAMA: JULY 28
~~Smoky & Mathilda~~ Smoky & Mathilda: AUGUST 19
~~Smoky & Mathilda~~
 Holidays: Valentine's Day: FEBRUARY 14
St. Patrick's Day: MARCH 17
~~EASTER: APRIL 3, 1988~~
LaBelle Family Day: APRIL 17
MOTHER'S DAY: MAY 8
FATHER'S DAY: JUNE 19
 (over)

The children are also expected to reflect on the four seasons in their journals as part of this unit. Claudia experienced autumn for the first time this year, and was most impressed by the falling leaves--a new phenomenon

for her (see Figure 27). During open-house in October, her father recalled what a disturbing event this had been for Claudia, and how she dealt with it:

You know, we take for granted that the leaves will fall of the trees and the grass will turn brown, and that it will all come back to life again in the spring. But Claudia has never seen this and as the trees started to become bare, she was upset. Imagine what it must have been like for her to see the whole landscape dying around her! I explained to her that the trees weren't dying, but that they were going to sleep for the winter. We had a long talk about it, and the next day when I came home from school, she was out in the yard, running her hands up and down the trunks of the trees. I didn't understand at first, but she finally made it clear to me. At night before the girls go to bed, we give them back rubs, especially rubbing their arms and legs to help them relax and get a good night's sleep. Claudia wanted the trees to get a good sleep, too.

Figure 27
Claudia's Fall



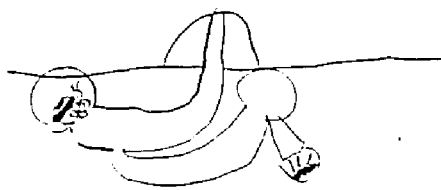
The children all described the seasons in their own ways. In their pages on spring, for example, Kelly wrote about the hibernating animals waking up, as well as the windy, but sunny weather she remembers (see Figure 28). But Paul's memories are of another aspect of the spring thaw, as

she wrote and drew, "In spring, there is mud" (see Figure 29). Graham, whose family has a huge garden, remembers that spring is a great time for everyone--even woodchucks (see Figure 30).

What is spring like?
Draw and write.

Spring Stories

What is spring like?
Draw and write.



All sleeping
Animals get up
Windy
a little bit
Sunny

Figure 28

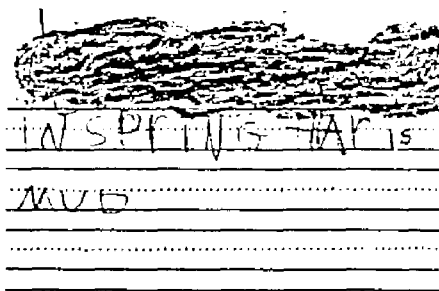
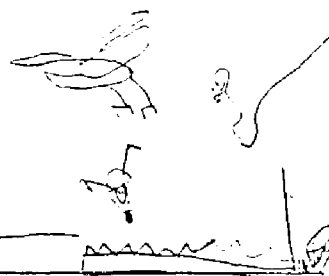


Figure 29

What is spring like?
Draw and write.



SPRING IS FUN FOR
EVERYBODY BUT WADCHUCKS
everybody but if means see see
WADCHUCKS
woodchucks

Figure 30

Other units that Pat plans into the curriculum throughout the year also reinforce time's cycle and time's arrow: the chick unit in the spring, for example, where the children make daily observations of the hatching chickens in their classroom, sometimes speculating on the answer to the question, "Which came first, the chicken or the egg?"; or the snowman-building directions, where the children write and draw careful directions about the steps involved in creating a snowman.

Conclusion

Time, then, is an important category in the symbols that the children are working out in their writing and drawing. And they rely on both visual and verbal symbols in order to transfer their concepts to the page. They are using their emerging literacy to learn an important social skill--an ability to "synchronize one's internal time consciousness with the cultural time of clocks" (Flaherty, 1987, p. 323). In the course of becoming socialized, children internalize the ways that their culture comprehends time. And as Flaherty points out, although children receive explicit instructions in "how to tell time, "other necessary interpretations of the concept of time "tend to be neither taught nor learned in a formal fashion, but rather to be gleaned implicitly. . ." (Flaherty, 1987, p. 323).

But time isn't the only cultural concept they are learning as they write and draw, they also have to learn to cope with the whole concept of representing their three-dimensional images onto the two-dimensional world of the page, as the next chapter shows.

CHAPTER IV

COPING WITH FLATLAND

In his novel Flatland: A romance in many dimensions (1884), Edwin Abbott created a fantasy two-dimensional world--a land where everything is reduced to a single plane. The people in Flatland do quite well, adjusting to the constraints of their world, until a stranger from Spaceland appears, and tries to tell them that their houses have no walls, and that he can see into their stomachs. He even goes so far as to injure his host when he reaches inside to touch the poor Flatlander's intestines. Adults often act like that bumbling Spacelander when they look at children's drawings, poking in all the wrong places and telling them what's wrong--all the while missing the power of the children's logic underlying their two-dimensional depictions.

Just as adults learned to handle the constraints of the page before them, the children, too, are coping with Flatland when they create ways to show space in the messages they create.

The space which the painter tries to encompass is basically the visible order of the events he is experiencing. Painting is a form of thinking. It is, therefore, both natural and inevitable that the steps the painter takes toward formulating spatial experience are conditioned by his ideas and conceptions of the ordering of social existence (Kepes, 1969, p. 115).

Gyorgy Kepes is talking about how an adult artist constructs space on a picture surface, but take a moment to reread the quote, substituting "the child" for "the painter" and "drawing and writing" for painting:

"The space which the child tries to encompass is basically the visible order of the events he is experiencing. Drawing and writing are forms of

thinking. It is therefore both natural and inevitable that the steps the child takes toward formulating spatial experience are conditioned by his ideas and conceptions of the ordering of social existence."

As children try to depict a world of depth and space on the flatness of a page, they, like the painters Kepes studied, are influenced by their abilities to perceive three-dimensional space and by the cultural conceptions of space that surround them.

Space Perception

[I]f we look for fundamental principles of spatial organization, we find them in two kinds of facts: the posture and structure of the human body, and the relations (whether close or distant) between human beings. Man, out of his intimate experience with his body and with other people, organizes space so that it conforms with and caters to his biological needs and social relations (Tuan, 1977, p. 34).

Yi-Fu Tuan, in his study Space and place: The perspective of experience, argues that a concept of space is tied to our sense of our bodies. Space, he claims, is experienced directly as "having room in which to move" (Tuan, 1977, p.12). Support for this claim can be found in a linguistic analysis of the words we use to refer to spatial relations and measurements (Thass-Thienemann, 1968). The human body has always provided our terms of measurement, as commonly used terms like "foot" or "digit" or even "elbow-room" show.¹

¹In his book Symbolic behavior, Thass-Theinemann devotes a full chapter to the notion of space in language. Besides word derivations for terms of measurements, he discusses other interesting word symbols related to a body-sense of space. "The English adverbs and prepositions which refer to spatial relations still sometimes describe body parts. One can 'face' in 'front' of something, it can be near 'at hand,' or can be done 'beforehand,' on the 'other hand' or the other, as 'right' and 'left' generally refer to hands" (p. 362). For other interesting examples, see the chapter on "Space" in the "Addenda" (p. 360-369).

And Theodore Thass-Theinemann finds that larger distances, too, have traditionally been measured by terms implying human action:

"Such distance was the 'stone throw,' how far a man could throw a stone or hurl a spear. . . . Another measure of distance was the human voice. For instance, a garden was 'as far from town as a man's voice will carry.' " (Thass-Theinemann, 1968, p. 363.)

In general terms, then, we organize the space we perceive in terms of our body-sense. But what is this space that we organize and perceive? What are some of the differences in perception between child and adult--or from culture to culture?

Even infants have the innate ability to recognize the three-dimensionality of things (Yonas and Pick, 1975).² But up to about eight months, these space concepts are limited by both physical and physiological boundaries. According to Spitz (1976), until around that age, a child's spatial horizon is limited by the bars of his crib.

But once babies are crawling, they can explore space--at least horizontally--and are clearly aware of the dangers in changes of depth. Numerous studies have shown that crawling children will refuse to crawl onto a glass plate, even when coaxed and encouraged by parents on the other side (Gibson, 1969) .

Immediate physical perception of depth is one thing, but what about more sophisticated elements of spatial concepts, such as mental imaging and recognition of pictorial depth perception? There is less agreement among theorists and psychologists in these areas.

The traditional view is that a child's spatial frame of reference is quite restricted. Much of this is based on the classic work of Piaget and Inhelder,

² For further research supporting infants' abilities to recognize the three-dimensionality of things, see: T. G. R. Bower, (1966); and D. M. & C. E. Maurer (1976) .

The child's concept of space (1967). The last decade has not been kind to these theories, (see Chapter I) but their influence remains strong in the field. Ironically, it is through looking at children's art that some of Piaget's and Inhelder's conclusions were drawn. (For example, a child's drawing of a cowboy on his horse showed a gap between the cowboy's head and the hat. This "error," termed "separation" is given as evidence of a child's inability to show spatial relations among objects.)

Recent research, however, points to more sophisticated spatial abilities in young children. Studies by Kosslyn (1980) and Paivio (1981) demonstrate that children as young as five years old can mentally rotate and manipulate mental images.³ It is important in both these studies that the stimulus be something familiar, such as letters of the alphabet. But this restriction appears to hold true for older subjects as well. Familiar position is important, too; both children and adults, according to Cooper and Shepherd (1973), are much slower to rotate images when the image being matched is not in a familiar, upright position (p. 169).

Recognition of depth in pictures was once considered beyond the ability of young children, but again, researchers are being challenged to reconsider this earlier assumption. A number of studies have demonstrated

³ One of Allan Paivio's simple experiments was to ask young children to picture in their minds a capital "N." "Now tip it over on its side and tell me what it looks like." The children had no difficulty and immediately replied, "Z" (1983, p. 15). Kosslyn's research program was much more complex. He describes the basis of it in this way: "A typical respondent, if asked something like, 'Do frogs have lips or stubby green tails?' would report first 'looking' at the mouth of an imaged frog, then 'mentally rotating' the image, and then 'zooming in' on the rear to have a 'close look' before answering. My research program is an effort to discover what images are, how they arise, when they are used, and what it means to 'look at' and 'manipulate' mental images" (Kosslyn, 1980, p. 1).

the ability of pre-school children to respond to pictorial depth, and Olson (1975) has shown that it is present in children at least as young as three.⁴

That is not to say that there are not some differences between the picture perceptions of adults and children. Several studies have shown that while young children can perceive relative depth in pictures, they have a much harder time determining how far away an object is in relation to other objects on the page. "While three-year-olds perform as well as adults when asked to judge the size of actual objects placed at various distances from them in an alley, when the same judgements must be made from a picture, children as old as seven are less accurate than adults" (Yonas and Pick, 1973, p. 260).

Although some theorists tie this to a developmental theory that picture depth perception develops independently, others believe it depends both on exposure to pictures containing depth cues and on cultural space conceptions. Hudson (1960) studied the picture depth perception of Bantu adults and children who had not been exposed to pictures before. He found that the adults who had never seen pictures were unable to perceive depth in the drawings they were shown (see Figures 1 & 2).

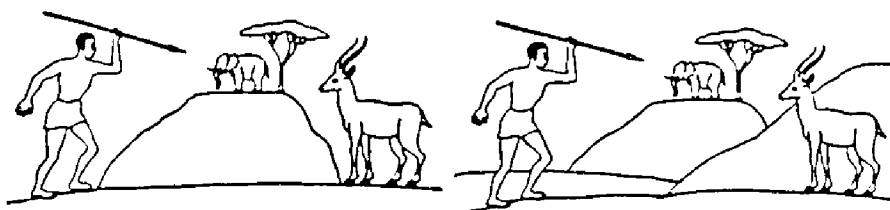


Figure 1

Horizontal Picture Space

⁴ Ellen Winner reports that in Olson's study, however, linear perspective cues were not understood. "The distance cues included height on the picture plane (one of the houses was sometimes placed higher up), occlusion (one house was sometimes partially occluded by the closer one), and linear perspective (a grid of converging lines was drawn in some of the pictures). Three-year-olds responded almost perfectly when the depth cues were height and occlusion. . . but the addition of linear perspective cues yielded no significant improvement" (Winner, 1982, p. 120).

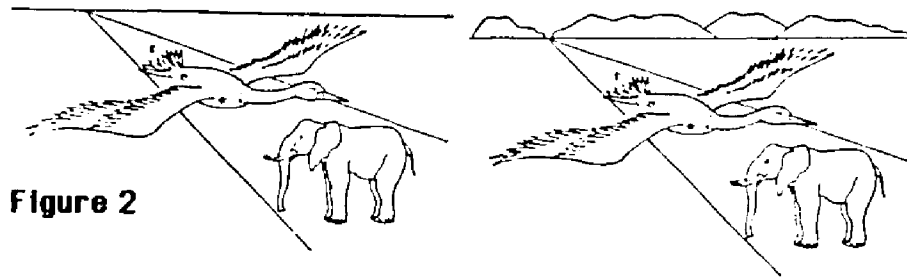


Figure 2

Vertical Picture Space

But it isn't that different societies perceive **picture space** differently; just like conceptions of time, space is understood in terms of the culture of which we are a part. In our culture, for example, it is common to perceive the edges of objects. We talk of the rims of cups, the borders of gardens. Hall (1959) points out that this is a Western conception of space (p. 172). The Truk divide space much more elaborately. They treat open spaces which we perceive as having no dividing line as completely distinct, separating parts which we think of being "built in" to an object. "Open spaces without obvious markers on the side of the bowl have names. Such distinctions in the dividing up of space make the settling up of land claims unbelievably complicated in these islands. Trees, for instance, are considered separate from the soil out of which they grow. One man may own the trees, the other the soil below" (p. 172).

These differences in spatial conceptions are reflected in language use as well. Benjamin Whorf, in his detailed studies of American Indians' models of the universe, describes how the Hopi concepts of space are shown in their language. There are no Hopi terms "for interior three-dimensional spaces, such as words for room, chamber, hall, passage, interior, cell, crypt, cellar,

attic, loft, vault. . . [I]n the Hopi scheme of things, a room in the strictest sense of the word is not a noun and does not act like a noun" (Whorf, 1953)⁵.

Semantic differences like this play an important role in how we perceive space. In a series of experiments on the effects of semantics on perception, Clark, Carpenter, and Just take the view that perceptual events, like linguistic events, are interpreted when they are processed (1973). One of their studies focuses on the processing of spatial adjectives--words like shallow, deep, short, or tall. They claim that "adjectives that describe spatial relations are especially well suited for the study of the interface between linguistic and perceptual processes, for they illustrate how the same spatial relation can be conceptualized or interpreted in different ways" (p. 350).⁶ One of the most interesting of their findings is that some spatial adjectives take longer to mentally process and interpret. They conclude, for example, that "it is easier to make judgements about greater extent (longer, higher, deeper) than about lesser extent (shorter, lower, shallower)" (p. 351).

Children are learning the different perceptual markers--semantic and cultural--that surround them. And as they try to transfer the three-dimensional images in their minds to the flat page before them, they rely on both verbal and visual symbols. As they deal with these problems of spatial representation--learn to cope with Flatland--I found that they discuss the

⁵ Benjamin Whorf discusses various aspects of the Hopi concepts of time and space in his essay, *An American Indian model of the universe* (1936). He shares detailed examples of how their language reflects their very different cultural ideas. "I find it gratuitous to assume that a Hopi who knows only the Hopi language and the cultural ideas of his own society has the same notions, often supposed to be intuitions, of time and space that we have, and that are generally assumed to be universal" (p. 378). His studies of Hopi "space" are extended in his article, *Linguistic factors in the terminology of Hopi architecture* (1953).

⁶ The basic technique of their experiments was to ask people to make comparative judgements about different objects on several dimensions, and time them as they did this.

ways they could show space, wrestle with definitions of words denoting space, and work hard to communicate their messages in this important dimension.

Excerpt from Field Notes (11/3/87)

Sally and Sarah are working together during writing time.

Sally: You drew right over the wheels.

Sarah: So? You colored over yours in your published book. (Sarah keeps working on her story, writing the word, "Moving" on the truck. The "G" doesn't quite fit on the side of the truck, however.)

Sally: That 'G' must be three-dimensional, because it's off the truck.

Sarah: What's three-dimensional?

Sally: I'm not tellin'.

Sarah: Come on, what is it?

Sally: It's like a picture with sort of a pop-up on it without really having a pop-up.

Some children, like Sally, are able to articulate the ways that depth and space are altered on the surface of the page. But even those who don't discuss it with metaphors to pop-up books and more sophisticated terms like "three-dimensional," are solving spatial problems in the messages they write and draw. Some of the solutions are rather straight forward and commonly accepted conventions of our culture, such as the relationship of size depicting depth; others, like mixed perspective, are more similar to the solutions of some primitive cultures. During the children's independent writing time, I have identified six distinct ways of representing spatial dimensions in their writing and drawing.

Strategies for Coping with Flatland

Relationship of Size

"We are accustomed to attribute to a larger retinal projection spatial emphasis. Size, therefore, becomes the simplest statement about space."

Kepes, 1969, p. 71

Early in the year, I began to notice instances of the children understanding--and using size differences to show space. Ming was working on a story about a little man jumping on a rainbow one morning as I sat beside her. "This guy's mad," she explained to me. "I'll make him jumping up and mad. He's jumping up on the rainbow. And on the next page, you're gonna see him much closer."

"What do you mean?" I asked.

"He's gonna fill up the next page--not little and so far away." And she promptly turned the page of her writing booklet, and continued her story, just as she said (see Figure 3 & 4).

Ming's Rainbow Person

K DRD YOU + MF
 YOU YOU YOUR
 A TEO F



Figure 3

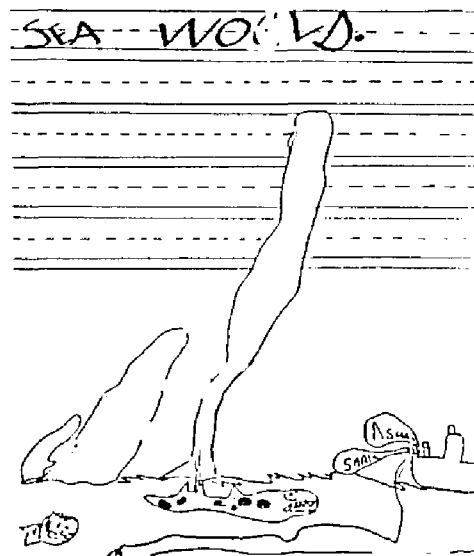
AM A A HLP I MA
 MROD KR=YOU RT
 MY RO RO



Figure 4

On another day, I conferred with Kelly as she worked on her "Sea World" story. As she worked, she narrated a running commentary of her process. "Now, this is supposed to be a tuna, and these are her fins." She thought a minute, then continued. "And I'm going on a boat, far away, so it's little, in the corner, far away. I'm holding little binoculars" (see Figure 5).

Figure 5
Kelly's Sea World



These examples tend to support what Ellen Winner (1980) terms the "Constructivist Theory" of perception. The Constructivists claim that, "[a]lthough perception may seem effortless and direct, . . . this feeling is illusory. The information available to our senses, taken by itself, provides ambiguous and misleading information about its source; perceptions are the product of constant, unconscious supplementation on the part of the perceiver. And because the information that must be supplemented is inherently ambiguous, perception is essentially a matter of guess work" (Winner, 1980, p. 89). The "classic example" of this theory is a scene with two people, one near and one far away (see Figure 6). If we read this

picture--or Ming's story--literally, we would perceive two people on the same plane, but one person much smaller than the other.⁷

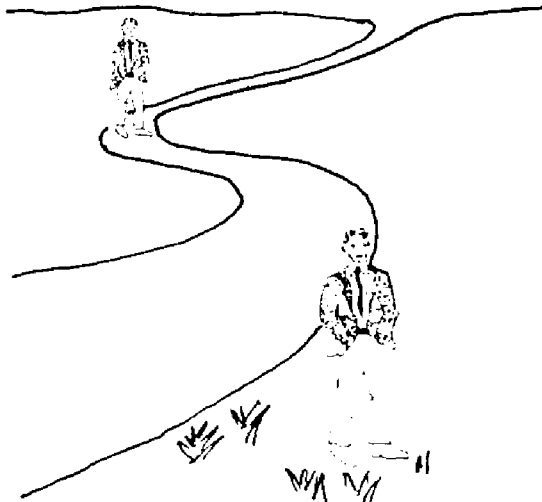


Figure 6

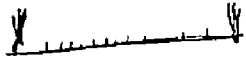
Figures illustrating the phenomenon of size constancy. Although the distant figure forms a smaller image on the retina, the two men are perceived as the same size.


Children, then, are able to make these perceptual inferences. And they make them as they read, as well. As Sally read and shared Caps for sale, she noted that the peddler must be very far away. Later in the year, I sat in on a book-sharing conference among three children--Jimmy, Ashley, and Nick. When Jimmy shared Dan, the flying man, he looked at the receding figures in an endless parade and noted, "Look, these guys are smaller. They're so far away, you can't even see their eyes." These children are making inferences daily in their reading of the **whole** text, both verbally and visually. They become familiar with the conventions they see in books,

⁷ According to Helmholtz, we are able to make perceptual inferences because of our knowledge of the world --gained from experience. This would also support the view that children's coming to understand some of the spatial cues is experiential rather than developmental. (Helmholtz is cited by Winner as the originator of the Constructivist Theory.)

and this, to some extent, may influence the way they express notions of depth and space in their stories.

But they also invent ways to show size differences. Consider Graham's writing and drawing of his trip to a science museum. He was fascinated by the different creatures that he saw at the Nature section of the museum, and wanted to show the difference in their sizes. "I went to the Nature Museum," he began. In an effort to show the relative sizes of the insects he saw, he then drew a ruler measure next to the words of each. "I saw cockroaches" is written next to a marked line of approximately three inches. Similar lines of varying length follow the texts of "I saw tarantulas," and "I saw scorpions." And because the scorpions are smaller, there is even a little arrow drawn to tie the words and measure together (see Figure 7).

I WNT TO THE NATRO HESTR
 MUSM I SEW THE
 CRDRCHAS 

I SAW TRACALS 

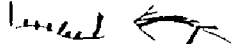
I SAW SCANS 

Figure 7

Graham's Nature Museum Measure

Transparency

Another way that children represent space is to create drawings that allow the viewer to see through an object to something behind or inside it. Nick shared such an example one morning a few days before Christmas vacation. He had drawn his Christmas tree with all the presents under it. Even though they were wrapped, we could easily see the inside, but his brother, Mark--in the picture--can't.

"There's something inside all the presents, see?" Nick explained. "That's a fish, a Jack-in-the-box, candy canes, a new stockin', a rattle for Will. And that guy is my brother Mark. He loves candy canes. He's thinkin' he's gonna ask Mom if he can have the biggest candy cane on the tree" (see Figure 8).

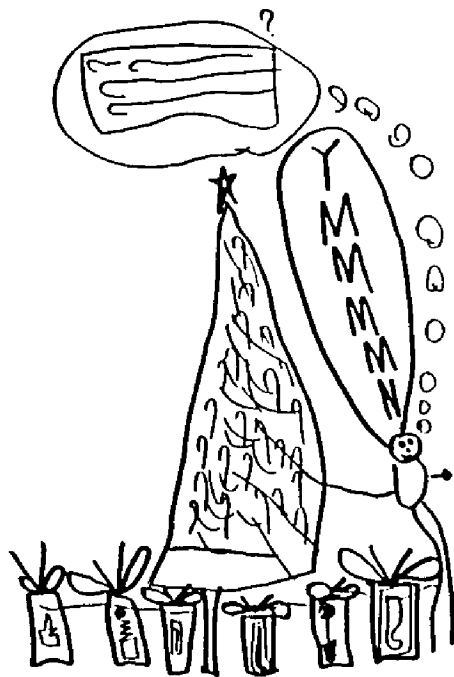


Figure 8
Nick's Presents

Other children solve the problem of overlapping figures occupying the same space by creating that same kind of transparency to the objects that Nick did. Linda, for example, recorded in her choice book what she had worked on during "Free Choice Time" in the afternoon: "Me and Ashley used the computer," she wrote. In her picture, she wanted to show what it looked like to an observer watching her and Ashley working--a view of their backs as they faced the computer screen with the Logo turtle on it (see Figure 9). But she also wanted to show **how** they were creating the Logo drawing, using the keyboard their backs would have kept from view. She solved the problem by giving the figures that transparency, so that the observer can have a simultaneous perception of different spatial locations.

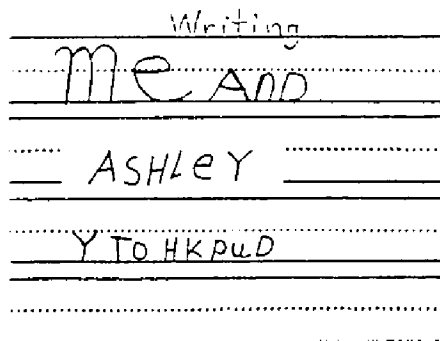
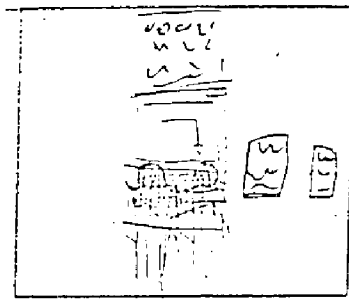


Figure 9
Linda's Choice Book

These kinds of drawings have been termed "X-Ray" drawings by some researchers (Gardner, 1983; Winner, 1982; Freeman, 1980). These theorists conclude that the children "are simply unable to draw in a more realistic way" (Winner, p. 158). Although Winner concedes that there are "surface

parallels" between the child's use of space and some adult artist, she concludes that they may have "no alternative but to make X-ray drawings. And they may not intend the strong visual effect they create" (Winner, p. 160).

I disagree with these conclusions and with the notion that these are "X-Ray drawings." These researchers did not talk to the children whose drawings they examined, nor did they know the children's other work. In the case of Nick and Linda, these children **do** have alternatives to showing space, but chose in these instances to use transparency to solve the particular visual problem at hand. In reviewing Nick's writing folder from September to January, I found this was the only time he chose to use this kind of transparency, and he used it because he specifically wanted to show that **we** knew what was in those presents, but that his brother Mark didn't. In all Nick's stories about the zoo and the animals he saw eating there, he did no drawings denoting the food inside their stomachs, a "hall mark" of Freeman's "X-Ray Drawing Phase."

I prefer to use the term "transparency" for this solution to showing space on the page, because this is a technique artists purposefully use. Although psychologists like Winner would term the similarities to Chagall's "Pregnant Woman"--where the artist draws the baby inside the transparent uterus of its mother--only surface, I believe they are all consciously solving the problems of space.

Sally's story about her trip to visit her grandparents provides more evidence. She wrote about the car they rented "sis tay ran ot ov litol cars" (Since they ran out of little cars). And she wanted her readers to know what it was like inside the car as well as outside. First she drew the car with all its occupants in the right order, her bearded Dad in front driving, and she

and her sister in the back seat looking out at the craters in the moon. But inside the car, she told me, "It was a mess! We had Pepsi on the floor, crayons, books, blocks" (see Figure 10). And in the rectangle drawn under her Mom, we can see all the items she has mentioned--we get a view of both the inside and outside. At this point, I thought she was done with this page, and made a copy during recess time.

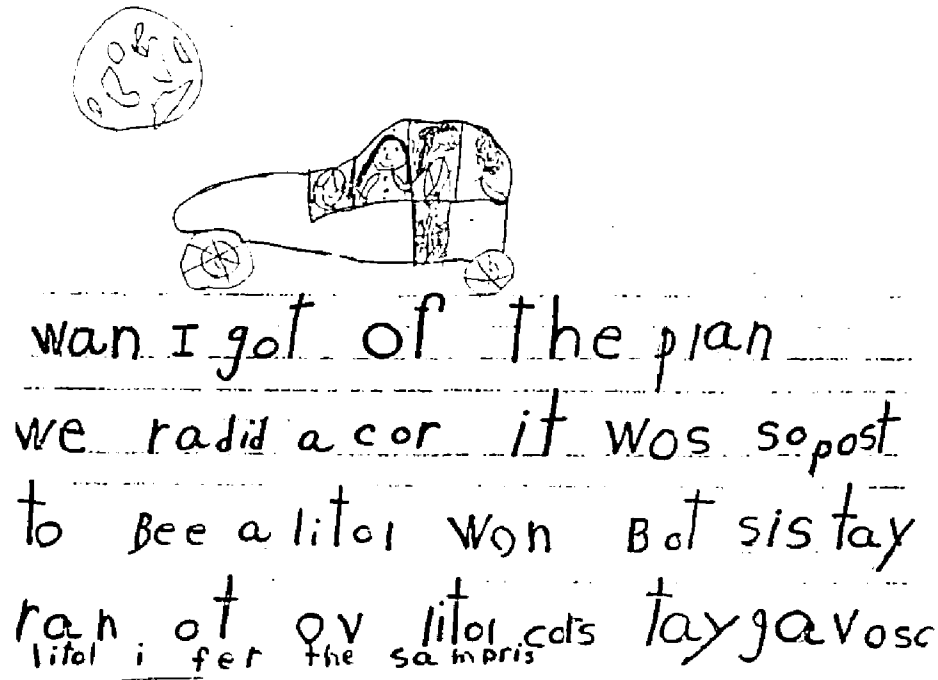


Figure 10
 Sally's Trip

I was premature in my judgement, however, as I believe other researchers may have been in the past. The next day, when Sally returned to her writing, she had come up with a modification she preferred to show the inside and outside of her car. She cut out and taped a door over the car's side, which opens and closes to reveal--and to hide--the mess on the floor inside (see Figure 11).

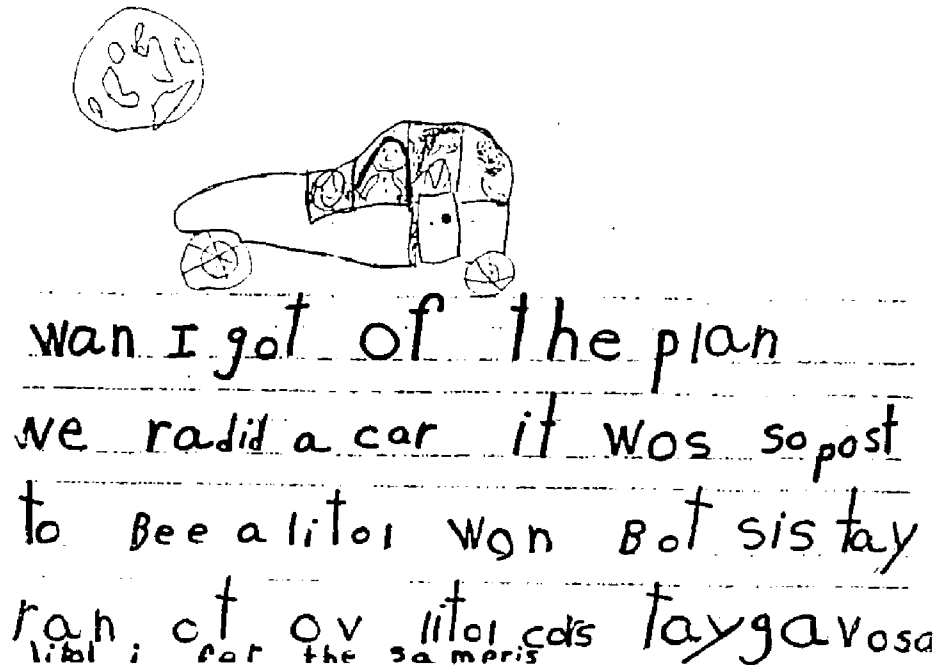


Figure 11
Sally's Trip

Overlapping Figures

Another way to create a sense of depth on the page is to have one form obstruct our view of part of another form. Overlapping figures to show some as nearer to the viewer was used often by medieval artists (see Figure 12, The Last Judgement, 1640).

I found many examples of children in the class overlapping objects in this way, an ability overlooked by the researchers who found only examples of "X-Ray" drawings at this stage.



Figure 12

The Last Judgement

Ming used this technique often. Early in the year, when she wrote about her cat running away from her dog, only half of the dog's body is drawn, and we can easily perceive that her dog is behind the house (see Figure 13).

Figure 13
Ming's Dog



Later in the year, she used the same technique, but in a more sophisticated manner. This time, she drew her body parallel to the picture plane, but overlapping one of her arms so that only the tip of her elbow shows--clearly on a plane further back from the viewer. "I'm going to the contest," she writes, then explains, "I've got my fingers crossed behind my back, hoping and hoping I'll win the prize for my pumpkin" (see Figure 14).

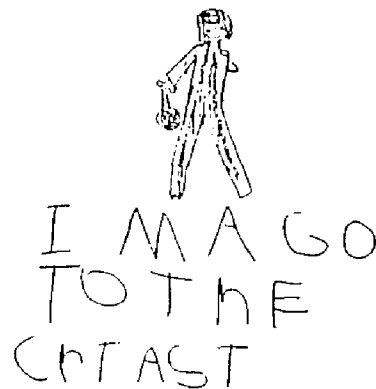


Figure 14
The Pumpkin Contest

On another day, Kelly was writing about the things you can do at recess, and created three planes of depth in her drawing of the merry-go-round. Nearest to us is Kelly as she approaches the equipment, one plane back is a child standing on top of it, while in the furthest plane from us a child is behind the equipment, sitting on the other side of it, the wood

overlapping so our view of her legs is obstructed. Kelly explained that this child "is sitting on it the right way, so it's safe, not standing on it the wrong way" (see Figure 15).

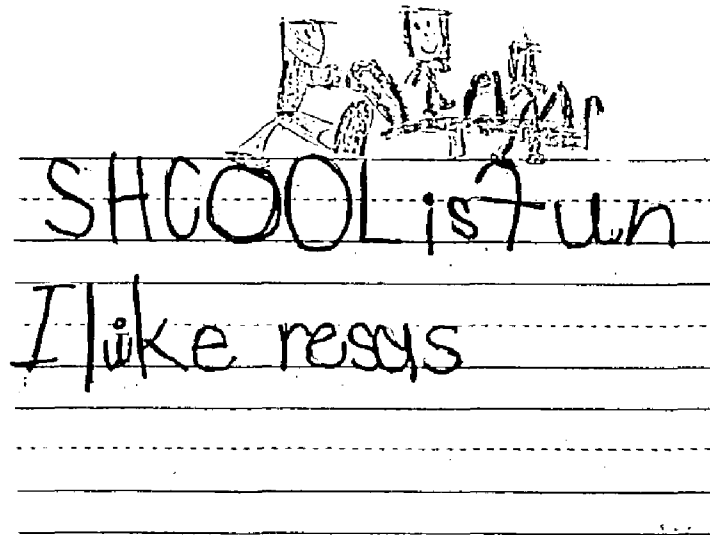
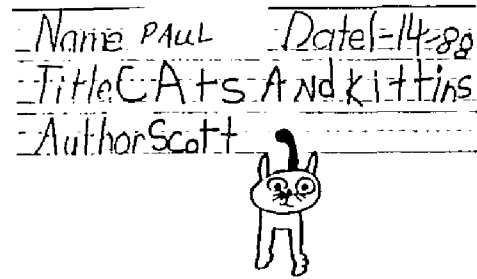


Figure 15
Kelly's Recess

This is also something children notice in the books they read. In Dan the flying man, Jimmy commented on how he could tell the man was bending over the mountain top in the picture, his head and shoulders covering the rest of his body as he leaned over. And in his reading journal, Paul drew a picture of a cat based on the cat photo in his book, the tail of the cat emerging from behind the head, emphasizing the space between the two planes (see Figure 16).

Figure 16
Paul's Cat



The Kittens ^{are} ^{cut} ^{up}
And ^{it} ^{like} ^{the} ^{cat}
cat ^{gets} ^{mad}

Mixed Perspective

In primitive art, [two things] have been attempted: the perspective as well as showing the essential parts in combinations. Since the essential parts are symbols of the object, we may call this method the symbolic one. I repeat that in the symbolic method those features are represented that are considered as permanent and essential, and that there is no attempt on the part of the draftsman to confine himself to a reproduction of what he actually sees at a given moment (Franz Boas, Primitive Art) (see Bushman painting, Figure 17).



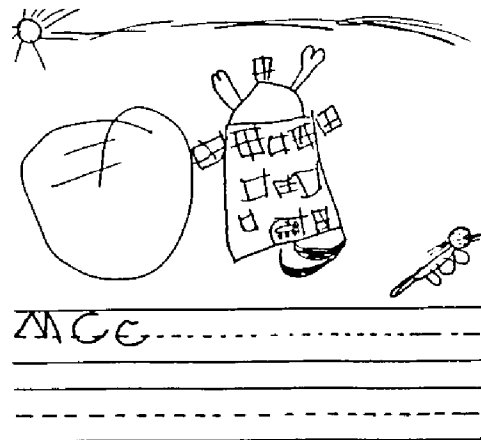
Figure 17
Bushman Painting

Like the early artists Boas studied, the children seem to take the realistic view that they will do whatever is necessary for their particular visual purpose. They appear to accept that things can be presented at a size and angle that best fits the situation without worrying whether this visual correctness is true to nature.

One morning in September, I observed two children working out perspective in this way, Joshua and Claudia. Through gesture and some English, Claudia was explaining to me about her two cats, who don't like each other. Joshua, sitting at a nearby desk, joined our conversation, mentioning that he has two cats, too. He had already drawn a house with windows, and now he decided to add his two cats to the drawing. Claudia, on the other hand, decided she, like Joshua, would draw her house.

As she worked on her house, she explained it to me (see Figure 18). The windows were very important to her because they defined "her" room. She explained that she had even drawn the shades "so you can pull down." And besides the front view of her house, she included the windows of her room that the viewer wouldn't see from the front. We are treated to a simultaneous view of all the parameters--all four windows--that define her bedroom.

Figure 18
Claudia's Room



When I later went back to Joshua, I realized that independently, he had used the same technique of multiple perspective to solve space problems in his story (see Figure 19). Here, beside the front view of his house, the cats are shown from a different perspective--all four legs and their entire faces silutaneously, as if from the top. As Joshua struggled to write "c" for cat and "H" for house, Kelly poked her head over to ask, "Is that a side view?"

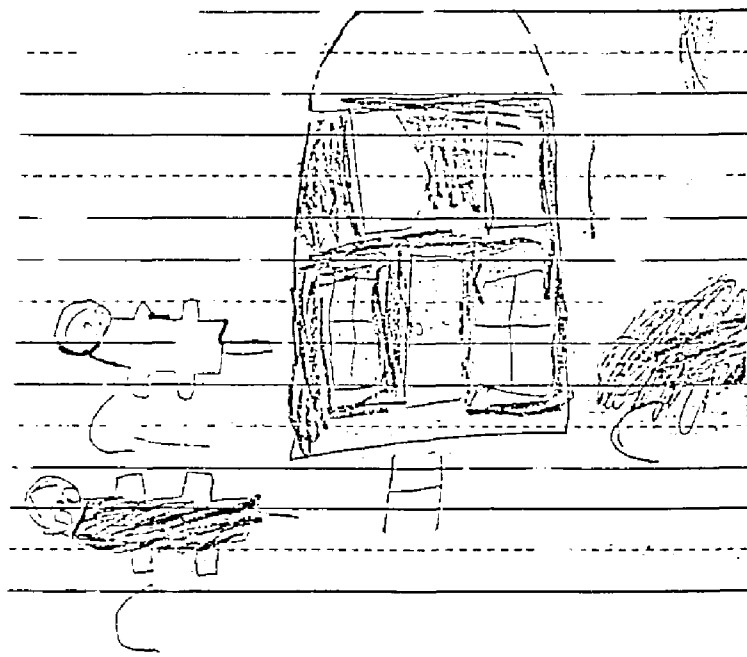


Figure 19
Joshua's Cats

"No," Joshua answered shortly, more involved in his writing now. "I have to erase this 'C'--it's too pointy." Joshua's intent was apparently not to present a side view, but to show more of the dimensions.

Side views and top views are very important to Kelly in her own writing and drawing, too. She included both in one page in her dog sled story, as she explained to me (see Figure 20). "Over here's a side view of the water hole, and over here's a top view. I wanted to make it look like it would swing and make waves right off the paper."

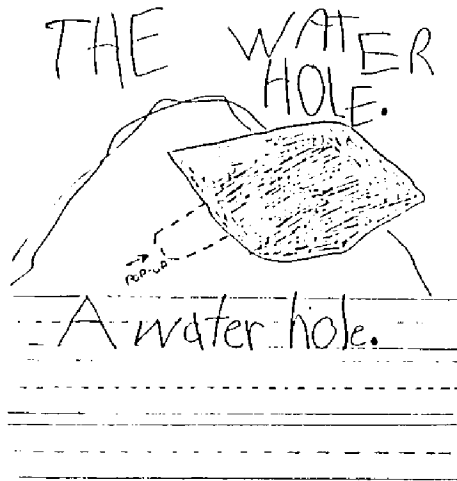


Figure 20
A Water Hole

When Eugene created his calendar in January, he included all kinds of animals that interest him--dinosaurs, reptiles, and for the month of March, this drawing of an amphibian (see Figure 21). From the top view, the scales on the back of its neck are clearly visible. At the same time, viewers are able to see all four webbed feet, almost as if we are looking up from underneath the creature's belly.

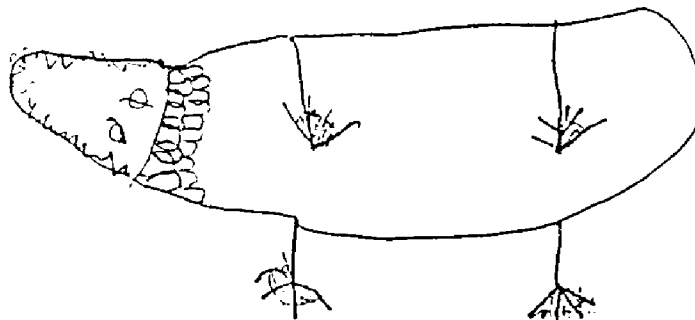


Figure 21
Eugene's Amphibian

When Linda drew her living room at Christmas time, she wanted her audience to see it just as it really was, with all the details available in a three-dimensional world (see Figure 22) . She wants us to see both the front view of the television set, and the top view of the dia's and knobs on the VCR on top of it. We see her Christmas tree parallel to the picture plane, but the chair receding into the corner. The angle of the lights on the ceiling is as if the viewer were underneath, looking straight up, but the edges of the lumber in the floor are from a perspective looking straight down. It is as if we are in the midst of the room, looking at all of its angles, yet viewing it from an outside picture window, simultaneously.

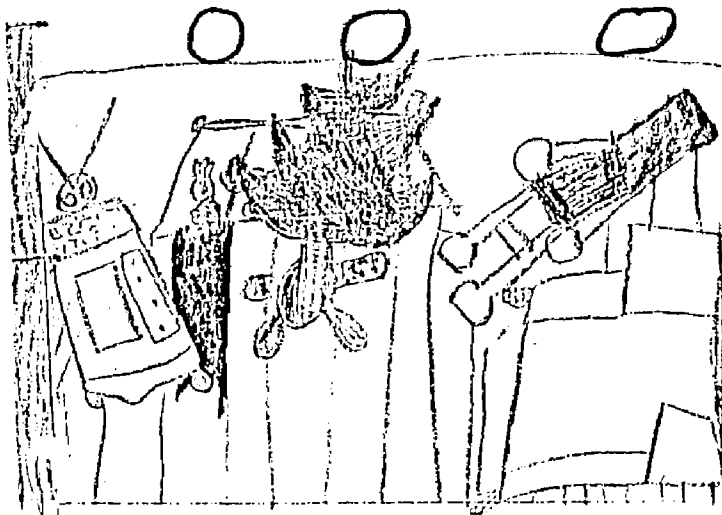


Figure 22
Linda's Livingroom

Bird's-Eye View

Besides looking at several views simultaneously, the children also draw from a perspective they rarely see themselves--from the top looking

down. Yet they seem able to understand--and to render--how things look from a "bird's-eye view" (Downs and Stea, 1973).⁸

In an early study of children's cognitive abilities, Susan Isaacs (1930) gives this example of very young children exploring spatial relations as they created a model of a garden as it looked to a man in an "aeroplane."

Some of the children climbed "as high up the ladder as we can get, to see how it looks from the plane." One boy of four-and-a-half realized spontaneously that from the plane, only the tops of their own heads would be seen, and he dotted a number of small, flat ovals over the paths of the model, "That's the children running about." (Isaacs, 1930, p. 37).

I noticed the children drawing from this perspective on the first day of school. Claudia's first piece of writing, for example, shows this view of the desks in the classroom (see Figure 23).

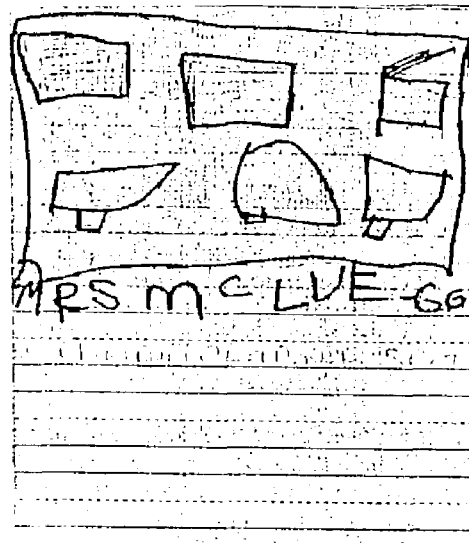


Figure 23

Claudia's Classroom

⁸ Tuan (1977) marvels at children's ability to understand aerial perspective. "[C]hildren are small people in a world of giants and gigantic things not made to their scale. Yet children five or six years old show remarkable understanding of how landscapes look from above. They can read black-and-white aerial photographs with unexpected accuracy and confidence. They can pick out the houses, roads, and trees on aerial photographs even though these features appear greatly reduced in scale and are viewed from an angle and position unknown to them in actual experience" (p. 27).

But some of the other examples show a more complicated view of the scene from above. Nick used this perspective in his "Secret Plan for Snack Recess" (see Figure 24). He explained it this way, "This is our plan for snack recess. We jump out of the cement block, get on the merry-go-round--sit on it for two minutes--then get off, go to the one-headed slide. . ."

"Wait a minute," I interrupted. "What's a two-headed slide?"

"It has only one beam." Nick continued, "Go down that once, then go down to the pole. Then go behind the pole. Go down it. Then, we attack Aja. We bring her back to the base."

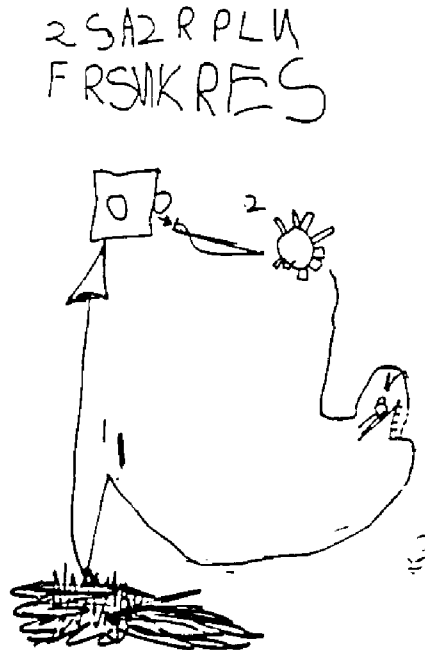
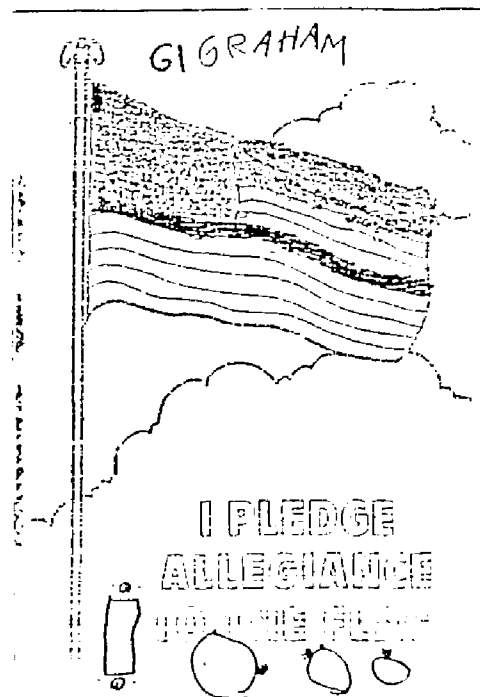


Figure 24
Secret Plan

For creating a secret--and rather complicated--plan like this, an aerial view that takes in the whole playground scene was clearly helpful.

Sometimes, the children's top-down views were more abstract, showing a sophisticated understanding of this concept. One morning, I overheard Megan and Graham discussing perspective--and Christopher Columbus--as they colored in pictures about "The Pledge of Allegiance" after a class discussion on "American Symbols."

Figure 25
Graham's Diagram



Excerpt from Field Notes (9/16/87)

Megan: But how did he find out the world is round?

Graham draws a diagram on his paper. (see Figure 25)

Graham: People thought it was a big rectangle, like a pencil with monsters at each end.

(Next, Graham draws a diagram of the world.)

Graham: See? Then he sailed around the earth. Here's England. Here's his ship. He's already gone this far on this map here. He spots England again, and he knows the earth is round. And here's another map--the boat's in England, he sees England, then he lands in England.

Megan draws a line on her book. _____

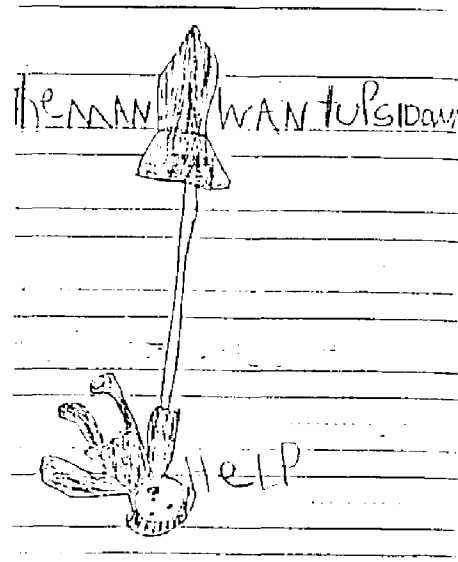
Megan: Not a rectangle.

Graham: You did your different. I'm doing it from overhead.

Combination of Words and Pictures

There were also examples, in almost all the children's writing, where the words and pictures worked together to define space. For example, in Paul's story about a man in space, he wanted to show the effects of the position of the spaceman. He drew and cut out a figure first, carefully making the hair standing up to show what "it's like with no gravity." But the words were definitely needed to show what happened to the man: "The man went upside down" (see Figure 26).

Figure 26
Paul's Space Man



And in Linda's story about her hand, she first drew her hand with her new bracelet on it, but was dissatisfied with the results. She needed the preposition "on" to show where the bracelet was: "I have my bracelet on my hand." (Figures 27 & 28)

Linda's Bracelet Story

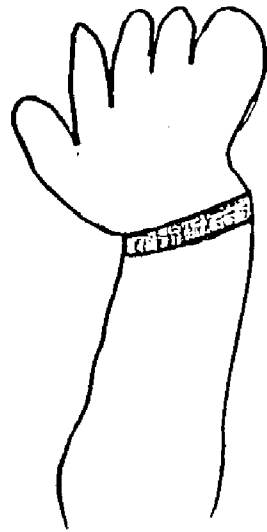


Figure 27



Figure 28

Prepositions were, in fact, by far the most used linguistic spatial markers in the children's writing, the most prevalent being "in" and "on." Others often used by the children were: over, at, into, and behind. Adjectives that are common in their speaking vocabularies--words like tall or deep -- were virtually absent from their writing. There were a few children, like Kelly who would occasionally use specific distance terms, as in her volcano story, when she swam "ten miles away." But classwide, prepositions accounted for more than 90% of the words children used to express space in their writing.

The children in this first-grade classroom relied mainly on six strategies for "coping with Flatland" when they transferred their three-dimensional images to the page:

- **Relationship of size**
- **Transparency**
- **Overlapping figures**
- **Mixed perspective**
- **Bird's-eye view**
- **Combination of words and pictures**

Besides these six categories, I found other ways that some children chose to extend the concept of space on the page--pop-ups, for example, (which are discussed in more detail in Chapter VI) were sometimes used to create a third dimension; and Kelly occasionally used of the front and back of her paper to extend some of her characters off the page. These uses however, were not used widely enough to create a category for this particular group of children.

Rotten Jack

In their Rotten Jack journals, the children also needed to represent three-dimensional space, but I found that this situation caused the children to rely more heavily on some categories than others. All the children but one--Bruce--used words and pictures together to create space. In fact, all these children used prepositions specifically, words like: around, inside, in, on, under, outside. The next largest category was that bird's-eye view--used by 13 of the 22 children. This view was helpful to show what the pumpkin looked like after it had fallen from the shelf. The technique of "Overlapping," was used only once, and the "Relationship of size" not at all (see Table 1). The results of this survey show, I believe, that the children are flexible their choice of ways to represent space, using the techniques which will best fit the demands of the situation.

Table 1
Rotten Jack: Spatial Symbols

	<i>Transparency Overlapping Mixed Bird's-eye Words & Perspective</i>				<i>Pictures</i>
Brad					X
Ming	X		X	X	X
Kelly			X	X	X
Nick					X
Joshua				X	X
Eugene				X	X
Debbie			X		X
Ethan					X
Gwen				X	X
TJ					X
Julie				X	X
Jimmy					X
Sally					X
Paul				X	X
Claudia			X	X	X
Sarah			X		X
Megan			X	X	X
Susan				X	X
Graham	X		X		X
Ashley			X	X	X
Bruce				X	
Linda				X	X

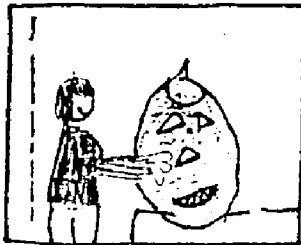
Ming drew herself touching Rotten Jack on the nose when she wrote, "At Jack's nose, it is soft." On this page, she wanted to show that she was on the plane in front of the pumpkin, and "Overlapping" helped her solve this space problem best (see Table 2, A). Graham, on the other hand, wanted to show himself reaching inside and under Jack's nose for his observation, "Jack is mushy under his nose," so the conscious use of "Transparency" made sense (B). When Rotten Jack fell to the floor, many children, like Paul, used the "Bird's-eye view" to show what how all the pieces looked on the floor (C). Others, like Debbie, preferred to use "Mixed perspective" to show the

pumpkin and shelf from the side, and then an overhead view to show those pices when "rotten Jack fal down off the shelve." (D) And 21 out of 22 children found there was no better alternative that a combination of words and pictures to express spatial details like Ashley's "He has black spots on the outside" (E).

Table 2

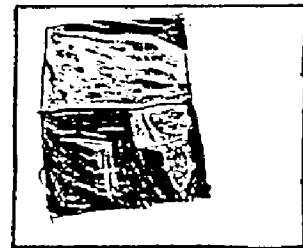
Rotten Jack Journals

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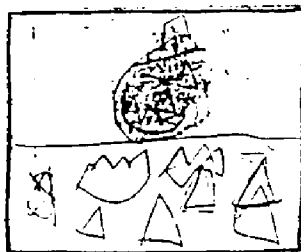
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Conclusions

Of all the aspects of children's pictorial representation, their use of space is by far the most researched and conjectured about. Unfortunately, most experimenters are not looking at the nature of the task, the child's intentions to communicate, nor the logic they use when coping with the demands of transferring their three-dimensional images to a single plane.

The six-year old children I observed made rational, deliberate decisions when representing space, using, for example, our cultural understanding of the relationship of size to show how near and far away people are, representing what's inside deliberately drawn transparent Christmas presents, or relying on words--especially spatial markers like prepositions--to complement the drawings on their pages.

But they are solving other problems as well--the images and events that the children want to communicate are not static images, frozen in space and time, they often dance, leap, and whirl. And when young children transfer these images onto paper, they find solutions to the problem of representing movement as well, as the next chapter shows.

CHAPTER V

**"PIECES OF THE ACTION":
CHILDREN'S SYMBOLS FOR MOVEMENT**

Eugene looks up from his writing folder to explain to Kelly, sitting next to him, "I'm drawin' the biggest plant in the world. I can't pronounce it, but it's some kind of huge cactus."

Kelly continues intently with her work as she responds, "I'm makin' something," then sounds out carefully, "I am on the bus." She looks at her work critically, then starts making sweeping circular lines with her pencil. Nathan peers at her paper, interested. "This isn't the bus.," she tells him "I'm scribblin' for. . .to make the bus look like it's moving."

Eugene nods and points to his paper, "You wanta see somethin'? That's an elf hole."

But Kelly doesn't look up--instead, she keeps explaining her process. "The bus is bouncing out of its wheels." She smiles and draws vertical "action" lines. "It's jumpin' really--even more--like this."

As children attempt to communicate their action-filled stories, memories, and mental images onto the surface of a page, they are faced with the same problem many artists face: "The principle problem to be explained is how movement can be represented when a painter is only able to give us a piece--or, at best, pieces--of the action. How can the movement of a figure, which happens over time, be shown in the timeless medium of a picture?" (John L. Ward, 1979, p.246).

Surprisingly, the many theorists and psychologists who study the fields of child development and symbolic representation in general have

paid little attention to the depiction of motion in children's drawing and writing. This may be because traditional developmentalists adhere to the Piagetian view that children's internal imagery does not preserve the "qualities of motion" (Piaget and Inhelder, 1971; Dean, 1976). These conclusions are based on research which does not measure the **child's** intentions to communicate motion. Piaget and Inhelder, for example, asked children to draw a falling stick. The children complied, but did not represent the continuity or the proper trajectory of the falling stick. In the experimenters' view, the children failed to represent motion--according to their pre-conceived ideas of "the way" to represent the movement of the falling stick. But there are two obvious short-comings to this research. The first deals with intentionality. Those children drew falling sticks because they were asked by adults to do so; they did not necessarily have an intent or desire to communicate that information. Secondly, the experimenters had pre-conceived notions of the correct way to depict motion--the children's solutions may have been understood by others in the child's culture.

The lack of research in the study of motion carries over into the world of adults as well. Gibson (1971) and Goodman (1968), for example, who offer the most in-depth recent theories of picture representation, do not include any discussion of the problem of showing movement. For those researchers who **do** discuss it, it becomes a debate between innate perception abilities and cultural influences.

Rudolf Arnheim takes the extreme position that motion in pictures is understood purely perceptually. It is, he contends, a visual interpretation of reality--the "dynamic composition" must be balanced and this in turn, activates the brain processes to interpret motion (1974; p. 416).

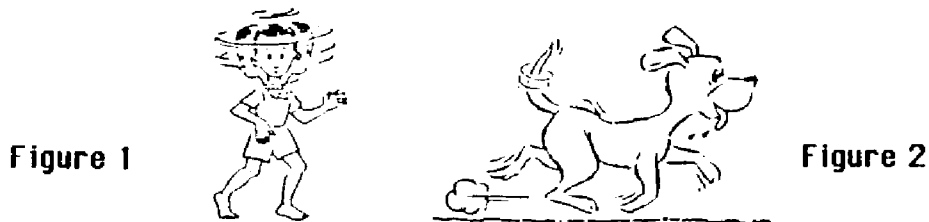
Ernst Gombrich, on the other hand, emphasizes that picture representations are culture specific. He believes that picture movement must be supplied by the viewer's imagination; just like reading print, reading pictures depends on reconstructing what has happened and anticipating what will happen. "Two qualities will therefore enhance the effectiveness of depicted movement: clarity of meaning (the viewer must be able to understand what is happening in order to understand how it has developed and will develop over time) and unclarity or incompleteness of form, which will arouse in the viewer the memories and anticipations of movement" (Gombrich 1961; p. 306).¹

Gombrich's view is appealing to me because it ties in with my theoretical framework for reading processes. Just as viewers interpret pictures based on their background experiences and their cultural biases, so do readers have personal associations to words--and to the referents to those words in a literary text (Rosenblatt, 1978). Norman Holland's psychoanalytic approach to literary response goes even further, suggesting, that the way we interpret texts is the way we interpret our worlds--in terms of our own identity (1968).

And that identity is necessarily part of the society in which we are raised. The way we interpret motion in pictures has been shown to be at least partially influenced by culture. Certain conventions, such as the cartoon-type "action lines" and multiple drawings to represent motion appear to be Western conventions, understood by children in our society as young as three years old, but not by some other cultures. In a study by

¹ John Ward (1979) quotes experiments by Rorschach, testing how people experience pictorial movement. "Rorschach argued that a feeling of movement in a picture is based on kinesthetic empathy deriving from memories of past experiences." For more information on this research, see: H. Rorschach, 1942.

Duncan, Gourlay, and Hudson (1973), only 3% of rural Zulus thought that the pictures in Figure 1 represented motion, while 86% of the Western subjects interpreted the child's head to be moving. And in response to the picture in Figure 2, only 1% of the rural Zulus and 3% of the rural Tsongas thought the dog was moving, yet 75% of the European subjects "knew" the dog was running and wagging his tail. Other studies, of the Bantu and the Songe of Papua, lend support to the notion that perception of motion in pictures is culturally influenced (Winter, 1963; Kennedy and Ross, 1975).



— Boy and dog from Duncan, Gourlay, and Hudson (1973). [Reprinted from H. F. Duncan, N. Gourlay, and Wm. Hudson, *A study of pictorial perception among Bantu and white primary school children in South Africa*, p. 26. (Human Sciences Research Council Series No. 31), © Witwatersrand University Press, Johannesburg, 1973.]

The children in Pat McLure's class, as members of our Western society, understand and use both these conventions to show motion in their pictures. But they use and invent much more: in analyzing the symbols they use in their drawing and writing, I discovered seven categories to the modes of representing their "pieces of the action."

Children's Symbols for Movement

Multiple Images

One morning, Graham was intent on communicating a "terrifying" experience during writing time, and explained to me his drawing of falling off a swing. "That's the swing at different times," he told me, pointing to the two swings on the page. "It was going up and it had to go down." He rolled his eyes and gave an exaggerated shudder. "I did a backwards somersault

right off the swing! Boy, did that give me a headache! See? I'm goin' back. I'm goin' up, I fall back, I roll over, and that is it" (see Figure 3).

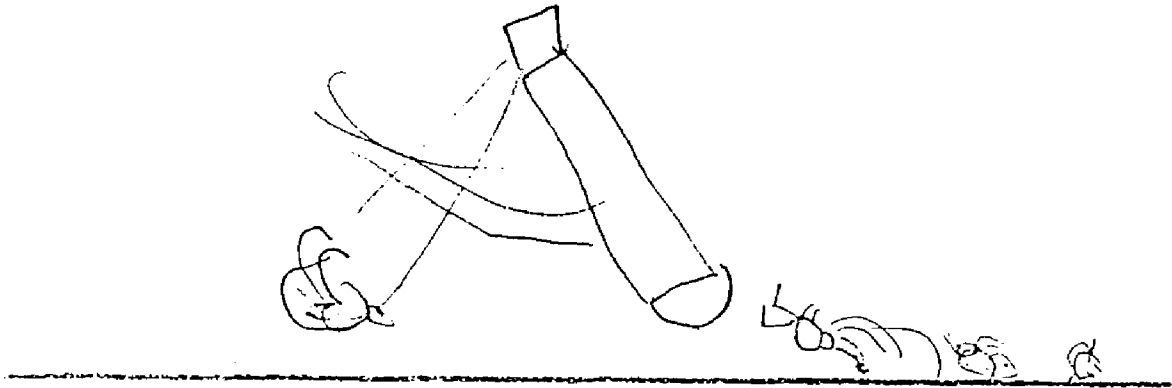


Figure 3
Graham's Swing Accident

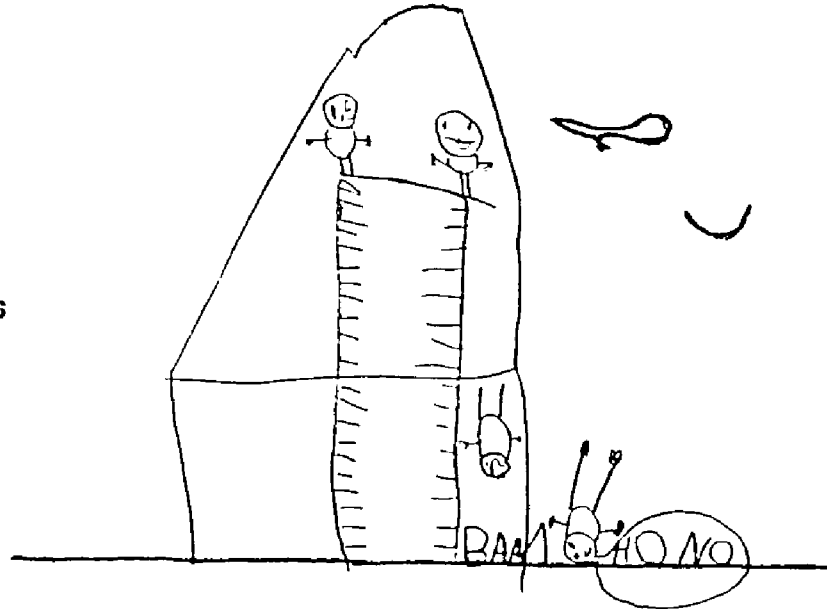
One way to represent movement on a page is to show an object, or a person in successive moments over time, as Graham did. These multiple images tend to indicate movement that occurs in a brief amount of time. A sketch by artist Pavel Tchelitchev uses a technique very similar to Graham's: the dancer's multiple arms and legs indicate the motion of her body (see Figure 4).



Figure 4
A Dancer

I found that the children often used this technique to show movement, especially that of the human body. Nick found it helpful in his epic circus chronicle. *"I Went to the Circus."* (see Figure 5). As he explained it to the class during whole class sharing time, "This guy was walking on this tightrope, walking. . . And he's there, and he walked across, and then he fell. BOOM! OH,NO! "

Figure 5
The Circus



The audience appreciated this depiction, directing many of their comments and questions to this particular page. It was Ethan's favorite part: "I like the part where you have him walk the tight rope, and he says, "Oh, No!" This gave Nick a chance to re-explain his solution. Turning to the page again, he chuckled, "Yeah. . .that? See, he fell down, and he's there, and. . ."

"Is that tightroper part true?" Ming asked, suddenly concerned about the thought of the performer actually falling to the ground.

"No, some of the parts are true, and some aren't."

Art theorist Gyorgy Kepes states that this use of multiple images, especially for body parts, was one of the earliest solutions painters attempted to suggest movement on a stationary surface--whether bark, cave walls, or paper. Like the children, they knew that changes serve to suggest

movement. "The pre-historic artist knew his animals, knew, for example, how many legs they had. But when he saw an animal in really speedy movement, he could not escape seeing the visual modification of the known spatial characteristics" (Kepes, p. 173).²

Movement "As it Happens"

In our Western culture, children begin to make marks--often called scribbles--at a very young age. Various researchers have noted the importance of the motor activity itself over the content, or even the color on the page (Gibson 1966). But it is more than the actual arm movement across the page that is important to these young children. In an interesting experiment, Gibson and Yonas (1968) replaced children's markers with ones that didn't leave any traces. Even children below two years of age soon lost interest in the scribbling if it left no marks. Gibson and Yonas conclude that not only is the physical action of scribbling a pleasurable activity to children, but they are also very interested in the traces-- that record of their motor activity--that they have left on the page.

This carries over into the way school age children show movement as well. The actual activity they are immersed in--scribbling, or acting out on the page a battle scene--is partly action and play in the midst of their composing. But it also serves the important purpose of *symbolizing* that action on the page itself. Kelly, for example, was intrigued with a story about an oil tank exploding that she saw on television. My first impression

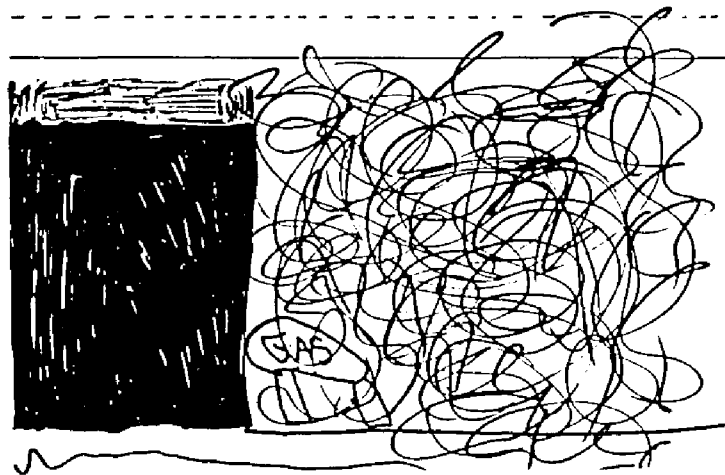
² In my pilot study, I found many instances of children repeating images to show the movement of balls and other objects. In the present study, however, this didn't appear. I think it was partly of a social nature--the children in the previous class saw it used, and found it useful for their purposes, so it spread, much like the pop-up convention in this study.

of her from across the room was that she was "just fooling around and scribbling this morning," but I was wrong.

"Look at this gas exploding!" Kelly demanded, as she pushed her writing booklet toward me. The "scribbling lines" that she drew acted out the motion she was trying to understand from the explosion she saw on the news, but when she explained it to me, it had become a symbol of that action (see Figure 6).

THE OIL TALK IS
IKSR LADING.

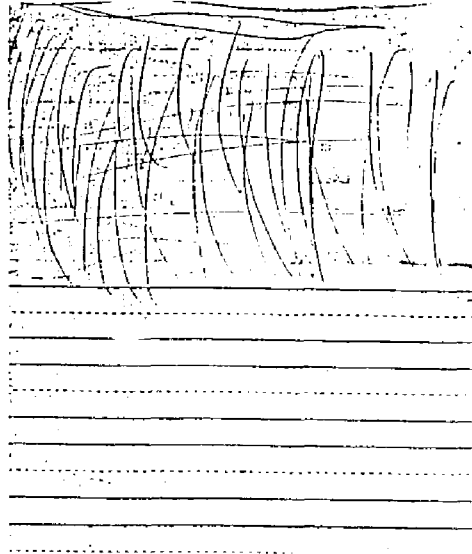
Figure 6
The Explosion



The children seemed to depict movement on the page "as it happened" when they were working out something new, like Kelly's gas explosion. Claudia has many new concepts and experiences to understand in our different climate and culture. In the early fall, she showed me a page of lines with no words which she had "scribbled" on the page. This was

different from the usual writing she was attempting at this time--copying symbols and words from the environment into her writing booklet (see Figure 7).

Figure 7
The Wind



She looked expectantly at me as she showed me the page, so I asked her to tell me about it. "Wind. Wind. Brrrr," she clutched her arms and demonstrated that the wind she was writing about was cold, a real aberration from the warm climate she knew from Portugal.

"Wind? Write?" she asked

"Wind," I repeated slowly. "/w/, /w/"

Claudia looked up at the picture alphabet on the wall.

"It's /w/, double-u, like the whale, see?"

Claudia shrugged impatiently. "No write," then made her "eh" sound, (accompanied by an upturned hand), and looked again at the way she had "written" the cold wind on the paper. She was content to work it out her own way for now--that tricky "double-u" sound would have to wait.

Debbie's writing one morning began as a page of brilliant balloons. As I watched, she put her crayons and markers away and started to "scribble"

over the page with her pencil, a smile touching her lips as her arm completed up-and-down and circular motions across the page. "This is me, poppin' balloons," she told me.

"Can you tell me about the pencil marks?" I asked.

"It's a path where I can pop all the balloons with one pencil! In the picture, I'm throwing pencils at the balloons. " She then flipped back the pages and read me her whole book--"A book about things"--ending with this last page, with the words, "Me, throwing a pencil at the balloons." She remains well-pleased with the depiction of motion she accomplished, even choosing to share this writing with the class several days later, pointing out again the path the pencil took as it scurried across the page in class--and flew through the air in her mental image (see Figure 8).

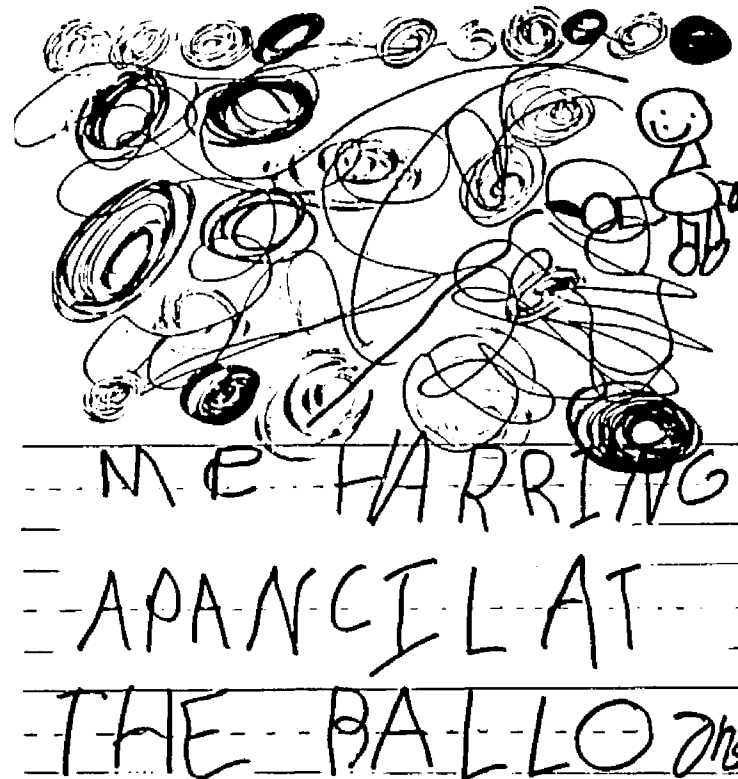
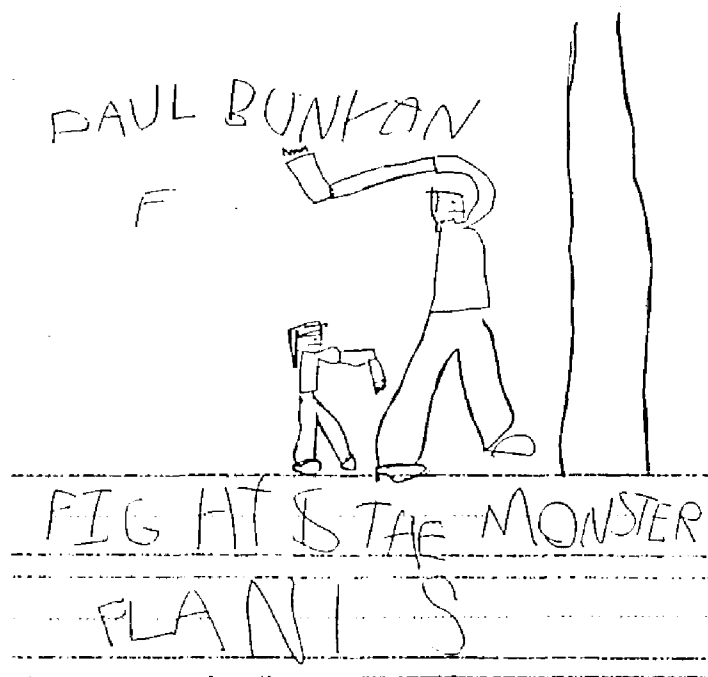


Figure 8
Debbie's Popping Balloons

The Frozen Moment

Another way to represent motion on a picture surface is to choose one moment in the process of movement and freeze it. Goodnow alludes to children's ability to indicate movement in this way, calling it "single viewpoint, single moment" (Goodnow, 1978). He points out that children rely on a sideways representation of a figure or object to show that single moment.

Figure 9
Paul Bunyan

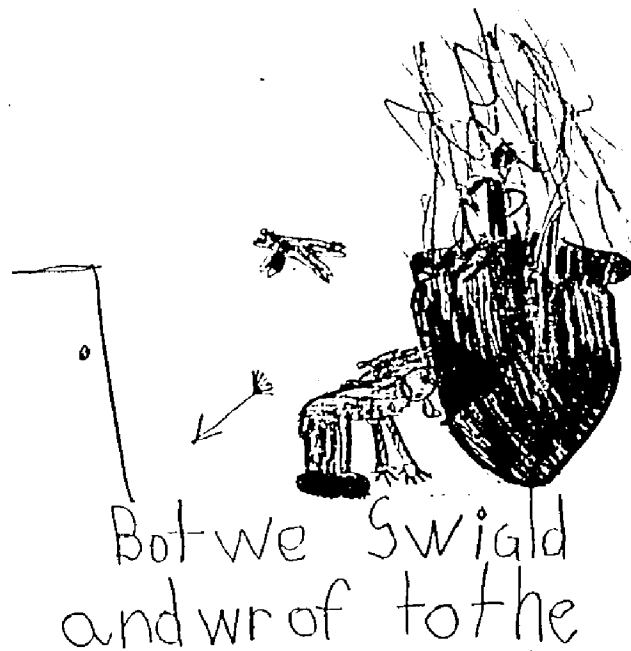


Kelly's reading journal about Paul Bunyan exemplifies just such a frozen moment (see Figure 9). "Paul Bunyan fights the monster plants," reads her text, and she relies on a frozen side-view of Paul swinging an axe at the plant, the weapon frozen above his head. Kelly has chosen her moment well; her audience knows that the axe cannot remain in this position for long, so it's interpreted as an axe swinging in the air. The side view is helpful to mark the moment clearly, and the bent arm is exaggerated, a technique Arnheim found employed by adult artists as well (1974).

But it's not just this single viewpoint that children employ; the choice of a particular moment in the action is also key. When moments are chosen

well, we, as viewers use the whole context of the situation to interpret the movement of the physical world we know. When Megan chose to draw her witch's frog flying through the air, she succeeds in representing that movement (see Figure 10). We know that the frog can't remain in flight long and is actually moving through the air.

Figure 10
Megan's Frog



A frozen body posture can also be particularly effective in showing movement. The Greek Warriors, for example, show by their poses that they are in the midst of a battle (see Figure 11).

Greek Warriors

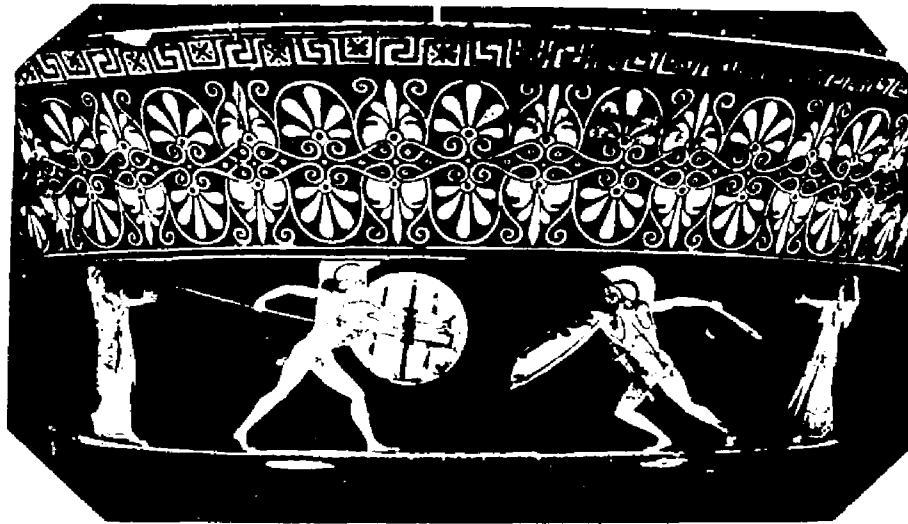
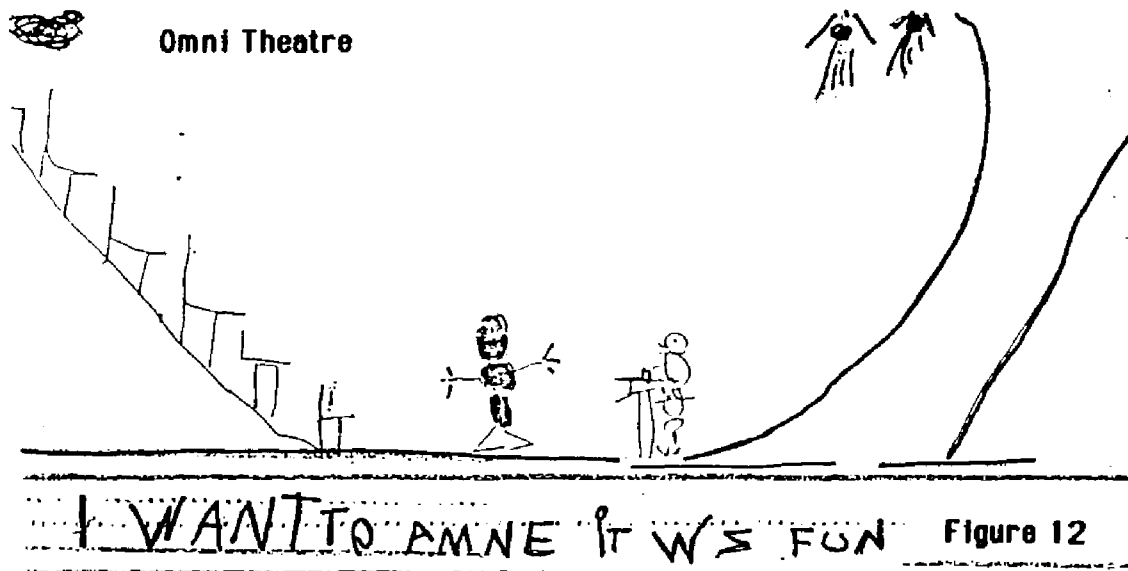


Figure 11

Seven-year-old Graham used this same technique when he wanted to show how dizzy he got at the Omni theatre. "I'm a little dizzy," he explained. "Those are the lights, that's the camera operator." Then he pointed to his representation of himself, toes pointed in, arms extended, stars in his eyes, as he staggers through the theatre in his dizzy state (see Figure 12).



"I'm walking like this 'cause I'm so dizzy," he explained.

Metaphor

Sometimes, movement is suggested through a kind of pictorial metaphor (Friedman and Stevenson, 1980). "For example, the artist may add arms and legs to an object that is limbless in reality" (p. 229).

Friedman and Stevenson consider this to be a more "advanced" form of movement representation, "better understood by older and more acculturated subjects." They base their conclusions on a number of experiments where children and adults of various ages and cultural groups were shown picture "metaphors" for movement. Younger children did not "correctly" interpret their picture metaphors, nor did members of "non-pictorial" cultures.

I interpret their results differently. It seems clear from the adult responses from non-pictorial cultures, that the inability to recognize the "movement metaphors" was dependent on exposure and experience, rather than developmental ability. Another problem is with the "picture metaphors" used. They were cartoon-like representations, and of a rather bizarre nature, such as an alarm clock kicking a kite or a fork carrying a chair.

I am indebted to Friedman and Stevenson for the term "picture metaphor," for I found examples of its use among the first graders I studied. But unlike these researchers, I found a sophisticated use of picture metaphors which the children were able to create as well as interpret when they wanted to communicate motion and movement in their stories.

Graham was hard at work one day writing about his trip to "New York Cctd" (New York City). "We wondered when we would get to New York City," the text reads, and the picture metaphorically explains the situation (see Figure 13).

Trip to New York City

WE WANDRO WAM

WE WAD GET TO NEW YORK CITY

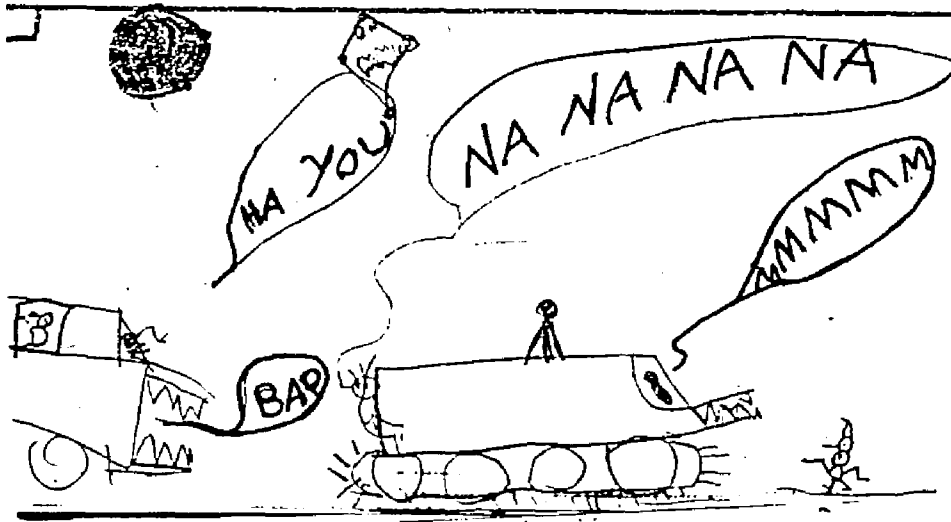


Figure 13

"That's my family in our car right there," he pointed to the vehicle in the middle of the page. "See all those marks around the wheels? They're like on tanks. You know, they show the tires are, like diggin' in slow."

I must have looked confused, because he turned to Ethan for help in his explanation. "Ethan, you know those things on tanks. What are they called?"

"Oh, I know what you mean, like on tanks? Aren't they caterpillar wheels or something like that?"

"Yeah, that's what I mean. You know? Our car was goin' along real slow, like a tank would go."

"Oh, I see what you mean," I responded. "Tell me about the rest."

"Well, see that's my Dad driving. He's going 'Mmm,' singing away, 'cause he doesn't care that we're going slow. But that car behind us..." he pointed to the car behind them, drawn with a huge angry mouth full of teeth on its hood. "...that's a New York car! He's saying, 'Hey, You!!! Beep.'"

Graham's pictorial metaphor immediately struck home for me, a timid New Hampshire driver who has experienced the 'Jaws'-like venom of aggressive and impatient New York drivers!

Kelly relies on picture metaphors to get across "pieces of the action" as well. Her entire dog sled story is an example of trying to make clear the movement in her story within the limits of her medium, incorporating the elements of time and space to help her (see Figure 14).

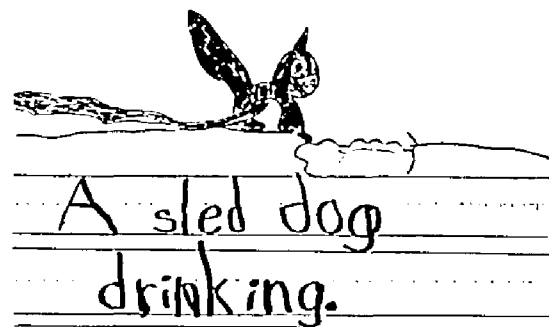
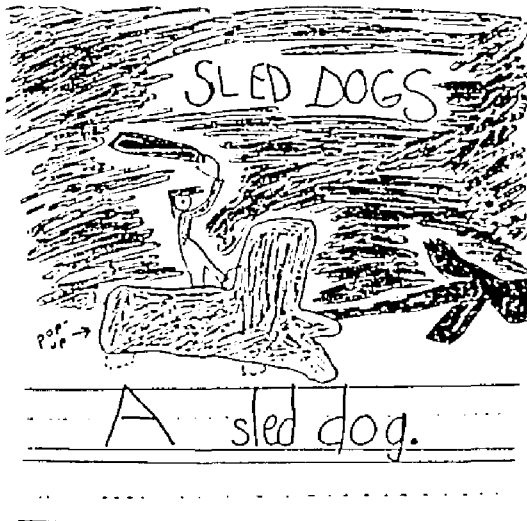


Figure 14 A & B
Kelly's Sled Dog Story

Kelly's Sled Dog Story

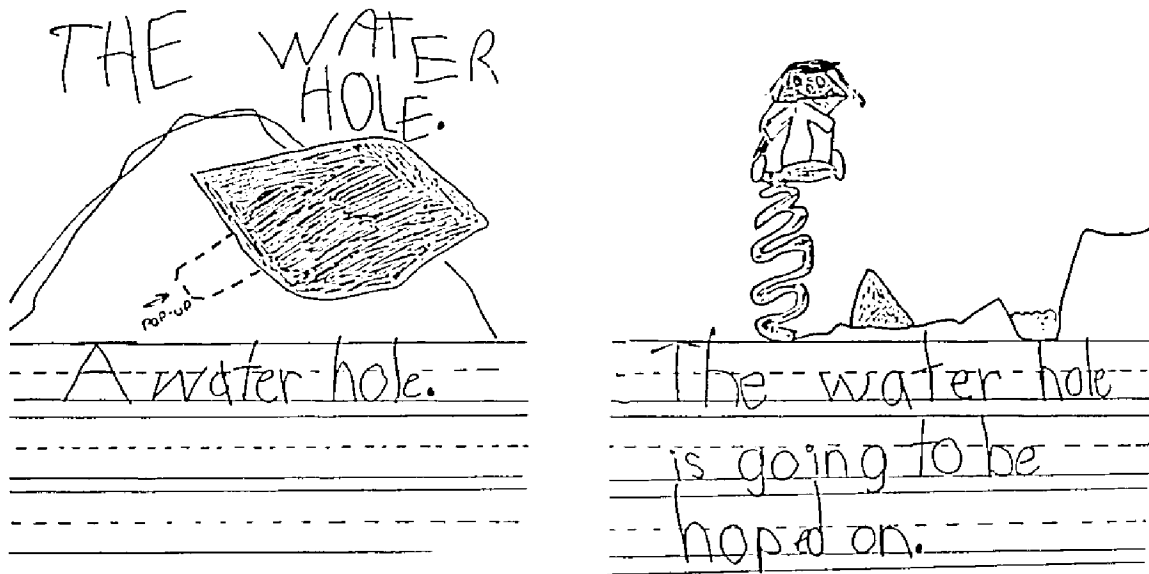


Figure 14 C & D

Her title page uses time: she draws just part of the dog to show he's moving. "This picture just has part of the dog, 'cause he's gone ahead," she explained to me.

Later in the story, she also struggled with finding the right technique to represent the motion of the water, in all its dimensions. "Over here's the side view of the water hole, and over here's a top view." Then, she created a "pop-up" version of the water hole, and attached it to the page with an accordian of folded paper. "I want to make it look like it will swing and make waves right off the paper."

Kelly is in control of the conventions she chooses to use. Although she wants to continue to depict that movement essential to her story, she decides not to continue with pop-ups. As she explained, "You're gonna see what happens to the water hole on the next page. But the rest of the book is going to be flat on the page. No more pop-ups."

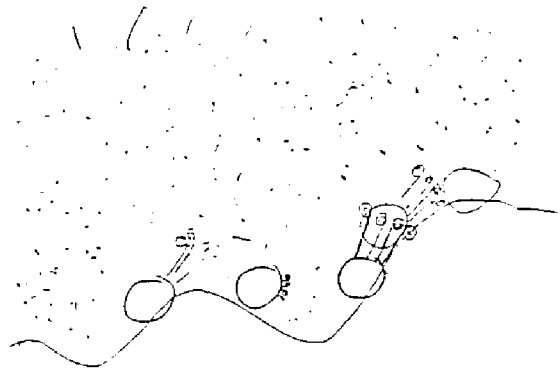
But it wasn't until she shared the story with the class the next day that I saw the metaphor she chose to show "what happened to the water hole." First, she read the pages I had already heard and seen, then concluded with, "The water hole is going to be hopped on." Above the words is a picture of the sled driver, legs out-stretched, atop a recently released coiled spring--a perfect metaphor to show that the water hole indeed can't escape being hopped on now!

The other children were impressed with this solution, too, offering comments like, "I like the part where the water hole is about to get hopped on," and "I like the part where you was just gonna hop on the hole" (from Field Notes, 10/15/87).

Action Lines

The use of "action-lines" is another convention many of the children use to show motion and movement. In a sense, this convention is used as a kind of metaphor as well. Notice, for example, the swirling, stylized lines that Paul uses to show the rolling snowballs in his work (see Figure 15).

Figure 15
Paul's Snowballs



Graham also uses lines to represent the path his sled has just taken as it flies down the hill (see Figure 16). "I bumped into a stump," he

explained. "I did *not* like it. See, I hit the stump and I went right up. Here's the ground level. . .it got so much speed!"

Then, Graham explained his other use of lines in this picture. "These lines, they show you're going fast!"

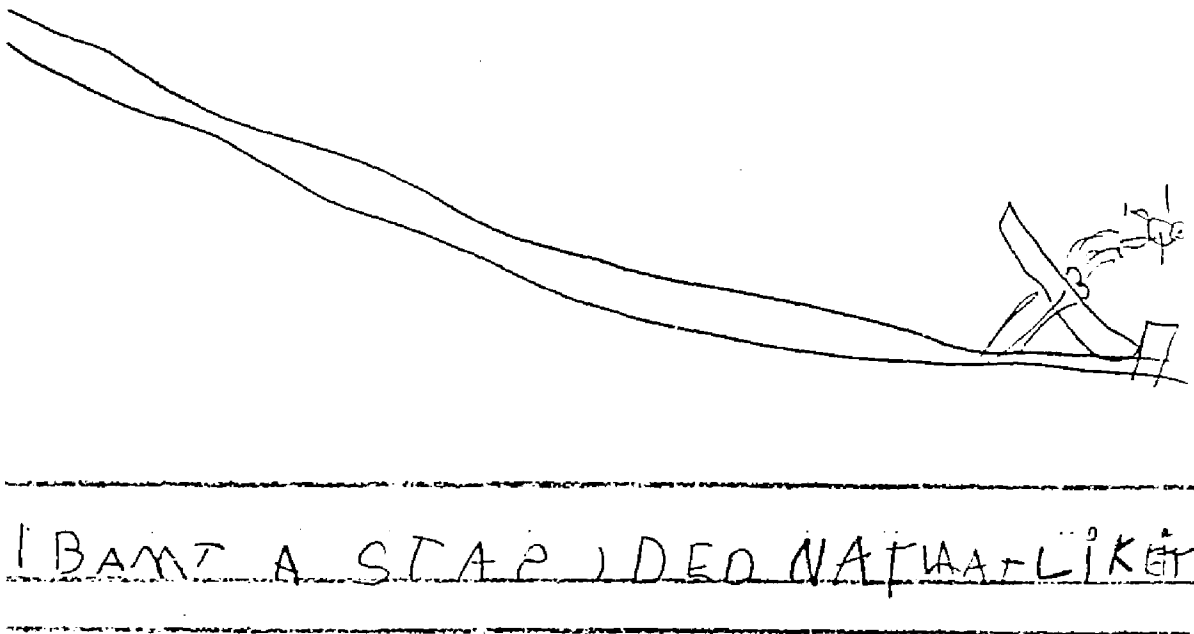


Figure 16
Graham's Sled Story

In our Western culture, movement--especially of figures--is frequently accentuated by these lines, or sometimes a blur, even though real movement doesn't produce these effects. This is especially evident in the cartoons, that are a daily part of the children's environment. They are also used frequently in other areas--television, book illustrations, and newspapers.

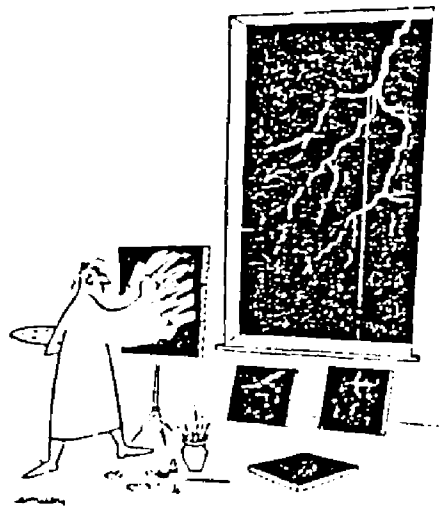
Some theorists, such as Kepes, argue that these metaphors for movement are really imitations of photographic effects, citing examples of

moving objects taken by cameras with the shutter open for a longer period of time. This creates an effect of movement: a blur next to the object. But others, such as Sarah Friedman and Marguerite Stevenson argue that these "action lines" were used long before the invention of the camera, tracing their use as far back as the twelfth century (1980).

Gombrich, in his article, "Standards of Truth: The Arrested Image and the Moving Eye" (1980) discusses the differences between machine-made and man-made images, and argues that even "factual images"--like photos of lightening or x-rays, must be interpreted by the viewer. There must be agreed-upon conventions in order to communicate meaning. Gombrich shares a cartoon from *Punch* to illustrate the problem:

"The desparate artist in Smilby's picture . . . is shown wrestling with the need to produce what I have called in my title an 'arrested image' of his view through the window during a thunder-storm. As he is trying to make a truthful record of the flashes of lightening which race across the sky, we can see his hand swishing from one position to another, for Smilby in his turn is presented with the task of representing movement in a 'still.'" (p. 181)

Figure 17



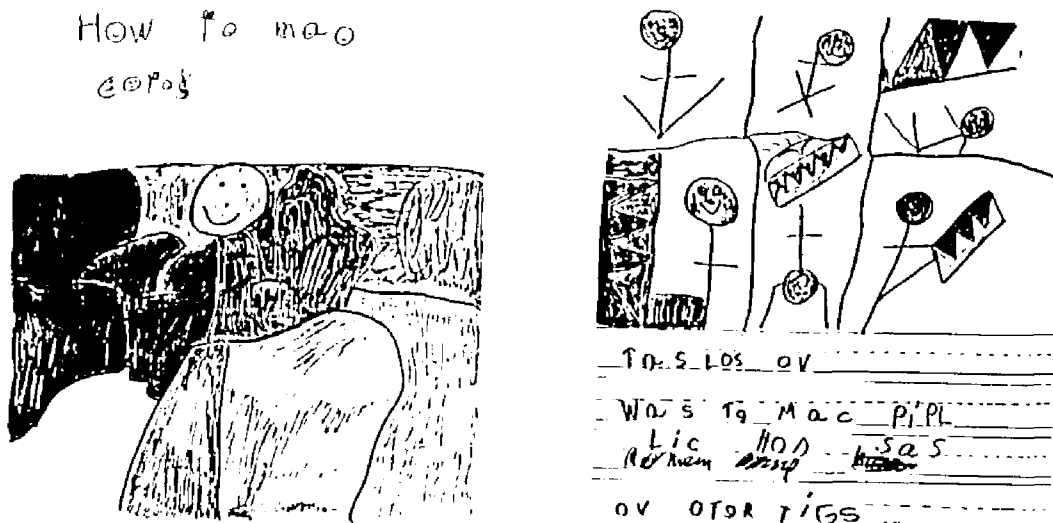
—Smilby, drawing from *Punch*,
1 February 1956, p. 177.

Examples of the use of the lines and blurred images cartoonists like Smilby employ to show movement appear throughout the children's work,

and when I would ask them how they got the idea, they usually related it to having seen it somewhere in their environment. Some, like Kelly or Paul, would respond with answers like, "You know, like you see in books," while others were more specific. Ming, for example, told me she got the idea from Bugs Bunny and Road Runner cartoons, while Sarah brought me in a Frosty the Snowman story to show me a specific example.

Sally decided, quite on her own, to show *how* cartoons can show movement, as part of her book, "How to Make Cartoons." On one page, she shows multiple figures, use of different posture, and of course, action lines as her cartoon figure flips the pillow in the air. (in the bottom central frame.) (see Figure 18 A & B).

Figure 18



How to Make Cartoons

The others in the class were supportive of Sally's attempts, telling her, for example, that they liked how she showed how to make a bird. But, they were also critical.

Gwen challenged, "Why didn't you name it 'How to Make Pictures,' 'cause if you wanted it to be like cartoons, you would have to make pop-ups so it would move."

Sally defended her book, citing the page shown in Figure 18, stating that she showed with stick figures how "you can make them do things and stuff."

But other children agreed with Gwen, saying Sally shouldn't call it cartoons. "'cause cartoons *really* move." Ming suggested that if she wanted a cartoon book, it would need to be a "flip" book to show things moving.

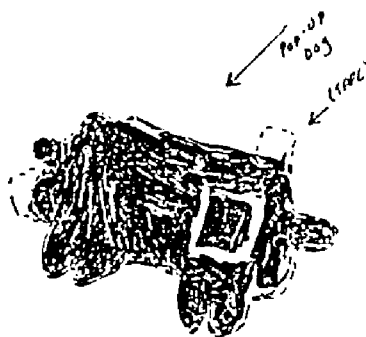
In discussing this group's conference later, Pat and I marveled at the difference in the understanding of the term "cartoon." For us, comic books and political cartoons fit well in the definition of cartoon, but most of the children think differently: they equate cartoons with the action-packed moving cartoons on television. The importance of the electronic as well as the print media has had a profound effect on the conventions for symbolizing movement in these children's literacy events. And, as Gwen suggested, it may be the clue to the widespread popularity of pop-up books in this first-grade classroom.

Pop-Ups

Early in the school year, Megan shared her draft of her dog story--a story that was to have a profound effect on the writing and drawing in the class. As she turned to the last page she had completed, she prepared them for something a little different.

"This is something special," she told them, then showed the page. "That thing's supposed to pop up." "I spring up," she read to the class. "Today is the day I go to the circus" (see Figure 19).

Figure 19
Megan's Pop-Up



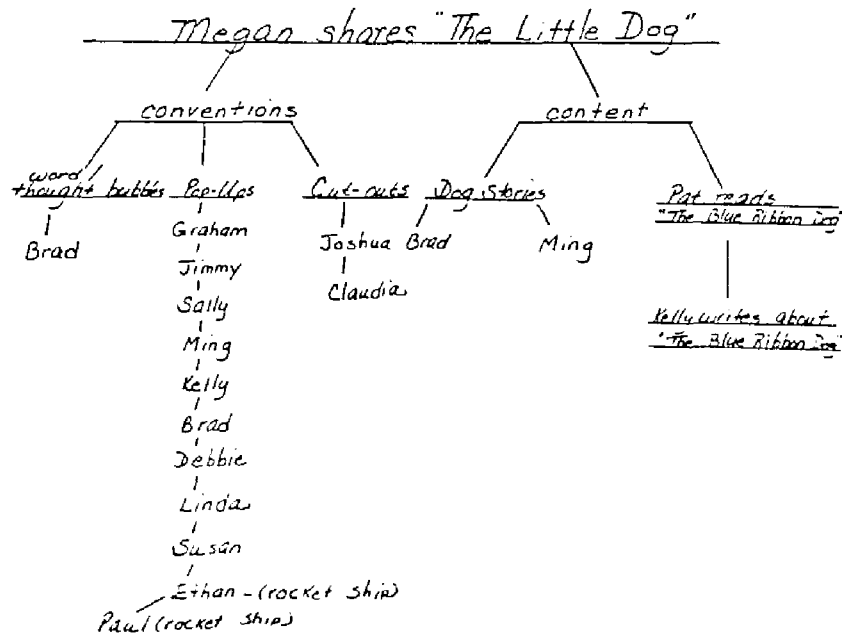
F SPRING UP
 TO DAY I ST HE DAY
 TO GO TO THE SRC'S

Murmurs of interest spread through her audience.

"Why I said, it came up is because in the book, he's supposed to like, *spring* up. See?" she demonstrated. "It's supposed to spring out like this, 'cept it won't right now, I have to fix it."

It didn't take long for this convention to spread through the class. From the beginning, it intrigued the children with its possibilities for showing movement, and extending the limits of the static page. In mid-October, I documented, through a research memo, the spread of this convention through the class (see Table 1). And as the year progressed, it became an accepted classroom convention for showing movement, used or attempted at least once by every child in the class by January. (In this statistic, I am not including the two new class members who arrived after November.)

Table 1

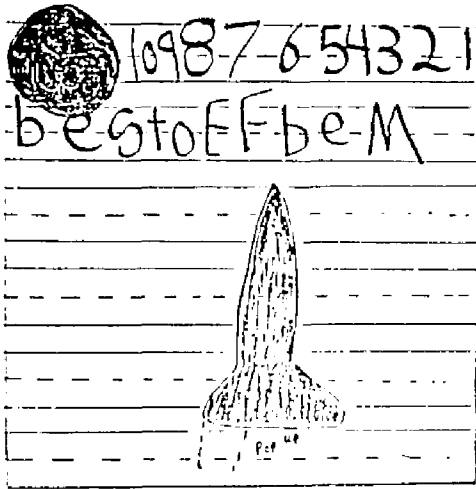


Research Memo

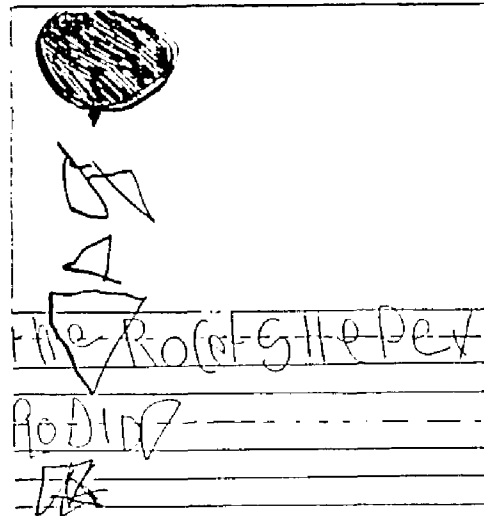
Why did the use of the pop-up convention take such a strong hold in this particular classroom? First of all, I believe, because it was done well, and *it worked* to show movement. Children followed Megan's lead, but used their pop-ups in very different ways, rejecting them when they didn't work and modifying them to suit their particular communication needs.

Paul, for example, didn't try pop-ups until he was in the midst of a space story and he decided it would help him show the space ship moving through space (see Figure 20).

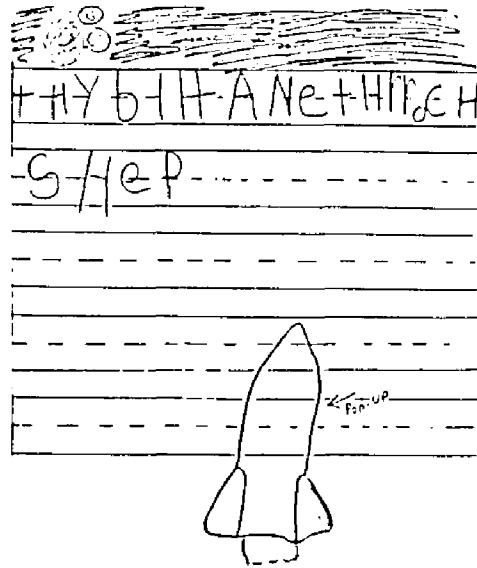
Paul's Space Story



A



B



C

Figure 20

"10-9-8-7-6-5-4-3-2-1. Blast off! Boom!" Paul read to me, then showed me how you can actually lift the space ship and fly it through the air to the planet at the top of the page.

"But then," he turned the page and read, "The rocket ship exploded." He pointed to all the shapes on the page. "That's all the pieces that broke up and some are falling."

He stopped to explain his plans before going on. "This time, I'm gonna make a new space ship, and it's not gonna explode--it's gonna go up and see aliens." Which is just what he proceeded to communicate on the last page of his story.

Paul's use of pop-ups is illustrative of the children's selective use of this convention--when it would work for the particular situation. Paul found it useful to use on two pages of his story--to show how the rocket flew through space. But he used a different kind of metaphor--geometric shapes scattered on the page--to represent the explosion.

And often, the pop-ups were used as part of the solution, with words and picture pop-ups each contributing to communicate the movement the children had in mind.

Words and Pictures

Right from the beginning, Megan used pop-ups in conjunction with verbs to show action. In her first story, it was as if the verb "spring" didn't communicate strongly enough what she had in mind, so she added the pop-up of the dog springing up (see Figure 19). In the same story she uses both words and pictures on another page to represent the motion (see Figure 21). "I love to jump over rocks," says the little dog. And Megan draws him in a

frozen moment in the midst of his jump to *show* as well as *tell* the action. She seems to feel a need to illustrate the verbs in her stories.

Megan's Dog

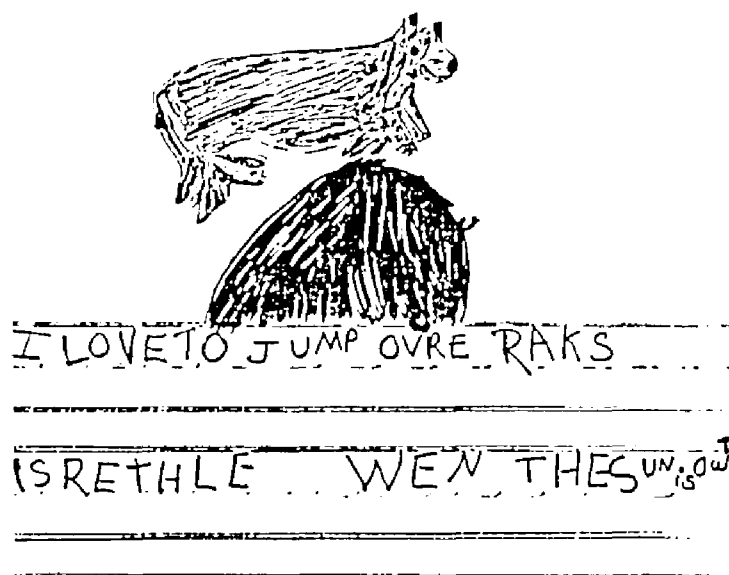


Figure 21

Kelly also relies on words --especially strong verbs, like Megan-- with her pictures. One morning, she sat down to write about a bus accident that many of the children had witnessed. She began with a picture, with part of the bus shown, the tree it crashed into, and a loud exploding sound, "BANG!" (see Figure 22). Then, she wrote the words, "The bus crashing into a tree."

Unlike Megan, who often writes first, then illustrates her words, Kelly chose to draw first to depict the movement of the crash, then felt she needed a caption to further explain her picture.

The Bus Crash

F-A-E--BUS--CRASHING
--IN-TO-A--TREE--

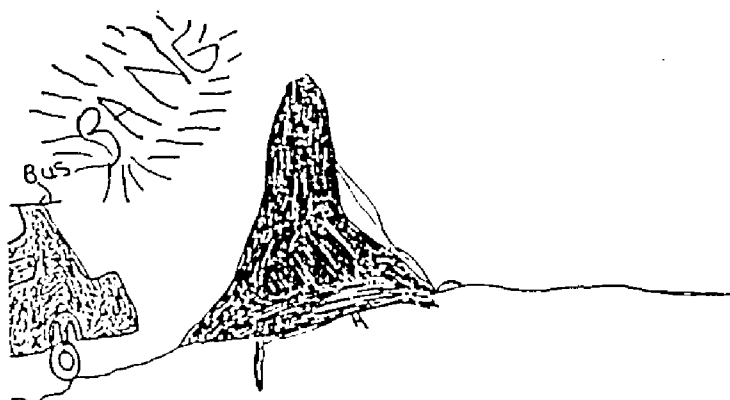


Figure 22

Although Kelly's vocabulary is quite sophisticated, she continues to rely on pictures to complete the whole story in most of her writing. Her "adventure story" is another example. "While I was watching my sun, a volcano erupted behind me," she wrote. "Choke," sputters the volcano in her picture as the lava pours out behind Kelly (see Figure 23).



Figure 23
Kelly's Volcano

While I was
watching My sun a volcano
erupted behind Me.

Kelly doesn't always draw first, then illustrate. Often, she goes back and forth between the words and the pictures. One day she began by writing the words, "I am at Debbie's trailer," then drew the picture of herself approaching Debbie's door. Dissatisfied, she added another sentence, with a more precise verb to show the action she wanted to communicate: "Another way to say it is, I arrived at Debbie's trailer" (see Figure 24).

Debbie's Trailer

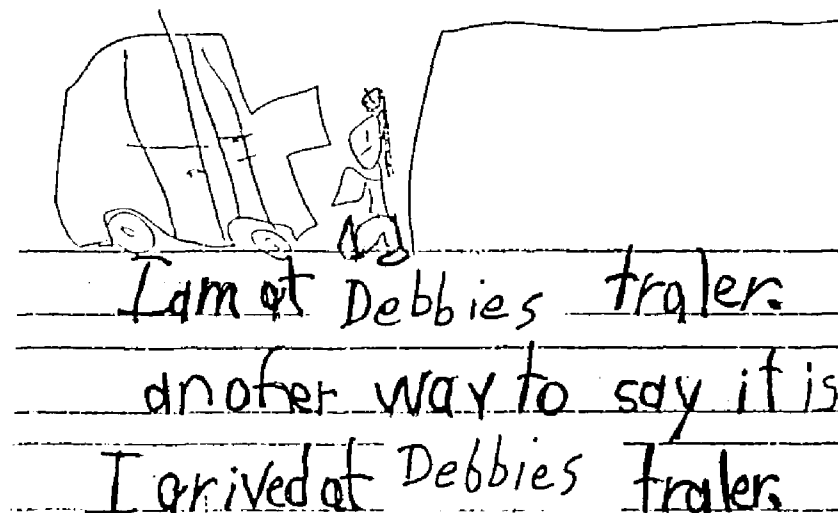


Figure 24

These are all examples from the children's self-selected topics, writing about things that they chose to communicate with others. How do these modes of expressing movement transfer to other areas of the curriculum? In order to obtain a picture of how the class showed "pieces of the action" on a similar topic, I turned once again to the "Rotten Jack Journals."

Rotten Jack

As the children made daily observations in their "What Happened to Rotten Jack" journals, they used many symbols to depict the important

elements of motion they observed. In Table 2, I have categorized the different modes I found in these science journals.

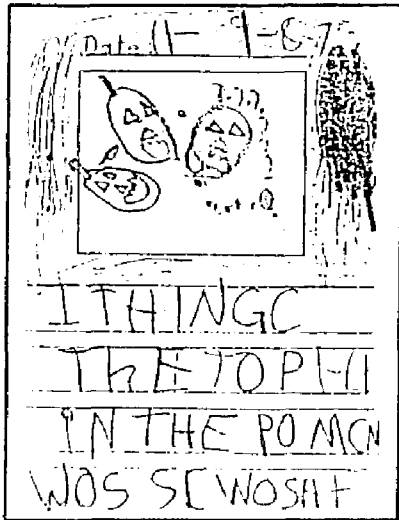
Rotten Jack Symbols for Movement

	<i>Multiple Images</i>	<i>"As it Happens"</i>	<i>Frozen Moment</i>	<i>Metaphor</i>	<i>Action Lines</i>	<i>Pop-ups</i>	<i>Words and Pictures</i>
Brad							X
Ming			X				X
Kelly							X
Nick		X			X		X
Joshua					X		
Eugene				X			X
Debbie		X		X			X
Ethan							X
Gwen		X			X		X
TJ							X
Julie				X			X
Jimmy		X		X			X
Sally					X		X
Paul				X			X
Claudia	X						X
Sarah	X				X		X
Megan	X	X					X
Susan		X					X
Graham	X	X	X		X		X
Ashley			X	X			X
Bruce		X			X		X
Linda		X					X

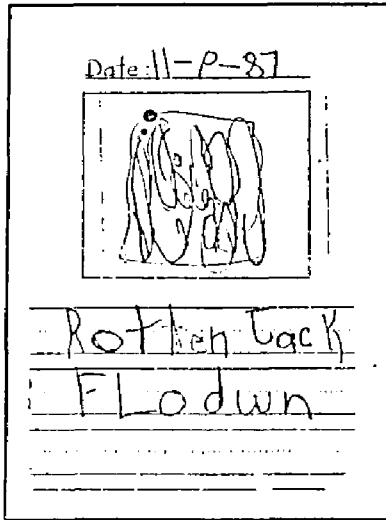
Table 2

Table 3 shows one example from each category. Megan uses multiple images as she speculates on what caused the pumpkin to fall: "I think the top fell in. The pumpkin was sqwooshed" (A). Jimmy uses swirling "scribbling" motions to symbolize the motion of the pumpkin falling: "Rotten Jack falls down" (B). The "frozen moment" of action that Ashley decided she needed to communicate was a little different--she wanted to depict the hovering flies that were attracted to the rotting vegetable: "Rotten Jack is attracting flies" (C). Some of the children, like Eugene, used the metaphor of stylized geometric shapes pointing out in different directions to represent

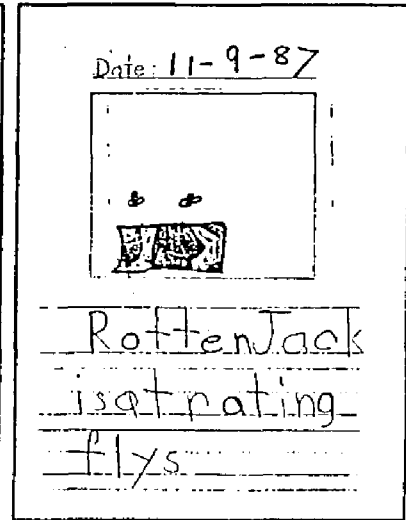
Table 3



Multiple Images

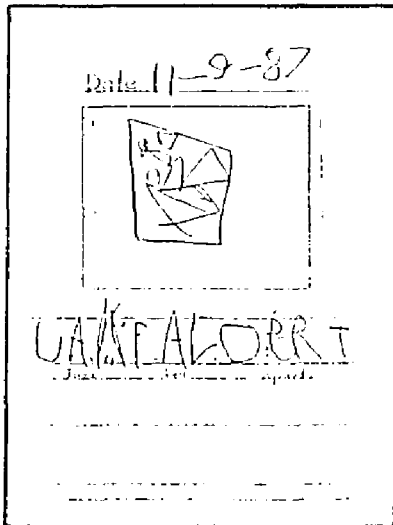


"As it Happens"

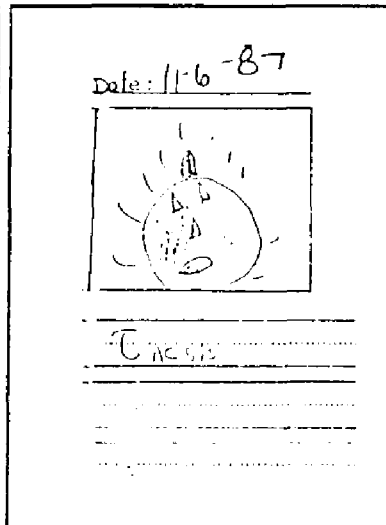


Frozen Moment

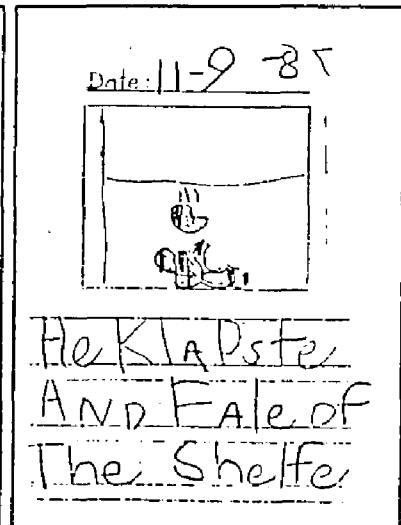
Symbols For Movement Examples



Metaphor



Action Lines



Words and Pictures

the moment of collapse: "Jack fell apart" (D). Lucy relied heavily on her audience's understanding of "action lines" to show Jack tipping over--her picture finishes the text she begins: "Jack is. . ." (E). Sarah, on the other hand, like 21 out of the 22 children, relied on words as well as her pictures to tell the whole story: "He collapsed and fell off the shelf," she wrote, using strong verbs, then other symbols to illustrate the movement in picture form (F).

And what about the pop-ups, used by every child in the course of their daily writing? Not one child chose to use transfer this convention to the science journals. I can only speculate about the reasons for this. They might have assumed that they weren't supposed to, although it would have been perfectly acceptable to Pat if they had. My hypothesis is that pop-ups were used often by the children, as I demonstrated above, because they *worked* in those situations to show movement. The motion most of the children wanted to depict in their "Rotten Jack" writing was the motion of falling down, or callapsing. Pop-ups are simply not a very good convention to show this kind of action, while some of the other modes were. Interestingly, almost all the children relied on a combination of words and pictures to show some kind of movement. This points out the flexibilitiy and versitality of the children's use of different symbols--and symbol systems--to communicate motion.

Conclusion

Throughout history, men and women have tried to suggest motion on a static surface. Some have relied primarily on the printed word to call up memory images of past experiences, using strong verbs, and recreating other

sensory indicators, like crashing or whirring sounds. Even young children rely on these techniques, incorporating words like "Bang" or "Choke" into their pictures, or using lots of action words like Megan's "springing" or Paul's "exploded."

Others have relied on pictures to indicate movement. Artists like Tintoretto, Goya, and Michaelangelo were masters at showing the strains that actions put on the body, elongating and stretching figures, or showing the facial distortions that appear when people force their bodies into action. They created the kinds of symbols that would work to communicate motion for their particular purposes.

And so do the children. They create metaphors like Graham's angry New York car biting at his heels; freeze frogs flying through the air; and create pop-ups to make the water seem to splash out of the pages of the book. They are skillful interpreters of a movement-filled world, able to translate in their own ways the "pieces of the action" that are a part of their world.

CHAPTER VI

**THERE'S MORE THAN BLACK AND WHITE IN LITERACY'S PALETTE:
CHILDREN'S USE OF COLOR**

Close your eyes for a moment and imagine a simple scene: Picture yourself taking a fresh lemon and slowly cutting it in half on a cutting board. What did you see and feel? Most people report a vivid image of the texture, smell, and above all, color, of the lemon. And when they try to *communicate* rich mental images, people often rely on references to color to bring an important dimension to their literacy. Children, too, are aware of the importance of color in transferring their images, memories, and stories--through the page--to others around them.

As Kelly wrote about her visit to Debbie's trailer, she was seeing colorful pictures in her mind. "I'm seeing Debbie's trailer and I'm seeing that it's bright silver and I'm seeing Debbie playing outside," she explained to me as she worked one morning. Her use of black and gray crayons to try to transfer that "silver" color to the page was not random, but a deliberate testing out of what colors would work best to communicate her picture of Debbie's trailer.

As I reviewed the body of research relating to children's use of color, I was struck by the absence of any mention of the child's intentions--of what his or her purpose for using the colors might be. In fact, the experiments meant to test color usage ignore that factor altogether. Ambrose Corcoran, for example, hypothesized that pre-school children use colors "in the exact order of presentation" (Corcoran, 1954, p. 106). In order to test this claim,

he set up four colors in a trough in front of an easel and asked the children to paint. He found that 12 out of 19 children used the colors in the trough in a left to right progression "at least once out of two turns at the easel." Based on these scant results, he concludes that "the mode of painting is to apply the color without conscious deliberation" (p. 113).

In another rather bizarre study, experimentors Carol and Edward Lawler presented young children with mimeographed sketches of a girl wearing a dress, and read them two three-sentence "stories" about the girl-- one happy and one sad. The children were then shown two crayons, one yellow and one brown, and asked which of the two colors the girl's dress should be because she was happy [sad]. Their results and conclusions? "Significant trends showing brown associated with a sad mood and yellow associated with a happy mood were found. . .The fact that pre-school children who have been subjected to relatively little cultural conditioning have strong color-mood associations similar to those found in adults gives some support to Guilford's theory that color choices are biologically determined" (1965, p. 31).

Both of these studies suffer from limitations that are common to the study of children's abilities.¹ The most severe limitation is the context, or lack of it, for these studies. The children are given tasks to "perform" for adult experimentors. Not only do they have no previous experience with these adults, but their options are severely limited in *how* they can respond to the tasks they are given. These researchers set up their experiments in order to prove, or perhaps disprove, their pre-existing assumptions, then draw far-reaching conclusions from those contrived studies.

¹For a further look at similar research on the development of color references, see: I. Child, J. Hansen, & F. Hornbeck, (1968); and C. Valentine, (1962).

But when children are working to communicate ideas that they *want* to share with others, they experiment to add texture and dimension to their literacy. Their explorations are not random, however. Because they find that color helps them to communicate, they use it consciously and intentionally:

Ming can't find the exact color she needs one morning and has to mix green and brown. As she explains to me, "This is my hand all muddy-green-green mud from working in the dirt. You can tell by the color."

Paul hums as he draws a picture of himself, then frowns, "The markers are running out." He switches to crayon, then explains how he will color his hair. "I better use yellow for my hair, 'cause it's sort of yellowish blonde. If you use yellow and put pencil very lightly, it looks like dirty-blonde hair."

"I'm drawing me watching the hermit crabs," Kelly tells me. "But my eyes are really hazel, not blue. I couldn't find a good crayon for hazel. I'm gonna draw my hair darker, too. All the blondes look too yellowish, and I was gonna save yellow for the skin."

In these examples, the children are all consciously experimenting with the medium--discovering what it can and can't do to help communicate their messages. They are also quite aware that colors aren't viewed in isolation, but that they influence each other. In the example above, Kelly knew that using shades of yellow for skin and hair wouldn't work, and on another day, she consciously chose a pencil to do the title on her red cover, explaining to

me, "I want this for my title. On the red, when you write with a pencil, it looks like gold shines."

Other children experimented with actually mixing colors and recording it. Gwen told me she got the idea to do her book, "A Book about Colors" because "Sarah was working on colors, somebody else was writing about shapes, so I just thought about it."

"There are a lot of different colors in the world," reads the first page of her book, with globes of color arranged above. On many of the pages, she records her experiments mixing colors.

"I tested them out," she explained, showing me the sheet of paper, full of colorful crayon scribbles, where she had tried combining different colors before putting them in her book, for later reference and use.

Categories for the Use of Color

Color for Detail

The major reason that the children use color in this first-grade classroom is to help communicate their detailed observations; they often need to record and share with others certain details which can best be communicated with color representations. The following excerpt from my field notes shows the care that Ming took as she, with Claudia's help, worked on a page of her "friends" book.

Excerpt from Field Notes (9/22/87)

Claudia directs Ming on the coloring of Pat's pants.

Claudia: Black for pants.

Ming: Don't worry. If I make a mistake, I have myself to blame.

Claudia: Why?

Ming: 'Cause it's my picture. Gotta make her head now.

Claudia: Black.

Ming: Kinda black and white mixed. (Draws and colors) Claudia, you come over to my house sometime?

Claudia: Why?

Ming: Play. . .You gotta watch out for my brother. Now, you (said to Ruth). You have a blue skirt, arms, make your hands in back. What color socks? (She looks and keeps up a running commentary as she draws.) Brown, brown, brown, hair. Okay, now. (Gets up and goes over to take a look at Brenda. Returns and sits down to work, black crayon in hand.) Now, black dress. . .

Claudia: Black, yes.

Brian walks by.

Ming: (to Brian) I might put you in my book. (Thinks about it as he walks away.) No, no boys in this book. (She draws and talks.) A bunch of flowers on her shirt and green leafs. . .Gotta make a face. . .(Scoots down on the floor to see Brenda's tights. . .)

Claudia goes and checks, too.

Claudia: Black shoes!

Ming: Blonde hair. (starts to color it in with orangish-blonde crayon)

Claudia: No! Not. . .it white! You forget her shoes!

Ming: I'll make her shoes last.

Over a month later, Claudia was writing about a trip to the apple orchard with the class and was carefully drawing herself with the teacher. She made many conscious decisions concerning color--the tools that would best convey the colors she wanted to use, and a compromise between what Pat was actually wearing and what Claudia **likes** her teacher to wear, as this excerpt from my field notes shows:

Excerpt from Field Notes (11/10/87)

Claudia: Now, I make what she wear today. (hums)

Ruth: Claudia looks happy in the picture.

Claudia: Teacher does, too.

Ruth: So does Mrs.McLure. Yup.

Claudia: Like my teacher dress. I'm drawin'. . .'cause. . .

Ruth: So you have pants on, and Mrs. McLure has a dress on.

Claudia: Yes. (laughs) OK, I no color--what my teacher has. . .

Ruth: Oh, what she has on today?

Claudia: Oh, blue. . .This a pencil. . .I try this one, this a pencil.

Ruth: This is kinda red. . .

Claudia: Now, blue. Yes!

Ruth: Oh, I see. She does have both these colors on today, doesn't she?

Claudia: MMM. Her pants black?

Ruth: I think so.

Claudia: Oh, no, this color.

Ruth: Oh, brown?

Claudia: Yes, this color. No, my teacher. . .yesterday. Yesterday.

Ruth: Those were the clothes she had on yesterday?

Claudia: No, the day. . .I no like, I no like when my teacher wear this. .
.black.

The details the children represent with color are not all related to people, however. Kelly, for example, created in her book about butterflies, careful drawings using , as she assured me, "only the colors butterflies can really be." And Ming, in her first published book--"The Little Red Car"--used changes in color to show how the car faded as it aged. In her explanation as she read the book to me, she stressed that it was important that the last car is a different color. "It looks different 'cause it's *older*."

Cultural and Symbolic Effects of Color

Colors are seen, felt, used, and responded to in our everyday lives; there is no escaping how meaning laden colors become for both adults and children. As Hans and Shulamith Kreitler write, "[I]n daily life, colors are bound up with forms, objects meanings, situations, memories, any or all of which may determine the pleasure or displeasure we feel when seeing colors" (Kreitler and Kreitler, 1972, p. 33).

Originally, I had identified two separate categories for the cultural and symbolic effects of color in the children's writing and drawing, but as I read the literature, I found the two inextricably related. Culturally shared meanings are often tied to the semiotics of a situation and can change very quickly in a culture. Two experiments on associations to color, serve a striking example. In the first experiment, performed in 1941 in Jerusalem,

(Kreitler 1956) yellow proved to be an extremely unpleasant color for most of the subjects (86%), as it reminded them of the "yellow patch of the Jews." On the other hand, blue appeared to be an optimistic color of hope for 72% of the subjects, since the "'blue shirt,' the popular uniform in Palestine at that time, stood for generally shared hopes for a national revival for a socialist and brotherly society" (Kreitler and Kreitler, 1972, p. 60).

In an interesting repetition of this experiment on another generation of Israelis in 1960, the results were very different. This time, there was a great preference for yellow as the color of the reviving desert in the country (41%), but almost no (3%) association of blue with hope. (Kreitler and Eblinger, 1961).²

An example a little closer to home is the deliberate change of the colors in fast-food chains in America. A decade ago, bright reds, blues, and oranges represented "new, fast, and efficient" for restaurant chains like McDonald's and Burger King. In the late '80's, these chains are purposefully changing their colors to those which represent "health" to their consumers-- notably browns and greens. (Boston Globe, February 1988) (Next time you drive by a Burger King, notice that their traditional orange roofs are quickly being converted to brown!)

Colors and emotions are intimately related, and both the visual and verbal languages reflect that relationship. There are many metaphoric references to color: some people are said to "see the world through rose-

² Three of the research studies quoted here are cited by Kreitler & Kreitler (1972) and are unavailable to me in the original, either unpublished or untranslated. The three sources are: Kreitler, H. (1956). Psychologische Grundlagen des Kunstgenusses. Unpublished doctoral dissertation, University of Graz, Austria; Kreitler, H., & Eblinger, S. (1961). Tension and relief of colors and color combinations. Unpublished manuscript, Tel Aviv University; Stern, E. (1955). Die tests in die klinischen psychologie. Zurich: Rascher Verlag.

colored glasses," have a "colorful background," or "get the blues." On the visual side, Rorschach gives an important role to color in his inkblot test, observing that "the gloomy person is one to whom everything looks "black," (Rorschach, 1951, p. 99), while Stern contends that, in Western culture, "a strong attraction to or revulsion from the blue colors is characteristic of introverted and emotionally highly controlled individuals, while a fascination with red suggests aggressive impulses. (Stern, 1955) (Based on the Kreitler experiments in Israel, however, this may have been reflective our culture in the 1950's, but no longer a true observation.)

For the six- and seven-year old children I observed, color is also meaning laden. For Claudia, purple is a color that shows happiness. She was pleased to see herself included in Ming's "friend book," and watched as Ming carefully drew Claudia in the black and yellow outfit she was wearing. She looked at the drawing of herself, and smiled. "I smile. happy. " She reached into the crayon box, found what she was looking for, and carefully colored in her own face purple (see Figure 1).

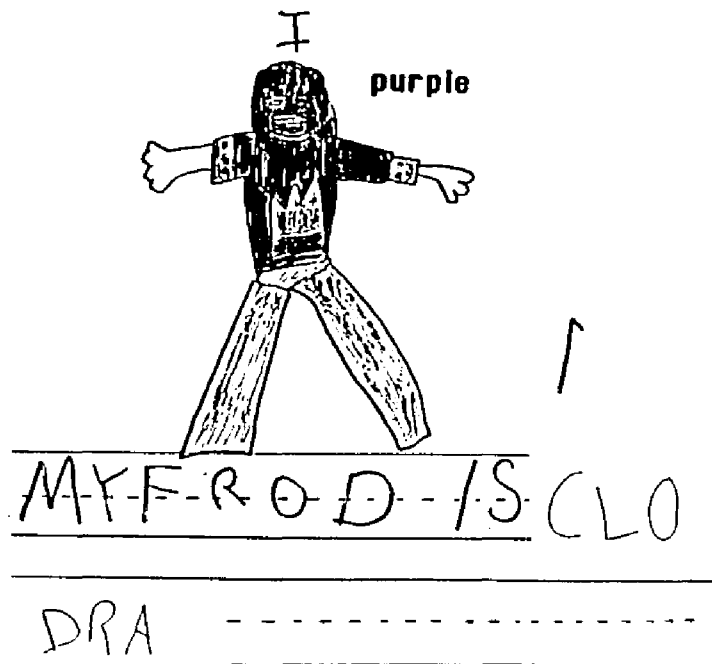


Figure 1

Ming's Friend, Claudia

Sometimes the color meanings derive from the larger culture. One example is Eugene's fascinating drawing depicting the end of the day. (This example actually represents all the dimensions I categorized in one page: Time, Space, Movement, and Color) (see Figure 2).

The Day is Over

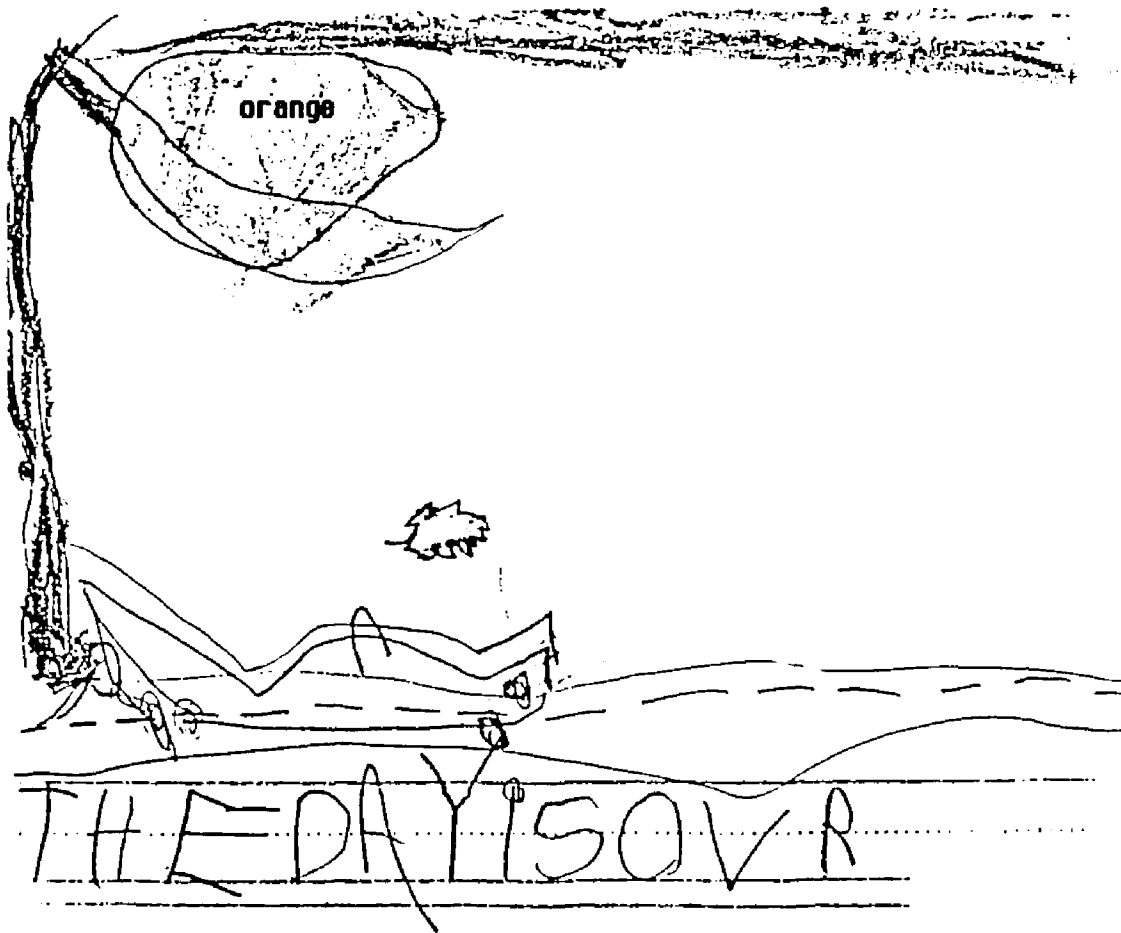


Figure 2

Eugene explained what he meant to show on this page. "See, the day is over. That's some of the light from the moon, and it comes out as this light." He pointed to the lines reflecting off the car. "A tree's in front of the moon," he went on. "This is a big harvest moon. That's why it's orange, or

you wouldn't know it was fall. And the moon shows that the day is over. Sometimes I watch the moon, and the falling stars with Paul--that's my Dad."

To Eugene, a big orange moon is a symbol of the autumn season. He doesn't need to say that it's fall, because he assumes that his audience shares the same cultural meaning for an orange moon.

Ming knows that her audience will associate the color blue with water, even though water is often colorless. In her flower story, she explained about her "fancy watering can." "This is the watering can," she told me. I wanted to make it fancy. It's glass, so you can see the water inside. blue water." She looked up at me from her coloring to explain, "You can tell there's water in it, so I made it blue."

This use of color may be a learned convention. Many of the books that surround Ming and the other children *do* use blue to represent water. Linda uses another color convention in her apple story, and again, I can only speculate that she has learned this from the books she has seen and read. As she drew and colored in her "fake apple that you can eat," she carefully made white semi-circles on the side of the red apple. "These are the shines on the apple," she explained. "They almost make it look like it's smiling!"

These children are learning the uses of color in the books that are read to them and that they read themselves. In an interesting conference between Sarah and Sally early in September, I was able to observe them as they struggled, and ultimately came to terms with, the use of black line drawings with some water color tints in an illustrated "Snow White" story.

"This story is pretty much the same as mine at home, but the pictures are real different," Sarah told Sally. "Her lips. . ." she pointed to the cover picture of Snow White, "should be more red. See, they're pale here, not real red."

She flipped through the book, and together, Sarah and Sally scrutinized the lips on each illustration of Snow White. "They're black here," Sarah shook her head, "And black again, and again."

The illustrations on these pages were mostly outlined--Snow White's lips drawn in black, but never filled in with color. Although I would not have interpreted these lips as black, clearly Sarah and Sally did.

Sally was adamant. "Her lips should be red. Red like in the movie."

But Sarah kept trying to figure out what the illustrator had in mind. "They're always black here, though." She looked closely, and pondered for a minute. "They're not really black inside, they're actually white inside."

"They're just supposed to be pale, then, I guess. Like on the cover," Sally decided.

The Influence of Light

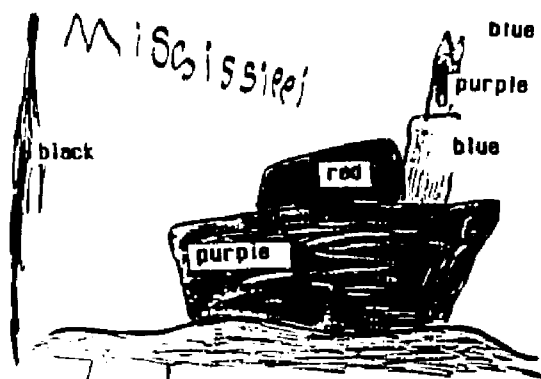
Just as children are working out the culturally shared conventions for the uses of color, they are also observing the world around them, and finding that lighting has a strong effect on how colors are perceived.

When Kelly worked her Mississippi River story (also discussed in Chapter 3), the use of color was extremely important to her (see Figure 3). Excerpt from Field Notes (9/28/87):

Kelly: This will be the shore here, and there always has to be water for the river. . .See that? The boat. It's a steam boat. The brown is for the land. (takes a blue crayon) This is the water.

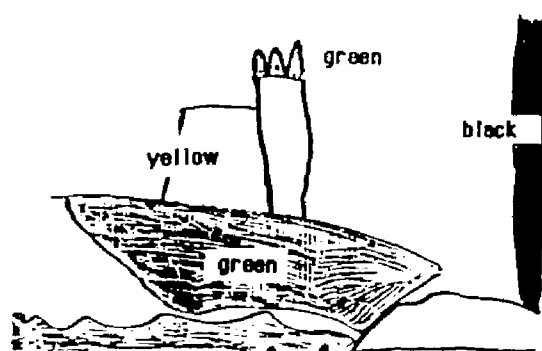
Ruth: Seems like you draw in pencil, then color it in.

Kelly: Yeah, so I know how to color it, and it also helps me to remember what to write there. See, the different pages, the steamboat is always different colors. It fades into different colors by the rain.

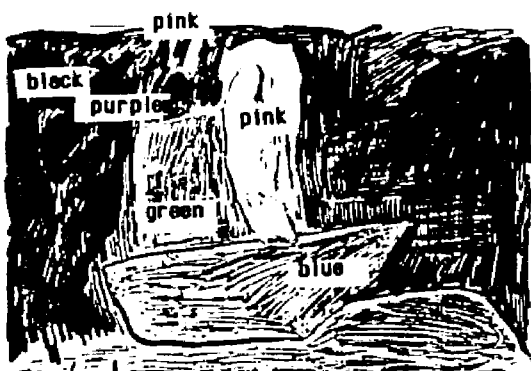


The
Mississippi
river,

A



a Mississippi
river boat boats
after a storm.



The Mississippi
river in p st
orom.

B

Figure 3
Kelly's Steamboat

Without Kelly's explanation as she worked, I would never have known how deliberate her color changes were in this story, chosen to represent the reflection of the light as it changes through a storm.

Many adult artists--both writers and painters--are also concerned with the effect of light on colors. Consider, for example, the contemporaries Baudelaire and Delacroix, nineteenth-century giants in the worlds of art and poetry. Delacroix was a noted "colorist"--who worked to create the impression of light as it occurred in nature, mixing colors so that his audience would see no isolated colors, but the blurring of color lines that light creates. He was known for omitting black from his palette, because light always modifies it to another color.

Baudelaire was an ardent admirer of Delacroix, writing analyses, as well as poetic odes, to his works. In Baudelaire's salon reviews of Delacroix's paintings, Baudelaire stresses above all the painter's "unprecedented achievement in harmonizing colour" (Baudelaire, "The Salon of 1846" quoted by Elizabeth Abel, 1980, p. 47).

In Baudelaire's writing, that same harmonious light-reflecting atmosphere is important. But, as various critics have pointed out, he uses color words only rarely. "Rather than literally adapting painterly techniques, Baudelaire chooses images that evoke a harmonious atmosphere. One striking aspect of Baudelaire's poetry is the frequency with which he uses imagery of sunshine (one critic has calculated that Baudelaire uses the word "soleil" sixty-three times in "Les Fleurs du Mal," making it fifth in order of frequency), especially of sunlight diffused at sunset or through mist in such a way that it dissolves a scene into a flow of refracted light" (Abel, 1980, p. 50).

Although the children do use color words, much of their writing as well as drawing about color is in terms of light. Ming was writing about rainbows one day--a topic many first-grade teachers come to dread. But Ming was working out information she had learned about the light of rainbows.

"I love rainbows," she read to me. "They come from light and raindrops by their light going together in the raindrops. It 'affects' a rainbow" (see Figure 4).

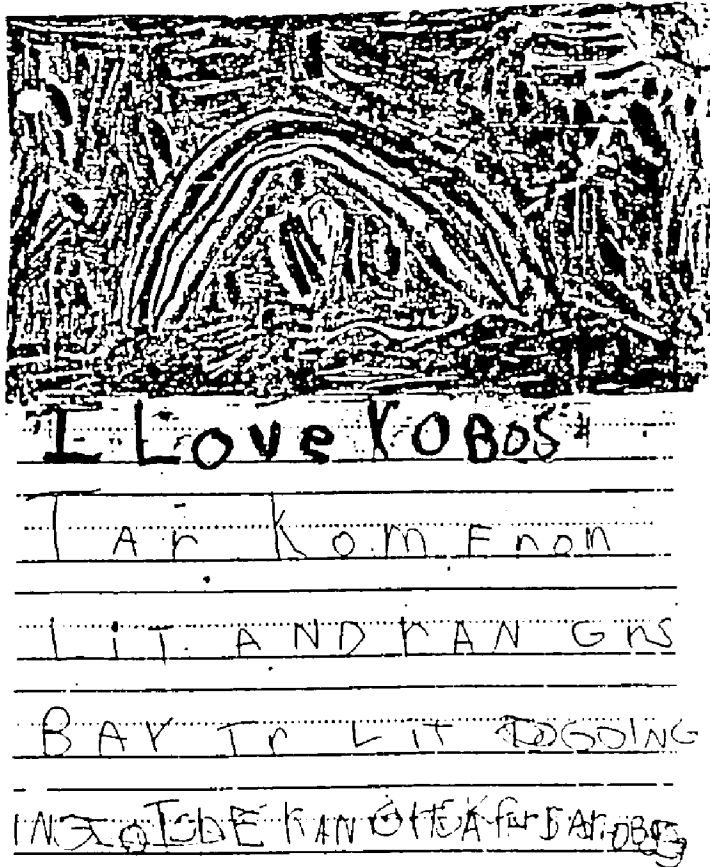


Figure 4
Ming's Rainbow

Megan was the first to appreciate and comment on TJ's representation of the effects of light on color in the atmosphere. Her favorite page of his "School Story" was the page which read, "It was raining the next morning."

"I like the way you made the rain different colors," she commented.

"You mean. . .um. . .you mean you like that part in the color right there?" he asked, pointing to a corner of the picture. "That was the sun trying to come out a little bit. It looks crazy like a meteor."

Megan nodded, " I like the rain. . .like. . ."

"You mean right there? I added blue, green, yellow, and stuff to make it that color," he explained. " The way how I did the rain was I took the point and I slided down and stuff" (see Figure 5).

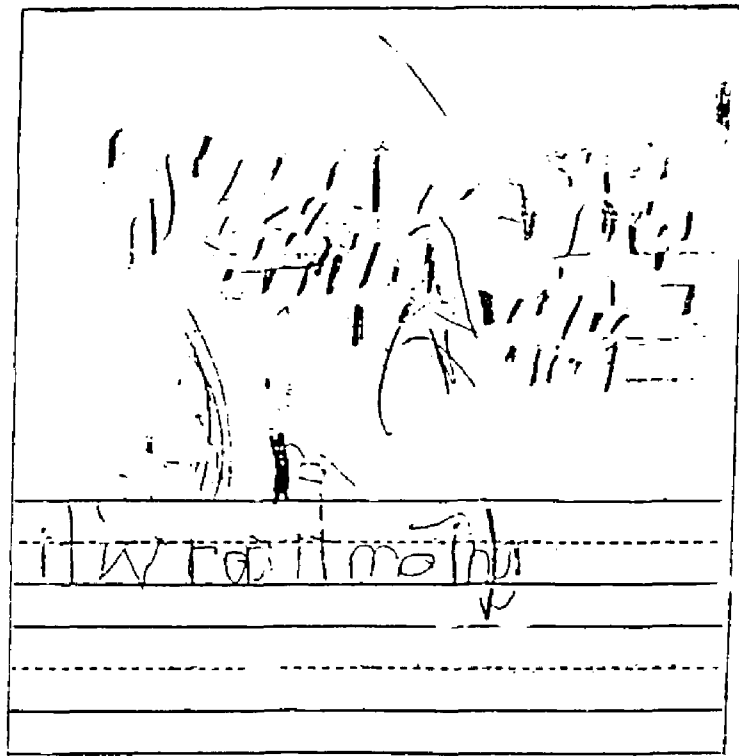


Figure 5

TJ's Rain

Claudia, too, both writes and draws about the effects of light, or in some cases, the absence of it. One day, as I sat next to her during writing time, she drew her cat Mathilda with an orange crayon. When she finished, she took out a black crayon and drew a dark streak across the page.

"Night!" she exclaimed, then proceeded to color in the whole page with a black crayon, covering even the cat drawing.

"My cat likes night," she said aloud slowly, as she wrote the letters M C L N.

Claudia is also fascinated by the use of colors in the books she reads, and especially the conventions for showing light illuminated in dark areas. During reading time early in the year, Claudia was looking at a picture book about Pinnochio, a book which had been read to her at home. She thought it was very funny, she told me, that some of the pictures have "paint" (are colored) and others don't.

"Some paint. . . maybe people paint," she muttered as she look through the pictures. "He fall down." She pointed to the tear on his face. "He cry." Then she came to the part where they are in the fish's stomach. In the picture, there is a table with a lighted candle, illuminating just the area around the table.

"Light? Light? Why? Light in tummy? Why?" She turned to Kelly. "Look. This light. Why a light in tummy?"

Kelly looked up, glanced at the picture, and responded, "That is silly."

Claudia, picked up the book and brought it to her friend Ming, "Look! Look at light."

Ming, however, was more interested in her own reading, and merely shrugged, keeping her eyes glued to her book.

Undaunted, Claudia continued to try to find people to share this strange picture with. "Mrs. McLure! Look at light in tummy!"

From this careful look at the children writing and reading, I learned that a colorful palette appears to add dimension to the children's literacy in

three main ways: to record the details they have observed, as a cultural or symbolic representation, and to show the effects of light.

Color in "Rotten Jack"

When I turned once again to the "Rotten Jack" journals, this time to analyze the classwide use of color, I expected to find the three main categories that stood out so clearly in the children's other writing and drawing. And, I did. Just like in other areas of the curriculum, when the children turn their efforts to recording their observation of the pumpkin they use color for detail, for symbolic representation, and to show the effects of light. But I also noticed some differences. Table 1 summarizes the classwide use of color in the different categories.

Rotten Jack: Symbols for Color

	<i>Detail</i>	<i>Cultural and Symbolic</i>	<i>Light</i>	<i>Color Metaphor</i>
Brad	X		X	X
Ming	X			X
Kelly	X			
Eugene	X			
Nick	X			
Joshua	X			
Nick	X			
Debbie	X			
Ethan	X	X		
Gwen	X			
TJ	X			
Jimmy	X			
Sally	X			
Paul	X			
Claudia	X			
Sarah	X			X
Megan	X			
Susan	X			
Graham	X	X		X
Ashley	X	X		
Bruce	X			
Linda	X			
Julie	X			


Table 1

I found much more use of actual color words, like orange, black, red, or brown. In fact, 18 out of 22 children in the class relied on these color words--as well as color pictures-- to record their observations. Only four children used color in their pictures with no words to enhance those important color aspects.

Table 2 shows examples from each of the classwide categories. "Rotten Jack has brown spots around his eyes and nose and mouth," writes Paul, recording the brown detail both with his colored crayon and the word "brown." In the same category, Sarah illustrates in her picture the words, "There is white fuzz on the skin." Graham explained to me a page from his science journal where he uses color symbolically. "Jack is wet," he wrote, and colored in a blue puddle within Jack's mouth. "There's water," he explained. "I drew it blue to show it was wet. It wasn't really blue, though. Just wet." Brian surprised me by comparing Jack's state of decomposition to the effects of firelight. "He has like it was in a fire," he wrote, and showed the colorful, dancing flames engulfing the pumpkin.

Other children throughout the class made comparisons based on color, too, calling for a new category to emerge for this "color" data: the use of color metaphors. Table 2 shows two examples from this category. When Sarah tried to record how Jack looked after he fell, she reached for metaphor, writing "He looks like orange mashed potatoes." Graham, too, wanted to compare the powdery substance he observed on the pumpkin to another white substance his audience would be familiar with: "Jack is getting powder--it looks like salt," he recorded.

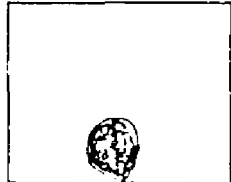
Date: 11-6-87



rotten Jack Hies
blows spots / new NO
HESLY AND NOS AND
MOWTH

Detail


Date: 11-9-87



There is white
fose on the
SEKne

Detail

Date: 11-2-87




Jack ES WAT

Cultural and Symbolic

Symbols For Color Examples

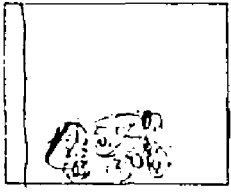
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he Has lik
It was in a
fir

Light

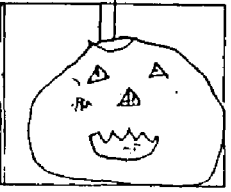
Date: 11-9-87



He Look
I like orange
MASH + Ptatos

Color Metaphor

Date: 11-6-87



Jack is
GETING PATR
ET LUKELIK
SALT

Color Metaphor

The demands of this science task--with its emphasis on careful observation--seemed to call for the use of metaphors, particularly those related to color in the children's literacy.

Conclusions

Recording and communicating color and light is an important, though often ignored, dimension of literacy. As William Bragg writes, "Light, therefore, using the full meaning of the word, transmits energy which is the mainstay of life, and gives to living beings the power of observation" (Sir William Bragg, The Universe of Light quoted by Gyorgy Kepes, 1969, p. 134).

The six- and seven-year-old children in Pat McLure's first-grade classroom use this "power of observation," integrating words and pictures in order to communicate messages. And color helps them represent significant details, symbolize the happiness of a certain mood, communicate the effects of light, and even reach for metaphors to share an observation. But it isn't only children who integrate words and pictures as they wrestle with depicting color. Think of Baudelaire's use of sunlight, or the struggles of novelist Sherwood Anderson, who writes, "There was a kind of painting I was seeking in my prose, word to be laid against word in just a certain way, a kind of word color, an arch of words and sentences, the color to be squeezed out of simple words, simple sentence construction" (Hjerter, 1986, p. 78).

Children need more than the black and white page--or the purple and white mimeograph paper--to communicate their messages. As the poet/artist Antoine de Saint-Exupery reminds us:

"It is impossible to survive on refrigerators, politics, balance sheets, and crossword puzzles, you see! It is impossible! It is impossible to live without poetry and **color** and love" (Foulk, 1956).³

³ This quote is from a letter to "General X," left in his barracks room the day Saint Exupery disappeared in his plane.

CHAPTER VII

DIMENSIONS OF LITERACY: CONCLUSIONS AND IMPLICATIONS

Conclusions

[Language] is a tool because with it we order our experience, matching the data abstracted from the flux about us with linguistic units: words, phrases, sentences. What is true of verbal languages is also true of visual "languages": we match the data from the flux of visual experience with image-cliches, with stereotypes of one kind or another, according to the way we have been taught to see (Hayakawa, 1969, p.8).

Children are using both verbal and visual languages as tools to help them sort out, understand, and cope with their world. As they are becoming acculturated to the concepts that guide the society they live in, they rely on these languages, or inner symbol systems, that they are creating. And they use and refine these inner systems when they are involved in literacy events--learning ways to translate and communicate them to the limited dimensions of a page.

The preceeding chapters have dealt with the key dimensions I found the children to be coping with as part of their literacy acquisition: time, space, movement, and color. The chart below (see Table 1) summarizes the categories of symbols I found in each of these dimensions. But in real life, these dimensions are closely inter-related; they cannot be neatly packaged and separated. As Kepes (1969) writes, "The perception of physical reality cannot escape the quality of movement. The very understanding of spatial facts, the meaning of extensions, or distances, involves the notion of time--a fusion of space-time which is movement" (p. 179). "[And] to experience

color," he adds, "is to interpret the very core of physical reality in terms of sensory qualities" (p. 134).

Table 1
Dimensions and Symbol Categories

<i>Time</i>	<i>Space</i>	<i>Movement</i>	<i>Color</i>
Time's arrow	Relationship of size	Multiple images	Record details
Time's cycle	Transparency	"As it happens"	Cultural
Words and pictures	Overlapping figures	Frozen moment	Light effects
	Mixed perspective	Metaphor	Metaphor
	Bird's-eye view	Action lines	Words and
	Words and pictures	Pop-ups	pictures
		Words and pictures	

Because the space-time continuum is such an integral element of our existence, its influence on our literacy is inescapable. The relationship of our sense of personal time, to the time sequences that are occurring around us are even considered by some philosophers to be the core of narrative plot (Brockelman, 1985; Ricoeur, 1984; Hillman, 1975).¹ If we are indeed in the midst of a huge change in our present conceptions of time and space, as Jeremy Rifkin (1987) argues, what will the effects of "the new nanosecond culture" and "bigger is better society" have on our literate behaviors? Each of the dimensions analyzed in this dissertation open up similar research avenues that invite further investigation.

Besides summarizing what categories occurred *within* each dimension, Table I also points out some similarities *across* dimensions. The appearance of a metaphor category, both in depicting color and movement, emphasizes the key role of metaphor in working out and expressing new meanings. "A

¹ For a fascinating discussion of the influence of time on narrative, see Paul Brockelman's *Time and self* (1985), especially, chapter 6: "Life values and narrative structure," pp. 54-69.

metaphor, in short, tells us something new about reality" (Rocoeur, 1976, p. 53) When Graham creates gaping jaws to express the impatient driving of a New York motorist, or Sarah describes a rotten pumpkin as orange mashed potato, they have created metaphors in which the meanings of the pictures or words have been extended beyond their familiar sense, telling us something new about reality. And Graham and Sarah come to know something new, too--struggling to express through metaphor and analogy the meaning of something helps us come to know it (Berlin, 1978; Ricouer, 1977).

Most importantly, in every dimension I investigated, the children used words and pictures together in order to communicate their inner designs. When pop-ups or action lines didn't quite express all the aspects of movement the children had in mind, they often found that a strong verb could help. And when prepositions like 'on' or 'over' proved imprecise, other children found a diagram, picture, or map could complement the words to make the message clearer. The way that the visual and verbal symbols worked together was not clear-cut, but shifted back and forth, sometimes relying more on words and sometimes more on pictures. There appeared to be two main influences on which symbol system dominated a literacy event: the nature of the task and the "cognitive bias" of the child.

Over and over, I found that children shifted their strategies and their symbols depending on the task at hand. Consider, for example, the depiction of movement in the Rotten Jack journals. Although using pop-ups to express motion had been used by every child in the class, none used it to show the "falling down" motion of the pumpkin--it simply wasn't effective. And when children *did* use this convention in their stories, it was a conscious choice: Paul didn't use pop-ups until he needed them to show his space ship flying

up across the page to visit aliens; Megan never used it in her witch story, but found it effective to show her dog "springing" up, or swinging on a trapeze.

There were days when Kelly's writing booklet was filled with page after page of words and hastily scrawled illustrations when she wanted to tell about how she was learning to master the patterns in her math "pattern block book", while on other mornings, her detailed drawings would convey almost all of the dimensions of a bus crashing into a tree, with the words clarifying certain elements after the pictures were complete. The symbol systems that children use evolve to enable them to cope more efficiently with the task at hand.

The "cognitive bias" of the child also has some influence in the choice of symbol systems. Jerome Kagan (1987) believes that all of us are born with what he calls a "bias"; it might be a bias toward shyness or assertiveness, for example, or toward a more active or passive nature. These personality impulses are tempered and shaped by the culture and environment to which we are exposed. I believe we are also born with a "cognitive bias" in terms of visual and verbal thinking as well; not as popular psychology would have it, in terms of "right-brained/left-brained thinking" but along a continuum, where some of us tend to rely more on one than the other. Ming, for example, is much more likely to depend on pictures rather than words across a range of tasks, while Ashley usually relies more on verbal solutions. Vera John-Steiner's work (1985) supports this view. In her analysis of creative processes, she found that children **do** have unique strategies and modes of thinking, but that these modes of thought are altered early on by their environment. "One of the most important bases for the development of a preferred mode of thought," she declares, "is to be found in the prevalence of certain activities in childhood" (p. 35).

The beginning findings of this study point the way, then, to a systematic investigation relating the workings of different symbol systems to different aspects of the task environment that confront an individual, taking into account the "cognitive bias" of that individual. Current symbolic systems theories fail to take either of these aspects into account; in future research, I would be interested in addressing these theoretical limitations.

Implicit Findings

Besides the specific dimensions discussed in Chapters 3 through 6, other important findings appeared as recurrent themes. The most important of these implicit themes is the vital role of children's **intentionality** in their literacy. Children are not randomly making marks on paper, but have certain purposes as they work. They might be testing out or experimenting with how something will look on paper, for example, as Gwen did in her color mixing experiments; or, they might be consciously trying to make something they know or have experienced clear to an audience, as Claudia did when she carefully drew all the windows of her bedroom so I would understand its spatial dimensions. What has been missing in many of the research studies on children's drawing and writing is a look at their intentions. Researchers need to listen to the children's accounts of the problems they have posed for themselves and their processes of solving those problems. We need to look at their writing and drawing in the context in which it occurs, taking into account the children's intentions rather than continuing to look at their solutions condescendingly from adult-centric viewpoints. We can clearly learn much more about Megan's abilities to depict motion when she *intends* to show a frog leaping through space than we would if we asked her--for no apparent reason--to draw a stick in its stages of flight after being thrown.

Linked to this intentionality finding is the prevalence--and the undeniable strength--of the children's **pre-planning abilities**. Some children held carefully sequenced plans in their minds, as Sally did in preparation for her story "The Ring." Although she didn't put words and pictures to paper until November, she told me she had been planning to write this story since she heard it, two months earlier! The following excerpt demonstrates many of the pre-planning strategies I found in other children's work as well, as well as Sally's.

Excerpt from Field Notes (11/5/87)
(Transcript from audiotape)

Sally: I'm trying to figure out how to explain what a deli is.

Ruth: Is that because you're writing about a deli?

Sally: I was telling Debbie about what I was writing and it has a deli in it. It's an "amazing story."

Ruth: Can you tell me about it?

Sally: OK, this is a true story. One time my mom was reading me the newspaper? And she said there was this part in it and this lady had a ring?

Ruth: Mmm-hmm?

Sally: And she lost her ring while she was working in the bakery? And she thought that she had lost it in a big crock of dough? So they searched the whole bakery, but they couldn't find it, and one time, while a different lady was, from the bakery, was eating with the lady from the deli, she. . .the lady from the bakery said, "Isn't it too bad about Anna's ring?" And then the lady in the deli said, "We found a ring in the back of our deli behind the refrigerator and we put it in a safe spot." So they quickly called up Anna and they went down to the bakery, but the spot was too safe and they couldn't find it!

Ruth: Oh, no! You're kidding! And so you're gonna write about the story your mom read you from the newspaper?

Sally: Yup. My mom's gonna be reading me the newspaper. . .and I'm gonna write the whole story in this [stapled together pages of paper].

Ruth: And you're writing the title first?

Sally: Yup, "The Ring," 'cause I knew I was. . .keep it about the same thing.

Ruth: Uh huh. So did your mom read you the newspaper story yesterday?

Sally: No, a pretty long time ago. [I later found this front page human interest story in a September issue of *The Boston Globe*] But I was writing

about Halloween because Halloween was coming up, and I thought after Halloween I would write about this.

Ruth: Can you tell me a little about what you're doing now?

Sally: Well, I'm drawing me and my mom's gonna be saying, my mom's gonna be reading me what's in the newspaper, and I'm gonna do pretend cursive, like this [she scribbles on her writing folder cover] with these wavy lines to look like the newspaper, 'cause it would take too long just to write little letters. . . [She draws and colors in her mom's feet.] I was thinking before I was gonna write about the ring. I thought it would be fun to write about. . .

Ruth: So you're drawing the picture first?

Sally: Well, it helps me, because when I'm drawing, it makes me think of so many ways I can say what's happening. I'm just thinking like, 'Well, maybe I can say this. . . and that.' I'm just thinking of what I'm gonna write while I'm drawing. But if I draw the words first, I don't know what I'm gonna write and I don't know what the picture's gonna look like.

This conversation with Sally shows the preplanning that occurred before she sat down to write, and the planning that continued as she began to work. She knows the main idea of her story is about a ring, so that's the title she writes, even though she doesn't mention a ring until the third page of her story. She plans to draw her mother reading the newspaper and has considered what symbols she can use to effectively represent the small newsprint on the page. And, Sally is also aware of what strategies help her refine her thinking into words to put on the page; she knows the content, but needs to rehearse the words in her head, and she knows that drawing helps her do this.

These pre-planning strategies--and many others--were prevalent throughout the classroom. Although some children, like Sally, drew part of their story first, others found it helpful to start by writing down words, then drawing the pictures they needed to accompany their story. Many needed to talk about their plans, rehearsing orally with neighbors before beginning to commit their messages to paper. Often, children had done some of their

"pre-planning" before coming to school, talking about possible topics with their families at home, or on the bus on the way to school. Evidence like this argues against the contentions of researchers like Carl Bereiter (1980) who assert that primary school children do *not* pre-plan; this evidence calls instead for further investigations of the types of pre-planning strategies children use, and the conditions under which they occur.

One of the underlying themes which reoccured throughout the research categories was the importance of the **influence of the electronic media** on the children's symbol weaving. The most obvious influences were in the form of certain "cartoon-like" conventions which the children picked up to some extent from books, but more often from television or home videos: conventions like word bubbles, thought clouds, or action lines. Topics were influenced by what the children had been viewing: Ghostbusters' adventures, Batman stories, "My Little Pony" episodes, or stories from the news, like earthquakes or oil tank explosion were common in the children's writing folders. But more subtle influences were also important. The key role of movement in the children's writing and drawing may have some link to their constant exposure to the action and motion filled world of television, as their criticism of Sally's cartoon book hinted. The sense of time segments in Paul's "T.V." story is another example of impact of television programming practices on children's literacy. His sense of the way narration works with television images is also evident in this story: the "narrator's voice" is always on the bottom of the page, cueing the "viewer" to the picture and word content above: Paul's information about "good food" or "the bus crash" are carefully separated from the voice which reports, "After this message, we'll be right back," or "And now, back to Good Food." These less obvious influences also deserve further study.

Future Research Directions

The categories discussed above all point to future research, but there are other untapped areas of this research project that appeared in my data which also invite further investigation. Besides the dimensions I discussed in the findings chapters (3-6), **the senses of sound and smell** could have been topics of mini-chapters: children talked about the voices they hear in their heads as they write and draw and explained their uses of word bubbles for translating sound to the page, for example. And when they needed to communicate the observation that "Rotten Jack stinks," they drew wavy lines to represent the aroma, or drew themselves holding their noses to symbolize the odors in the vicinity of the pumpkin.

A researcher interested in documenting children's abilities to take the viewpoints of others and the importance of **role-taking** in literacy could find much supportive data in my field notes. Children empathized with characters in the books they were reading, and in the stories they were writing; they projected what the reactions of different members of their audience would be to their writing and drawing; and even drew pictures as someone else would. Paul, for example, drew a picture of a person as his younger sister would draw it, explaining that that's how she draws " 'cause she's only four."

A quick review of the whole-class share transcripts point to the importance of **literacy as a tool for oral language development**. Their daily discussions, while based on text, help bring out more of the stories that the children are creating. It's an important time for the students to develop their oral language, using this mode to sort through their experiences. A more systematic exploration could document the ways that

children extend the meanings of their texts--and those of adult authors--through talk.

Finally, the **role of the teacher**--the rhythm that she or he establishes in the structure and environment of the classroom, the values that are both explicit and implicit, the theories on which he bases his day-to-day decisions (of child's abilities and of how people learn) and his own literacy behaviors have enormous influence on the emerging literacy of the children.² Every corner of Pat McLure's classroom gives clues to her learning theories and her broad definition of literacy. In March, for example, one large bulletin board was labeled, "Art Gallery," with reproductions of Matisse's art, picture-book illustrators' drawings, a watercolor painting of a horse by one of last year's first-grade students, a collage made from wrapping paper and marker drawings by another six-year-old artist, and other diverse examples of art work. Pat shows that she values the fine artists that abound in today's picture books as well as the classic "masters"--*and* she values the work of the artists who create daily in this workshop community.

Implications: Adding New Dimensions to Literacy

Picture-book author/illustrator Trina Schart Hyman echoes e.e.cummings claim that his paintings and poetry "love each other dearly," when she writes that her text and pictures "are absolutely married to each other" (Saul, 1988, p. 9). Pictures as well as words are important to human beings in their communication; we need to expand our narrow definition of literacy to include visual dimensions, answering the call of researchers for

² For a discussion of the changing role of the teacher, see J. Hansen, When writers read (1987), especially Chapter 16, "The Teacher's New Role," p. 157-167.

the recognition of "multi-literacies" *and* ways these literacies can work to complement each other (Gee, 1987; Greene, 1984; Klein, 1984; Heath, 1983).

Most classrooms deny to the children the very tools that adult authors find helpful in their work. Not just picture-book authors, but many writers rely on drawing to help them. The drafts and manuscripts for E. B. White's classic novel, Charlotte's Web, are full of sketches of pigs, barns, and of Charlotte herself, labeled with diagrams of the different parts of a spider, such as coxa and trochanter, which were later incorporated into the novel (Neumeyer, 1982). D. H. Lawrence found in oil painting a medium to work out visual images which were later transformed into metaphor; John Dos Passos and William Faulkner's pencil sketches fill their notebooks, and writers as diverse as S. J. Perelman, Gabriel Garcia Marquez, and Flannery O'Connor, began as cartoonists (Hjerter, 1986). In an account of his writing process, John Updike stresses how drawing and painting can be important tools for writers:

The subtleties of form and color, the distinctions of texture, the balances of volume, the principles of perspective and composition--all these are good for a future writer to experience and will help him to visualize his scenes, even to construct his personalities and to shape the invisible contentions and branchings of plot. A novel, like a cartoon, arranges stylized versions of people within a certain space; the graphic artist learns to organize and emphasize and this knowledge serves the writer. The volumes--cloven by line and patched by color--are imitated by those dramatic spaces the inner eye creates, as theatres for thoughts and fantasies. Unconscious, we dream within vivid spaces; when we read a book, we dream in a slightly different way, again slightly different from the way in which the writer dreamed (Updike, 1986, p. 8).

It isn't just poets and novelists who rely on combinations of words and pictures to make their messages clear. Evans-Pritchard's ethnographies are full of his sketches "rimming, like visual footnotes, the edges of the text"

(Geertz, 1988, p. 67). Stephen Jay Gould (1987) claims that pictures provided a key to his understanding of time's arrow and cycle, and urges his readers not to consider the illustrations in his book as "pretty little trifles included only for aesthetic or commercial value" (p.18). He argues that scholars have been too slow to recognize "another dimension to their traditional focus upon words alone" (p. 18). And other scientists, particularly M. J. Rudwick (1976), contend that primates are visual animals who rely on illustration. He focuses on the theme that this illustration has a language and set of conventions all its own.³

If the language of literacy is expanded to include the visual dimension, how does this set of conventions, and the "sequence of development" fit into the "hierarchy of skills"? curriculum directors will ask. Unfortunately, human development--and literacy--are messier than this. As Tom Newkirk (1985) argues, there simply isn't a convenient scope and sequence into which educators can plug children; instead, we need to allow for considerable variability in the development of literacy.

Instead of looking for ways to isolate particular skills and plan mastery learning sequences, we can turn to classroom teachers who *are* successfully opening these new roads to literacy for their students. Besides early elementary teachers like Pat McLure, there are teachers at the upper elementary, middle school, and high school levels who are expanding the dimensions of literacy in their classroom, and learning with their students.

In writing about the process of teaching, Donald Murray (1982) stresses that students must be given four freedoms: "the ability to find his

³ Rudwick stresses that "particularly in science"--and in his own field of geological science--an understanding of "visual language" is key. Two of his many articles are of relevance here: "Caricature as a source for the history of science" (1975) and "The emergence of visual language for geological science" (1976).

own subject, to find his own evidence, to find his own audience, and to find his own form" (p. 142). Teacher-researchers like Cora Five (1986), Donna Lee & Paul Nelson (1988), and Linda Rief (1988) have all given these four freedoms to their students, including within the freedom of form the ability to use visual as well as verbal solutions to their problems.

In Cora Five's fifth-grade classroom, for example, the children often write her letters in response to the books they are reading, as well as journal entries to each other. But they are also encouraged, if they prefer, to sketch important parts of the books they are reading, map out characteristics, or create flow charts. "By collecting, sorting, reading, and rereading their letters, maps, and sketches," Five writes, "I found for myself a much closer view of how children struggle and then succeed to find meaning in books. The process also kept me engaged in learning because it led me to new questions" (1986, p. 405).

In the sixth-grade classroom they team-teach, Donna Lee and Paul "Chip" Nelson, also invite children to use whatever symbol system works best for them. They describe Andy as a "reluctant writer who had no idea that writing could turn to discovery. His belief that he had nothing to say entered into every conference and prevented him from ever writing unless forced to do so" (1988). Instead of focusing on the difficulties Andy had with written conventions, they instead validated the sketches that filled his writing folder, encouraging him to include these drawings in order to communicate the things he *did* know about--particularly fish. His careful pencil drawings illustrate his non-fiction piece "Salmon and Trout of the Squamscott," and his sketches are an integral part of his plans to cross-breed fish from a local river (see Figures 1 & 2). His sixth-grade classmates' writing folders, too, are full of maps and diagrams, like the detailed layout

drawn in Jim's "The Place Intact" (see Figure 3) which accompanies his writing, or Grant's description of the way to fix a bicycle (see Figure 4).

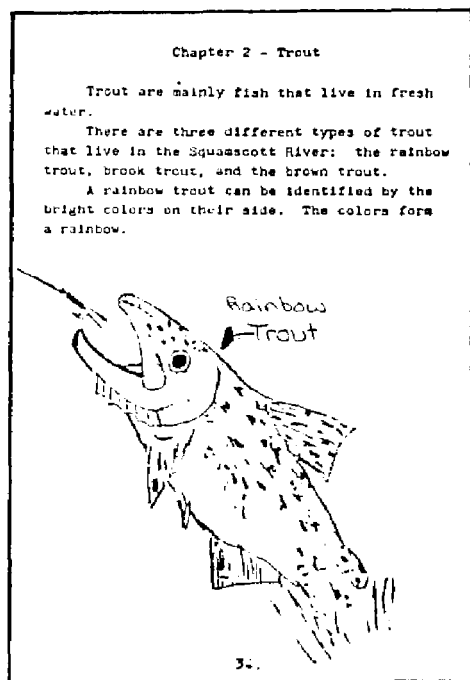


Figure 1

Andy's Trout

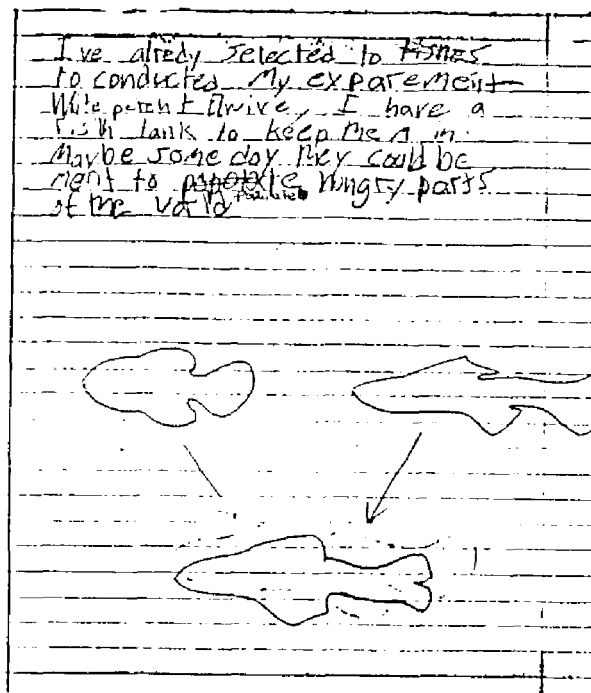


Figure 2

Andy's Draft

"With my help as a facilitator and as part of a writing community," writes Chip Nelson, "the children are responsible for their own learning." One of the ways Chip acts as a facilitator is by surrounding the children with pictures and print. Like in Pat McLure's classroom, the walls are covered with posters, charts, and graphs, and the children are immersed in the works of fine adult authors and illustrators. "Surround the children with literature," urges Donald Graves (1983), reporting the variety of connections children can make to their own work. The children in Donna and Chip's sixth-grade classroom are surrounded by the literature of master writers and illustrators, and aspects of their work turns up in the writing of the children, from Tad's Tolkein-like map of his fictitious world, to the drawings

of knights and damsels in Christine's novel, dressed in intricate medieval costume reminiscent of Trina Schart Hymen's artwork.

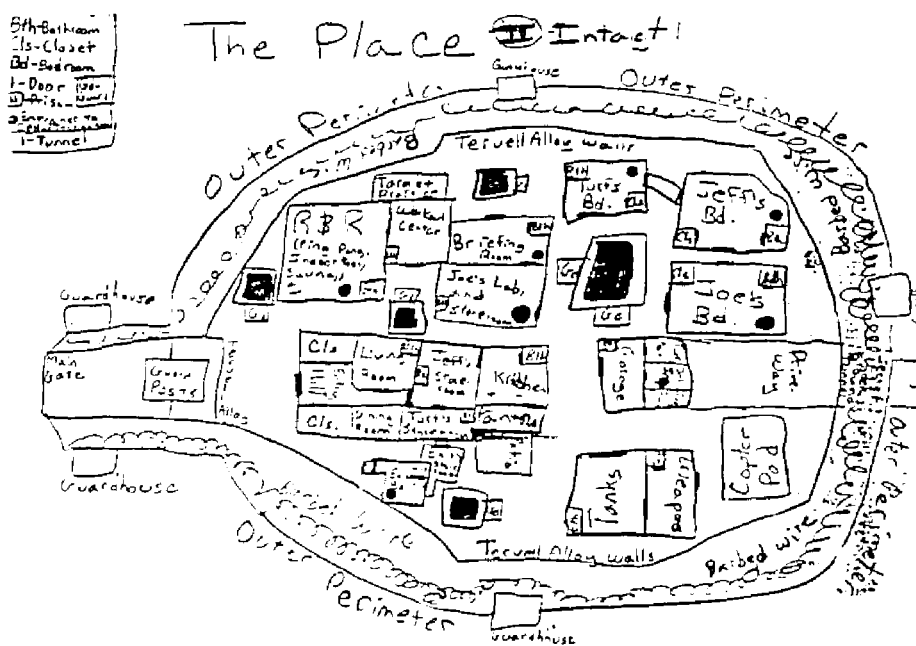


Figure 3

The Place Intact

The atmosphere in these classrooms encourages "total communication" in the students' literate behaviors. Much of the debate about children's "preferred mode of thought" has focused on diagnosing a learning style, then teaching encouraging one particular mode. In the history of deaf education, a similar polarization occurred: some deaf educators believed solely in preparing their students for a hearing world, banning sign language and teaching lip-reading and oral speech only; on the other end of the continuum were the educators who believed in teaching only Amislan (American Sign Language). In the last decade, the school of "total communication" has

gained prominence in deaf education; educators of this persuasion argue that their learning environments and teaching activities should encourage children to use whatever modes of communication will work best for them, including combinations of Amislan, lip-reading, and finger spelling. The idea of "total communication" should spill over in main-stream public school classroom environments as well, allowing children to learn to communicate in a range of modes and with a combination of media that will work best for them, experimenting and altering techniques to meet the changing demands of the tasks at hand.

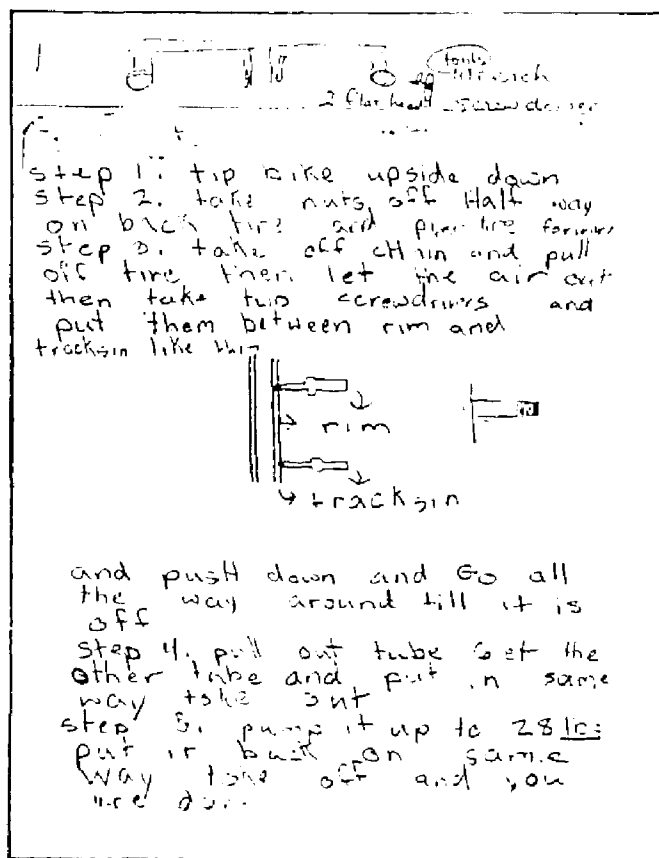


Figure 4

Grant's Diagram

Teacher-researcher Linda Rief encourages this total communication in her middle-school classrooms, and she finds that her students often rely on visual as well as verbal solutions. She reports that some students, for example, find photographs helpful tools for describing people they have interviewed. "In their journals, some kids have told me about studying photos they've taken in order to add the details that will create a vivid description on paper," Linda reports (1988). "I've never given them directions or assignments that ask them to use pictures or drawings in the ways they have, but I've made it clear that they should use whatever works to communicate their messages, or to show me they've understood what they've read."

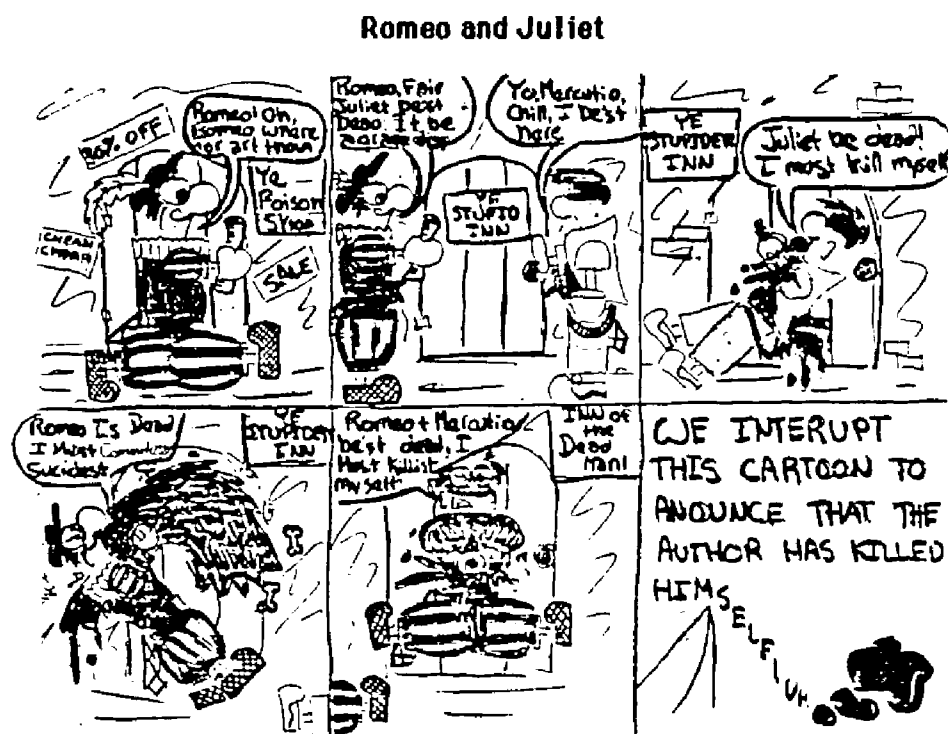


Figure 5

After reading "Romeo and Juliet," for example, Alan's journal entry contained a "comic strip" rendition of the parts he had read. "I had fun writing/illustrating in my log," he wrote, and the pages that followed

reflected both his enjoyment and his understanding of the story (see Figure 5).

Sandy, on the other hand, used words and pictures in quite another way: she chose to borrow the picture-book format of an old "Dick and Jane" reader to write about Ann Hutchinson's flight from Massachusetts for religious freedom in her book entitled "Dick and Jane visit the Massachusetts Bay Colony." Using the stylized words and pictures of this genre, she shows her knowledge of the historical event she studied. Her readers learn about Ann Hutchinson's escape to Rhode Island as she reports Dick and Jane's time travel in the machine they built "with a spatula, macaroni, paper mache. . . and the red wagon" (see Figures 6 & 7)

Sandy's "Dick and Jane" Book

THE TIME TRAV'LER
GOES FAST-

ZOOM! ZOOM!
REALLY FAST

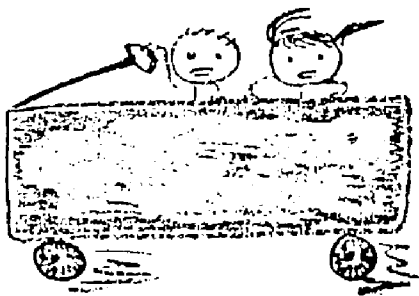


Figure 6

THE MEN WITH POWER
ARE SAYING BAD WORDS TO
ANNE. THE MEN WITH POWER
ARE MAKING ANNE SAY BAD
THINGS SHE HAS DONE. THE
MEN WITH POWER SAY
ANNE CANNOT LIVE WITH
THEM ANYMORE. THE MEN
WITH POWER SAY ANNE MUST
GO.

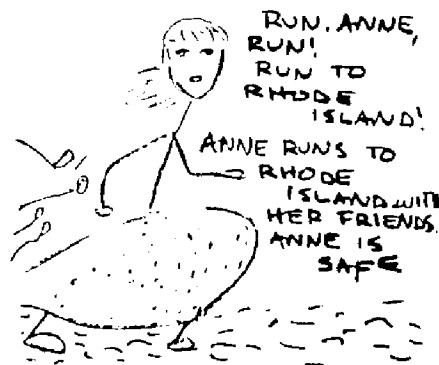


Figure 7

Other examples, like Stacy's porcupine brochure (see Figure 8 A & B)-- including the "Eating Habits Poem" alongside the diagrammed "Characteristics," or Ann-Marie's autobiographical chart (see Figure 9) show the range of solutions and the strength of communication these teen-agers demonstrate when literacy is viewed as a process of "total communication."

Stacy's Brochure Excerpts

EATING HABITS POEM
 The eating habits of the porcupine,
 Are really quite honestly, truly divine.
 In spring, she eats buds, twigs and leaves
 And munches on acorns from the acorn trees.
 Also on the menu are wild onions and mushrooms,
 And also gherkins if there is enough room.
 She will wade in a pond, holding tail erect
 And munch on a lily pad without a fret.
 Salt is by far her most favorite treat,
 And to get it she'll go through impossible feat.
 How can she hold all this food? Do you ask?
 Her 25 foot intestine performs the hard task.
 Her large incisors grow as she sits
 On her haunches, and brings food up with her hand,
 she sits quietly and munches.
 Her stomach can hold one pound of food,
 which her large liver stores for the winter interlude.
 When snow hits the ground and grasses
 are covered, she climbs up a tree and sits there.
 she gnaws on the bark in her thick coat
 she grew and stays up there for days, stuck to it
 like glue.
 YES, this vegetarian is very unique.

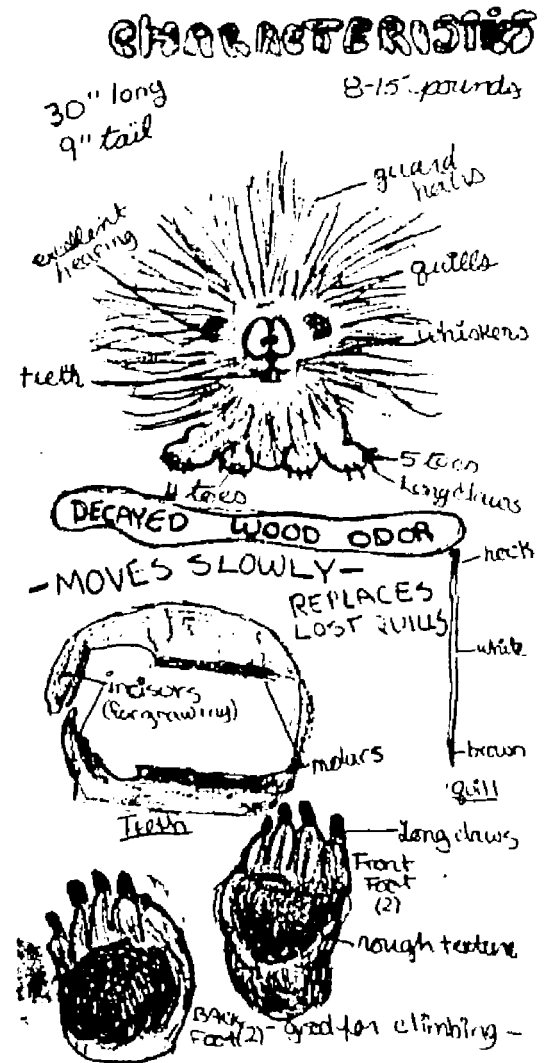


Figure 8 A & B

Ann-Marie's Autobiography

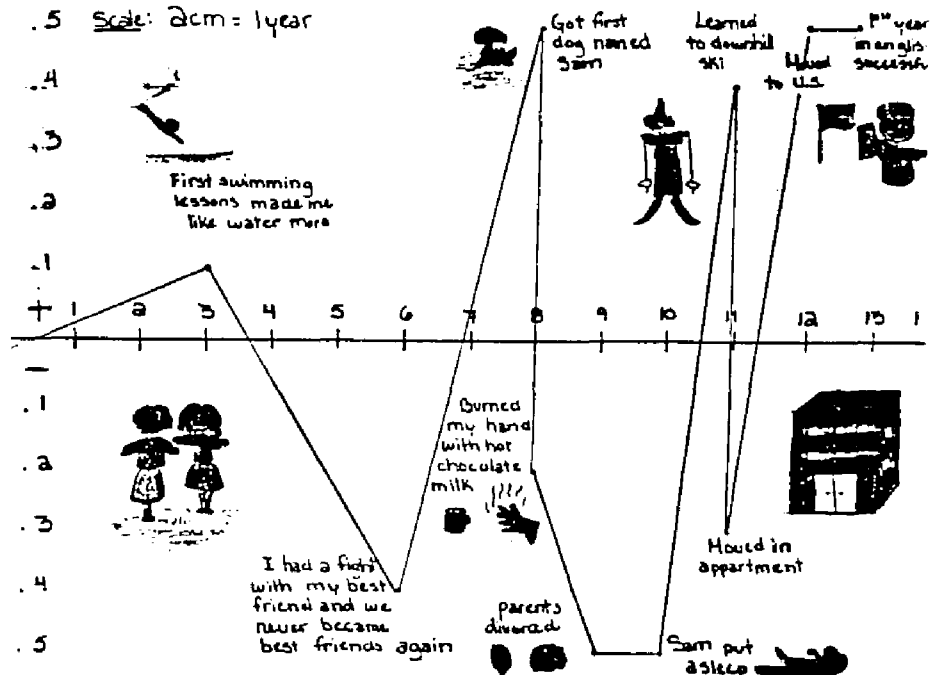


Figure 9

My research has given me the opportunity to see what is possible--for students *and* for teachers; imagine extending the practices and philosophies of master teachers like Pat McLure and Linda Rief to an entire school! Elliot Eisner (1976, p. 213-214) describes what such a school might be like:

The school I would like my children to attend would have a sense of intellectual excitement about it. Things would be happening there. Children would be moving about, some intent on projects that had captured their imaginations and therefore their souls. Others would be working in small groups, collaborating on an experiment in science or engaging in a debate about a fine point in a book. . . Still others would be reading alone, transported to another time. Engagement is the quality that pervades this school, immersion in activities that have deep personal meaning. These children are actually turned on to what they are doing. . .

The school I would like my children to attend would be a visual delight. Paintings, sculpture, prints, and murals would vitalize the spaces. Ink-splattered kids would provide evidence of people literally into their work. Walls would shimmer with the profusion of color and form of work in progress. . . What we have in this school, this place of life, is a center of

human enterprise, a mixture of energy and imagination, a treat for the senses, a celebration of the mind, a realization of the curiosity, the power, and the competence of growing young minds.

We need to replace the images many of us preserve from our school days--images of straight rows of desks, of silent students repeating pages of "work" in identical patterns. Instead, we need to share visions of classrooms that encourage new dimensions to literacy, creating schools we would like our children to go to.

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