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LOOKING AND NOTICING AS CULTURALLY SPECIFIC BEHAVIOR

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CHILDREN* have a vast capacity to build networks of interconnected symbol systems. The goal of the research reported here is to develop a systematic method for studying one aspect of children's enculturation in the nonverbal domain. The study investigates how humans utilize the possibility of seeking information visually in naturally occurring situations and how these patterns are exhibited in a child's early years. It explores how young children ages 6 months to 3 years seek that information in their daily lives, and through analysis of in situ observations it develops a preliminary system for plotting the attributes of visual, information-seeking behavior. To date, six categories have emerged from the first two years of this long-term study that is being carried out in two vastly different cultures—China and the United States.

Although this research may seem far removed from linguistic theory and analysis, it draws from and utilizes Lamb's linguistic models and relies heavily on the theoretical and descriptive work Halliday employed while studying his son's rudimentary linguistic functions which began as nonverbal gestures. By investigating nonverbal communicative interactions and behaviors of very young children the study seeks to provide a foundation for linguistic study.

DATA DESCRIPTION. I have used observation and detailed analysis to uncover components of enculturation found in the behaviors of looking and noticing. I began with open-ended observing of children in China as they looked at their worlds and interacted with adults within that visual processing framework. Using this as a foundation I continued my looking in the United States, and a cyclical process of observation, analysis, cross-check, and new observations has evolved. Over the last two years I have collected 151 observations of visual, information-seeking behavior in 6 geographical locations in China, and 33 observations to date in the United States.¹ They have been collected in diverse settings—in trains, on the streets, in classrooms, in parks and zoos, and in homes. These observations were recorded in field notes and supplemented by photos and diagrams. Each has been analyzed for categories. Emerging attributes have been checked and reshaped through focused observations and by cross-checks with cultural insiders and other researchers.

A few specific examples will illustrate the nature of the data.

U. S. SAMPLE OBSERVATIONS.

- A three-year-old boy stood on a small slope of bare dirt and scraggly grass beside the sidewalk. His mother was sitting nearby on a park bench with lunch sandwiches and drinks spread out. He looked intently at a spot on the slope for about 5 seconds, then walked up the slope and back down while looking in the same place. Stepping onto the sidewalk, he walked away a few feet, then returned to look again at the little patch of ground. He stepped onto the slope again, then walked away from it, but looked back over his shoulder. Next he moved down the sidewalk a few feet, went back to look again, then walked up and down the slope again. His interest seemed to be on approximately the same spot at each look, but his body and his location shifted constantly. He went back to his mother, collected a bite of sandwich and returned to the same spot. The entire observation was about 4 minutes long. [US #28]
- A nine-month-old girl was sitting in her stroller at the chimpanzee area of the zoo. Her parents and older siblings were leaning against the fence with many other spectators watching a chimpanzee family. The baby's stroller was parked behind them. She could see none of the animal display, but she was content to look at things in her environment and pull herself up on the fence. I was able to watch her eyes, and typical spurts of looking included the following: 3 seconds at her father's leg, 4 up at a tree, then 1 second at her father's shorts. After looking about rapidly for awhile she looked back at her father's shorts for 3 seconds, at me for 4, and then at the ground for 12 seconds. Next she looked straight ahead (when I could not see her eyes), but her head moved every 2 seconds, 2 seconds, 2 seconds, 2 seconds shifting about 10 degrees each time. She then leaned forward toward the chain link fence and focused at different points on it for 2, 2, 1 and then 3 seconds. During the three-second look she pulled herself up on the fence with both hands. This looking-pulling-up sequence was repeated several times. Her parents then turned toward her and pushed her on to the next area. The observation was 5 minutes long. [US #20]

CHINESE SAMPLE OBSERVATIONS

- A two-year-old stood beside a large patch of golden wheat, while his father waited off to one side. The child pulled up one wheat stalk and looked at it intently. He then looked at the wheat beyond, leaned for-

ward a little and pulled up a second stalk. Holding one stalk in each hand, with the heads of wheat almost at eye level, he looked at the head of one, then the other, back and forth, back and forth. At three different times within 7 minutes the child made long looks, focused on the heads of wheat. The first extended for 35 seconds, the second for 25 seconds, and the third for 45 seconds. In between these long looking periods there were very brief looks to the side, but he never moved his feet and his hands were almost stationary. At one point, between the second and third long looks, his father took a piece of twine that was tied into a circle about 5 feet in diameter, draped it around the child like a harness, and tried to pull him away gently. The child slid out of the twine, returned to his original place and continued looking at the stalks in his hand, from one to the other. The father returned to his waiting position on the side. This portion of the observation was about 7 minutes long. [CH #55]

- An 18-month-old child was standing on a park bench beside where her mother was seated. For 5 minutes they looked at various activities in the park, stylized sword dances, the people passing by, the flowers. Then the mother got out a bag of commercial nibble snacks, a small type of popcorn in a foil bag, and for the next 15 minutes a looking game proceeded. The mother slipped one piece of popcorn to the top of the bag opening. As it emerged, the child took it while they both peered at it carefully, and then she ate it. The mother slowly pushed one more piece to the top of the bag, they peered at it, and the baby took it and gave it to her mother. This activity continued—the child took a piece, they both looked at it for 5 seconds, and then the child ate it. Five minutes into the game, the baby sat down for 6 seconds. She then stood back up and the game continued as before, after she had looked into the bag for 11 seconds. At one point a piece popped out of the bag about 2 inches; the baby and her mother caught it together; they both smiled and then the baby ate it. This interaction continued for 15 minutes before another activity was introduced. [CH #16]

These are just a few of the observations, but they give a flavor of the data. Although they may appear commonplace and trivial at face value, they are rich in complexity of sign systems when combined with other observations and analyzed for similarities and contrasts.

RESEARCH OVERVIEW AND THEORY. By identifying characteristics of young children's looking behavior in two very different cultures, a system can be built that encompasses a wide range of sign system potential. A culture's informa-

tion system is a cohesive interlocking reality, and learned networks of relationships shape a child's output at many points. Lamb sheds light on this complexity through his descriptive work of systems of networks and their nonlinear nature. His models suggest a dynamic, interconnected world (Lamb 1993; Regan 1989) in which any part of a culture is connected to all the rest. Such multidimensional systems preclude simplistic, linear models of explanation or leaps from discrete unit to whole cultural meanings. They also present a dilemma for this study, for they suggest that complex interconnections exist between language production systems and nonverbal activity. At the same time, Lamb's models caution against leaping to premature conclusions. In the case of this research, one premature conclusion would be that the visual behavior being studied develops in parallel to language. Meticulous observation and description of visual information-seeking behavior in young children must precede any hypothesis building processes.

In spite of this cautionary stance, the notion of communicative competence appears to provide one potential link. Significant portions of communication sign systems are associated with socially appropriate and culturally specific competence. Hymes describes this communicative competence as what a 'member of a society knows in knowing how to participate' (1970:66). In the relatively undefined nonverbal domain of visual interactions, communicative competence involves such things as how to look someone in the face, how long to stare at an object in another person's hand, or how close to come to an object being viewed. Cultural clustering within categories of this study already suggest that culturally specific ways of looking may exist.

Connections between the nonverbal and the structure and form of language acquisition are more tenuous and need to remain so at this point. A few threads exist but must be viewed cautiously. A small body of research that considers nonverbal participant structures as possible precursors to linguistic interactions (see for example Philips 1993; Trevarthan 1979) has considered whether infants produce unspoken communicative components that include rudiments of speech. Evidence is inconclusive, but these studies as well as earlier language acquisition work (e.g., Brown 1973; McNeill 1966) see children treating one-word utterances as a system. This in turn raises questions as to whether children view nonverbal 'acts' as a communicative system. Stronger potential links to visual behavior appear in recent work of Armstrong, Stokoe, and Wilcox (1995) who have drawn on primatology, linguistics and their intimate knowledge of sign languages of deaf communities to suggest that language emerges through visible bodily action.

To date the most helpful research is Halliday's careful description and analysis of his son's earliest linguistic functions (1975; 1979). He demonstrates that by nine months of age, long before using conventional words, Nigel employed nonverbal means to express linguistic function. Halliday de-

finds the 'acts of meaning' that Nigel used in his protolanguage as communicative acts that are both intentional and symbolic. They included three non-verbal signs and two 'vocal gestures' (not words).

Meaning	Expression
(i) 'I want that'	grasp object momentarily, then let go
(ii) 'I don't want that'	touch object lightly and momentarily
(iii) 'do something with that or me to watch'	touch object firmly for measurable time
(iv) 'let's be together'	half close front rounded vowel on low falling tone
(v) 'that's interesting'	half close front rounded vowel on mid falling tone

(Halliday, 1979:173)

He identifies this set of symbolic acts as semantic functions. The first three, those most relevant to this study, are in the active mode of semantic development. Function (i) is 'instrumental' with Nigel using nonverbal gestures (and later in his development, verbal gestures) to get what he wants. Function (ii), the 'regulatory', is also in the active or pragmatic mode and is person oriented—the meaning being 'you do this'. Function (iii) is more 'interactional' with Nigel using 'nonverbal language' as a way of being together with another person. These functions continue into his early speech. Halliday postulates that one common element in all protolanguage is that its elements are discrete signs, but they are somewhat different from those found in adult language; it consists of a semantics and a phonology (or other expressive means), but no lexicogrammar (1979:180).

Halliday's findings may—or may not—provide a way to link the data of this study to language development, but they point toward a fruitful area of exploration. Several related questions and puzzles must be considered as the research proceeds, however. First, Halliday studied one case of a child's nonverbal behavior as it connected to emergent language, while I am creating a system in which all acts of a semiotic mode can be recorded. In doing this, I hope to set a foundation for what will follow linguistically, but it places my work in a very different context from Halliday's. Secondly, I must question whether visual nonverbal behavior is entwined with language development or whether it functions separately. And if it *is* closely connected, then does it actually function similarly to speech?

FIRST PHASE CATEGORIES—A SYSTEM EMERGING. Since the ultimate task of this research is to create categories that will help define units and inner structures within and among cultures, one other central issue needs exploration—how to categorize and systematize visual information-seeking behavior. Regan points out that deciding what is a ‘unit’ is one of the most difficult questions in observational research (1987; Regan et al., in press). The first phase approximations that have emerged from the current array of data are rough and very imperfect. When observing very young children in naturally occurring situations, the possibility of defining likeness between one event and the next is problematic, even within the same culture. Comparing events across cultures becomes even more complex.

Following are first phase approximations that have emerged from this study of attributes of visual information-seeking behavior. The array of data—although highly complex—is merely a beginning point when considered within the context of interconnected systems. Nevertheless, these first phase categories provide a foundation for more focused observation and testing. In addition, they help identify culturally specific patterns of semiotic development and ways of knowing that have evolved in particular cultures, but not necessarily in others.

Six categories have emerged from analysis of the 184 observations of young children’s looking and noticing behavior in the two cultures. As rough as they are, they have held constant as new observations have been added.

- Duration of looking: how long a young child looks continuously at one thing (exhibited either by eye or head fixations)
- Duration of an entire looking event or activity: how long a looking activity is sustained with a single focus, despite minor distractions or interruptions
- Nature of focus: for example, steady, jerky, visually locked on a subject, panning, zooming
- Size of the object of focus
- Movement of the body while looking: for example, hands, head, whole body; speed of movement
- Adult indicating behavior: pointing; moving to the eye level of the child; holding the child in a particular position

By applying some of these categories to the four sample observations described above, we get the following:

DURATION OF LOOKING.

- US #28 For the three-year-old boy looking at something as he moved up and down and near the little slope, each look at the focal point was 5 seconds or less.
- US #20 The longest look for the nine-month-old at the zoo was 12 seconds, and the average of the 14 recorded looks or fixations was 3.07 seconds.
- CH #55 For the Chinese two-year-old looking at the heads of wheat, there were three recorded lengthy and sustained looks of 35, 25 and 45 seconds respectively as well as unrecorded looking in between, much of which was focused on the wheat.
- CH #16 Only two specific look times (of 11 and 5 seconds) were recorded for the 18-month-old playing the popcorn game with her mother, because the observation was focused on the interplay between mother and daughter rather than on duration of a single look.

Even in this seemingly simplistic category, the variety is complex—as it could be, and differences or extremes within an event may be more productive to look at than means or totals.

DURATION OF AN ENTIRE LOOKING EVENT OR ACTIVITY.

- US #28 The US three-year-old on the little slope sustained one specific focus point throughout a 5-minute time frame, but he was constantly changing his physical location and subsequently the direction of his look—even to the point of going many feet away to get a bite of sandwich and then returning.
- US #20 During the 5 minutes of observation of this nine month old, her focus on any one thing was very brief—an average of 3.07 seconds. But her sustained interest of sitting in her stroller and ‘just noticing’ was continuous even while she was pulling herself up on the fence.
- CH #55 For the two-year-old with the wheat, the entire looking activity filled up a 7-minute time frame. The child himself never interrupted the looking activity during the 7 minutes. When his father tried to interrupt with the twine, the child ignored him and sustained his focus on the wheat.
- CH #16 Duration of the popcorn game between the mother and her 18-month-old daughter was 15 minutes with only one 6-second break when the child sat down. However, this is the only observation of the four examples that includes the intimate involve-

ment of a parent. This parent involvement adds another factor which may structure looking behavior differently.

PRELIMINARY PATTERNS OF CULTURALLY SPECIFIC BEHAVIOR. Although culturally specific patterns must be defined carefully at all times and be allowed to develop more fully, or dissolve, as more data are collected, there is some clustering of attributes when observations from China and the United States are placed side by side.

DURATION OF LOOKING. The length of a single gaze appears to have a shorter time span among US children than among Chinese children. In the US data, of a total of 22 observations that record duration of looking in seconds, 5 include looks of 15 seconds or longer, with the longest two at 45 and 50 sec-

Age/Case#	United States	Age/Case	China
1;0/#23	1 2 2 2 1 2 1 2 1 1 2 2 1 3 4 2 3	1;0/#54	1 5 2 8 5 7 10 12 1 2 1 6
1;3/#9	1 2 1 2 1 2	1;3/#79	10 25 14 3 8 8 2 5 8 4 10 5 4 4 6 10
1;6/#16	1 2 1 3 9 1 2 1 4 9 1	1;6/#5	2 3 2 3
1;9/#26	7 2 5 5 2 5	[1;8]/#86	2 5 1 6 1 2
2;0/#7	8 1 8 2 10 2	[1;10]/#84	3 2 6 1 1 3 6 2 9 4 17
[2;0]/#8	5 2 1 3 2 4	2;6/#51	3 1 2 3 1 10
3;0/#19	1 2 4 1 8 6 1 2 1 15	3;0/#80	14 3 12 6 10 2 2 8 5
3;/#1	2 2 1 2 1 1 6 2 3 1 2 1 1 1 1 1 1	3;6/#27	5 1 6

Table 1. Duration of Looking: Sequence Patterns: Reported in seconds. The children included in the table were randomly selected from within age groupings. Age is reported by year and month—1;3 is one year, three months.

onds. In the Chinese data, of a total of 37 observations that record duration of looking, 16 single gazes are recorded of 15 seconds or more. These involved 9 different children, and the longest were 55 and 65 seconds.

In another subset of data—sequence patterns of a child looking at one focal point, then the next, and the next—the US observations document numerous rapid sequences. Typical patterns can be seen in Table 1.

There is of course considerable variation among the sequences of each cultural group, with one four year old in the United States looking intently at the flamingoes in the zoo for 50 seconds, without moving her eyes. Some Chinese youngsters, on the other hand, looked from one thing to the next with only a few seconds allowed for each fixed gaze. Nonetheless, when sequence patterns are lined up side by side as in Table 1, the data show US children having many more incidents of 1 and 2 second looks in their sequences. Of the 29 observations in China where head fixations or eye gazes were recorded, the data often yielded a look of 8 to 10 seconds or more embedded in a series of shorter ones. Only more systematically collected data will delineate cultural differences, or likenesses, in this category.

ADULT INDICATING BEHAVIOR. Much indicating and showing is done unconsciously by the adult, but repeated patterns of behavior can send a persistent message to a child that ‘this is the way we look at things around here’. When hundreds of repetitions are experienced day in and day out, patterns of cultural networks are formed. Vygotsky concluded that as sign use develops it leads humans to a specific structure of behavior that ‘creates new forms of a culturally-based psychological process’ (1978:40). Daily interactions associated with visual information-seeking behavior are influenced and shaped by complex webs of culturally specific sign systems that perfuse daily life. ‘The microsemiotic exchanges of family and peer group life’, writes Halliday, ‘contain within themselves indices of the most pervasive semiotic patterns of the culture’ (1975:81).

One subset of culturally specific behavior—how adults carry young children—emerged within this category of adult indicating behavior early in the study. With a high level of consistency, Chinese adults carry young children so that the child has the opportunity to see the same visual perspective as the adult (Figure 1). Of 77 carrying position observations in China, 74 children were held in this almost identical manner, while the other three (all asleep) were held diagonally across the adult’s abdomen. Of the 44 observations made so far in the United States no such consistency exists. A variety of 9 holding positions have emerged so far in the US data. They vary from high on the hip with the child looking in a number of directions to cloth carriers where the child’s face is against the adult’s chest.

As the research continues, more subsets of this nature may emerge that will help define other categories.

FUTURE CONSIDERATIONS. Precautions need to be taken into consideration when looking at categories in isolation. In reality, the categories are entwined into complex networks. Although it is convenient to look at them as separate entities, they actually coexist and are inseparable. In some instances, this complexity appears to add dimension to cultural differences. For example, Chinese children seem to combine longer single gazes with less body movement, while children in the United States seem to combine much more movement with quicker single gazes. On the other hand, multidimensionality may erase some cultural differences.

Another consideration is that as new categories and insights are discovered in one culture, it is critical to dip back into another culture to see what exists, or does not exist there. The long duration of individual gazes and of looking activities in China forced me to see duration of gazes and activities in the United States in a completely new light. And I believe that the recent discovery of movement patterns within looking activities in the United States will most likely help me see new patterns in China.

After much more data are collected, links between this data of visual information-seeking behavior and language development must be probed with great care. *The Handbook of Semiotics*, citing Pike's unified theory of human behavior as 'the most important contribution of linguistics to the study of nonverbal communication' (Nöth 1995:388), points out that semioticians consider nonverbal communication the field most closely connected with verbal behavior and seek to extend linguistic research into the study of signs. Although this research may eventually provide a means for exploring such connections, Lamb's warnings against leaping to conclusions must be listened to carefully. At present the realm of this study remains the careful description and delineation of categories that emerge from naturally occurring observations.

The long-term purpose of this research is to discover areas of human potential. The human capacity to develop any number of semiotic systems can be demonstrated as careful description and analysis illuminate the unique ways that diverse cultures have evolved. Contrast found in two highly distinct cultures forces reexamination of the familiar, and this juxtaposition illuminates new possibilities. Cultures, because they develop such different characteristics and perspectives, provide us with ways of looking that we could not imagine if we did not step outside of our own ethnocentric perspective.

¹ A subset of one category, carrying positions, emerged early in data collection and an additional 177 Chinese and, to date, 44 U.S. observations have also been made of this behavior.



Figure 1. Adult indicating behavior: carrying positions, China. Traced from representative photos taken in China, ages 6 months to 3 years.

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