CHAPTER 20

# Attention to Microspace

## Plotting the Connections of a Cultural Theme

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### 1. Overview

Lamb's contributions to the understanding of cognition and cultural information systems span diverse theoretical and applied domains. Fundamental to these contributions is his development of the scholarly world's recognition of the interconnected, network nature of knowledge — the nondiscrete characteristics of the cultural and, specifically, the linguistic informational system. In addition to his demonstration of the actuality of this integration and his refinement of a notational system for its description, Lamb has initiated a range of applications from computers to education. Our report concerns the latter application.

Lamb's work provides a concrete, although frustrating, point of view from which to study the diversity of a culture, a topic which has, in the socio-political environment of the late twentieth century, become an issue of vigorous axiological and political world discourse, particularly in the education establishment.

In the monograph, *Whitehead and Lamb, A New Network of Connection* (Regan et al, eds. 1982), some directions of the educational applications of Lamb's work have been discussed. In the present research, our interest centers in encouraging educators' recognition of a procedural, methodological issue related to any study of cultural forms:

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From the network of relationship theory viewpoint, any part of a culture is, in fact, connected to all the rest; therefore there cannot be, logically, any linear, one-dimensional pursuit of the "meaning" of an event or word. Rather, the reality of cultural information is more a galaxial one. Hence from this view which we accept, the tracing of the "meaning" of words, behaviors, or events, can move in a very considerable number of alternative directions. Which of these directions is chosen, what first step is primary, secondary, etc., is neither obvious nor, actually, is there a sequence. The explication of this methodological fact is, we propose, of considerable importance to end-of-century educational theory and practice. The following section introduces our discussion of a five-year study of one aspect of one cultural group present in American schools.

## 2. Noticing a Nonlinguistic, Cultural Event

We notice and puzzle over an event in another culture as we might over an unfamiliar lexical feature we hear in discourse. But what strategies can we use to find that event's connections with the rest of the whole contextual informational system? In encounters with another society, observers may note a detail and suspect that cross cutting this "unit" lie masses of interacting cultural

and linguistic informational networks. But how does an investigator systematically follow those networks of relationships from a first observation? How is the path followed so that the next steps taken (so that those observations) will lead further into the whole culture? How can the first data base, begun by that first noticed event unit, be expanded so as to point out next productive directions of the search for relationships?

When travelers in another society or—as is our interest—educators in an ethnically diverse school system notice an event which is unlike that which they have experienced in their own cultural context, they may puzzle at it, considering it simply as an interesting fragment of daily experience. Or, they may, over time, persist in looking for related events until by accumulation of those events, an outline of a previously unrecognized, cultural pattern begins to become apparent.

For example, one member of our research team was stopped for some twenty minutes in dense, six-lane traffic on a Beijing overpass. At a fork in this overpass, six lanes were packed with motionless cars. One vehicle on the extreme left moved several inches towards the researcher's car as a signal of intent to get into the right fork. However, the driver of the researcher's car inched up his vehicle to prevent this possibility. More interestingly, each of the Chinese passengers, by very slight nods and vocalizations, indicated a basic nonverbal assent for this action. After that observation, in numerous locations and events (in diverse allomorphic variations and contexts) the essence of this cultural unit was seen repeatedly: "only give way when the other (be it car, bike, or person) has definitely blocked the path". When we gave verbal descriptions of such events, Chinese associates would react knowingly, their comments revealing a recognition of the rule.

In a stratificational model of non-separable networks, there is little room to claim causes, effects, or origins; co-presence is all that can be suggested. And as cultural themes and dispositions interact in multiplicities of nonlinear ways, consequently, the tracing of the correlations of an observation is a baffling and difficult task.

What observational and notational strategies exist for both the extrapolation from such a nonverbal event, and for the identification of the cultural impetus to that fraction of behavior? It is most unlikely that the lines of closest connection of such an observed cultural fragment would lie in the time sequence in which the examples were experienced by our observer. So where to go next in a search of a pattern for this event? If this observation were considered to be a first thread to pursue into the cultural matrix, where would the exploration of that topic go next to get further grasp on the theme? Where into the broader domains of the society's meaning and behavior might such a starting observation lead? Could such a single observation lead to others? If so, which others? There is the problem. What would the logical proximity of a

subsequent observation be to the original one? And finally the larger question. Could the data eventually collected by disciplined observation and testing be extrapolated to a rule or cultural trait? If so, at what point in the data-gathering would that rule or trait be established. And how many noticings make the meaning?

As Lamb's work with language has demonstrated, tracing the relations and associations of a linguistic feature is complex. In addition to all those he records, pursuing the networks of connection of nonverbal units (such as the above example and those below) presents further problems.

## 3. The First Part of Our Observing

In addition to linguistic information, a culture's nonverbal knowledge, including the peoples' visual knowledge, is a network of inseparable interrelationships. So, too, any evidence, or any fragment of such a subsystem network could be pursued to a final ethnography of the entirety. A first observation could be used as the basis from which eventual conclusions about a culture were made. These problems of discovering the next logical steps in the construction of the "meaning" of a nonverbal unit is the issue with which we have wrestled. This problem began for us in the following simple, commonplace events:

Like many outsiders to a culture experiencing a puzzling difference in a way of life, one of our research group was struck by an event in which a Chinese associate insisted on taking his hands from the bicycle which he was riding down a hill and wildly sketching his name in the air with his finger. Puzzled by this insistence on writing the Chinese name which the visitor had already heard numerous times (and which he could easily pronounce and spell), the Westerner asked why — at such an inappropriate location and situation — this insistence on visual air writing.

The answer came immediately; there were six entirely different ways to write this bicyclist's name in Chinese. To this piece of information were added two other points, and these together suggested a connection that intrigued the observer:

1. Nearby was an inscription on a wall that was, according to the biker, presented in Mao's handwriting. Each character of this three foot high inscription, was crafted by an artisan whose employment was just this sort of task.

2. Furthermore, the badge that the Chinese was wearing was in Sun Yat Sen's script which the bicyclist could easily recognize and reproduce.

The Westerner puzzled about this set of statements related to an apparent Chinese attention to the complex, geometric nature of the 40,000-50,000 characters of the Chinese writing system. In the next days, this in-the-air or on-the-hand, sketched writing was noticed being used on the street, in offices and meeting halls. With only the barest of features — indeed, even from backward or sideways positions — these transient, geometric movements were immediately understood by the Chinese interactants. When and by what means was this visual acuity learned? What would young children's abilities and visual enculturative experiences in such a cultural context be?

And increasingly arose the question: Where next would we go to observe other features of this theme? Where would the next level of relevant meaning show? How proxemically or logically close on the lines of connections from that first event was any next detail or component of such a relationship network? The steps in the logic of events follow.

## 4. Chronology of Related Observations

1. A university student, discussing the brilliance of a work of Chinese literature, spoke about the beauty of one of the written characters selected from some dozen possibilities by the classic writer. "I love the look of that character" the student said, and other students around the room nodded in agreement. Certainly, these shapes had for the Chinese a special importance that included both a sense of and interest in a type of architectural beauty that we westerners did not recognize. Increasingly we found evidence of special attitudes regarding these complex geometric characters. Attitudes not matched in Western experience.

Then other observations occurred, for example:

2. A Chinese commented that he found the shape of one character of a name card "very nice". We subsequently showed informally the same name card to a total of 59 Chinese, asking each person which of the five characters were the most appealing. Each of the 59 promptly gave a response. Furthermore, to our surprise, when asked to rank the other four characters on the name card, again, each of the 59 Chinese (across different social levels) complied, frequently giving reasons for their individual choices. A similar question to similar people in the United States about the very same name (though on an English script card) always drew puzzled, curious responses. And never was a choice made. Such a question about the pleasantness of letters or words seemed ridiculous to all of the Westerners.

3. Discussing his young daughter, a Chinese father mentioned that he had used five criteria to select her name at birth. Among the criteria for the name-

choice was the character's shape itself. The father replied that the characters of the given name needed to "balance" the family name, i.e., to match the simplicity of the surname. Subsequently, we discussed this topic with many Chinese parents, and found frequently reported that they had indeed made a choice of names based on design — for example, simplicity, complexity, balance, etc. Sometimes at first our question was not understood. But then perhaps this type of decision about names is made as a judgment deep within the non-verbal awareness. In further studies we found more evidence of this.

For example, at one home the parents replied that shape factors had not been considered. Later in the evening, however, a page of the parents' original 48 choices was brought out — six rows of eight characters. Of these, one quarter had been eliminated with an X. When we asked why this one and that one had been crossed out, we were often told (and with some embarrassed laughter) that indeed the shapes had not fitted well. Other examples of this were observed with other families.

So in what ways are these events related? What was their proximity to a theme, a topic cluster like that of which the first bike-event was an example? Where exactly was each event that we had noticed located in the galaxial meaning universe? Did the "units" placed together point to an origin or source of this apparent focused Chinese interest and involvement in two-dimensional, geometric forms? We needed more information. But Lamb's model warned against assuming that the networks constituting meaning lay in any linear cause/effect association, or that a simple path to the heart of the meaning system would be found.

## 5. Associated Observation/Data Collection

We heard of school children memorizing and repeating aloud the 100 most common Chinese names one at a time while alternately visually focusing on the different characters for those names, for example, looking at 'Li' or 'Wang' and saying those names in unison as each of the array of different characters were pointed out by the teacher. Also, we had heard of the necessity of children and adults practicing looking up characters in a dictionary and telephone book by the character's geometric likenesses (and hence engaging in a type of architectural microspace memory experience). Would this practice in visualizing for the purpose of "looking up" words set in process skills that somewhere in the universe of Lambian interconnectedness would have an outcome?

We turned to a more formal type of data-gathering while continuing to record any chance observation opportunities:

1. We tested young children to estimate their visual memory and noticing-acuity concerning this narrow band of two dimensional shapes called characters. Now, one year on from the original observation, we were hypothesizing that accompanying Chinese attention to such a form of visual, two-dimensional detail, perhaps other dispositions, habits, etc., were to be found in a child's development. We first designed a simple reproduction memory test using five characters. These characters' meanings, we were assured, even the bright, first-grade children would certainly not know. Hence, these shapes, although recognized as "writing" to the children had no semantic meanings for them. They were simply graphical shapes, part of the seen world of everyday life — the visual semiotic. Each character, written boldly on separate pieces of 5" x 8" paper, was held up to the group for 10 seconds, one at a time, then removed. At a signal, the children reproduced the character. First, with these Grade 1, then younger children, and later with Western children of a much wider age range, some 250 children were tested.

The results were impressive. With speed and accuracy, in unexpected evenness (linear, horizontal straightness) and precision the Chinese Grade 1 children reproduced these shapes from memory. Some children were seen moving their bodies, embedding the shape's general form and direction of lines. The results suggested that the children had developed (through their six years of looking at their environment) sophisticated, microspace-noticing strategies. However, testing of Western children revealed a very different result indeed. We tried this test from Grades 1 and 2 up to Grade 6 in Australia and the United States. The results were uneven, large, disordered shapes scattered across the paper, and quite unlike the originals shown for the 10 seconds. When we asked Western adults to do this looking/memory test. The results were like those found among the grade school children — sometimes worse. Many of the Westerners reported using mnemonic strategies (e.g., "there's a roof in it") a method not mentioned by Chinese who seemed rather to see and know the shape as a whole.

A Chinese looking at the results of American adult efforts to reproduce these five shapes was astonished with what he regarded as the "chaos" of the results. We finally reminded him, with some defensive ego, that the Westerners were not accustomed to seeing such shapes. "But all they have to do is look and remember", he replied, stating an attitude and opinion echoed many times among the Chinese with whom we discussed this issue. The Chinese apparently thought any such shape was surely quite easily reproduced once it had been looked at.

Were there then, indeed, skills that the Chinese children had that came from frequent focused, two-dimensional, equally-spaced, visual semiotic, micro-noticing? Certainly children's enormous motor and perceptual efforts — to understand and to make the huge number of characters necessary for literacy —

would surely encourage different habits than would the experience of Western orthographic learning. When we tested other forms of this ability in younger ages in both Chinese and Western societies, we continued to find dramatic differences between the two populations. The Chinese children indeed were more practiced in that noticing skill. But did that practiced noticing produce — in a Whorfian-like form of association — other skills or behaviors and at earlier ages? What if very young Chinese and American children were not asked to remember and reproduce shapes, but rather were invited to create "writing". We devised a second formal probe to explore this possibility.

2. Through native speaker representatives we told, in words and action, some two hundred children ranging in age from under two-years to five-years in seven different geographic areas of China to "pretend to write a letter" to their parents. After numerous trial runs of this probe and numerous fine-tuning efforts (which in themselves unexpectedly produced valuable data related to our interest), we finally designed precise instructions.

There were astonishing features to the results. At very young ages, even two years of age, some children produced tiny, linear, discrete, box-like shapes analogous to the character system. In some, we needed to enlarge the page on which the "writing" was done to be able to see the detail. This doubling and more of size was necessary in order to see completely the box-like shapes densely impacted and compacted in a tiny, narrow, linear band. Looking at these enlargements was astonishing.

And there was more to surprise us. Before we introduced a time limit on the task, some very young Chinese children worked on these small shapes for 15-20 minutes with amazing persistence and care. Western children's productions tended to be quickly accomplished and were continuous, bigger, more oval-shaped, filling more of the page and rarely arranged linearly. To be able to appreciate completely these children's results, we recorded every micro-feature of a character and produced a comprehensive and extensive grid of components that included each micro-variation of line, angle, and position. The resulting chart could be, therefore, used in later testing to evaluate these children's approximations of characters and to illustrate the extent of their learning from environmental exposure.

3. To estimate the speed and accuracy of pre-kindergarten children's noticing of micro-variations in characters, we gave a further test using three sets of 10 identical characters repeated five times with photocopied, and hence identical units. In each set there were two rows with one of the 10 characters having a minor difference, perhaps a tiny fragment — a dot or a line omitted from one. The test scores themselves, in comparison with those of Western children, indicated a more accurate noticing by the Chinese. But more interesting was the fact that many of the Chinese children's "errors" indicated a highly-detailed attention to the most minute page print imperfections which we had not noticed

(for example, a spot from the photocopy screen on the reprinted test page). Again, kindergartners' evidence of disciplined, lengthy perusal of the test shapes was astonishing.

4. We next set out to test children's awareness of a single component of writing. We speculated that much younger children than those we had tested, for example $1^1/_2$ –2 years old (whose linguistic level was such that they might not understand what to do if we verbally asked them to "write a letter"), would also have learned basic architectural aspects. We selected the correct "upright position" and designed a test that could be used in China and the West. Again, after numerous mis-starts and subsequent adjustments, we presented Chinese and Western children, one at a time, with three sets of different shapes, pictures, characters, and letters placed on 2" x 2", laminated surfaces. The sets were of (i) pictures of commonplace objects, (ii) characters, and (iii) letters. The pictures were the first group scattered on the table. These we used so as to give the preverbal children the idea of the game, namely turning the pictures right side up. Each set of 5 cards was, one at a time, scattered on a table to be placed "right side up". We showed what to do with the pictures. As we did, we role played, stating, for example, "Now this pig should stand upright", "Oh, this chair is upside-down! That's not right!" We found indeed that the Chinese knew significantly better than the Westerners what side was the correct side up for characters (and the Western children were better at orienting the letters). Hence, at an even earlier awareness of this two-dimensional system which is seen in the general daily life environment, there was identifiable learning. We took this result as a further indication of the early visual learning that goes on in human growth and, importantly, as an area of potential future, visual semiotic research.

5. We next gave kindergarten to second-grade children a copying test that included (a) the original five unfamiliar characters used in the first visual-memory test, (b) five English alphabet letters, and (c) five invented shapes. These graphical forms, placed together in one line on the board, were displayed in the front of the classroom. The children were given as long as they liked to copy these. There were in this test's results only 42 slight malformations and only one reversal in the more than 2,800 copies. However, an unexpected result, and one of considerable interest to us, was the following: In one class of 52 children aged 6 years, when we returned in the afternoon to pursue other tests, the teacher proposed that we see how much of the morning's task the class still remembered. An interesting proposal, we thought.

The children were given the same sized piece of paper on which in the morning they had copied the three sets of shapes. They were asked to write the same unfamiliar Chinese characters which they had earlier directly copied from the board now erased. Although we expected minimal success in this task, in fact, there was more like a 90 percent recall and only 28 very slight deviations

in the 260 attempts. We considered this further suggestive evidence that these children were becoming sophisticated in a domain of visual memory of shape not specifically emphasized in Western culture. Naturally, the Chinese would be expected to be better at this sort of task. But that, of course, is the point. We have begun preliminary replication of these tests with Japanese children in Japan, where there are similarities but also differences related to the orthographic system. We look forward to identifying what may be similarities and differences.

## 6. Further Observations of a Culture's Attention to Variations in Graphical Details

As we proceeded, unexpected side inputs of evidence contributed to our growing sense that the "meaning" of the first observational event was rich and diverse beyond our imagining.

1 For example, a week after a request to a Chinese associate for his name to be written in Chinese, one of our group finally received it. Why had that simple request for writing a name taken all that time? Could not the associate, as would a Westerner, have done it right then and there at the time of the request? The answer was "no", and the reason for that negative was intriguing. The Chinese associate "had been thinking through" some 50 character alternatives to the **approximation** of the Western name (further evidence of mental visual cogitation that was unlike our own skills which we practice). But why was an "approximation" of this name necessary? Why could it not be exactly (as it is in English) reproduced? There were dozens of alternative characters for the same-sounded name part. The Chinese had been looking through all the alternatives so that our colleague was not given a name that read as something insulting but rather aptly appropriate. But the sounded name would be the same.

We examined this topic from various angles. What had been the alternative shapes, the characters which the Chinese friend had considered for our colleague's name? Among those mentioned was one with a regal, aristocratic meaning. Had **that** one been chosen, the name would have been pronounced the same, but the name's meaning would have been very different. However, in a socialist nation, that character option had been rejected for politically sensitive reasons.

2. A Chinese research associate in China had been considering changing his name. He had gone to a person who specialized in problems caused, as it was believed, by individuals' given names. This specialist inspected the alternative meanings of the different shapes behind the heard name and told our associate that a name with "more water in it" was needed. He had been told earlier that

his name, its visual form, was related to a health problem and our colleague consequently studied some 150 characters, none of which would have changed the actual sound of his name but only the meaning. Finally he decided to keep the character that he had despite the effort put into his exploration. None of the alternatives seemed quite right for him. Still, in this process, he had been perusing mentally for some months those tight, equally-spaced forms and looking for some feature that would help his problem.

3. A young woman, speaking about her exploration of feminist literature, claimed that male biases were in the Chinese writing system and were visually based. These biases, unlike *he* or *she, doctor* or *woman doctor*, etc., problems in English would not be heard in speech — only remembered from the visual form. Here was a topic we needed to study, so our team devised a probe of this topic. On the top of separate pages was written one character with "woman" in it which had negative meanings. These included 'envy', 'treacherous', 'chaos', 'improper', 'suspicion', 'ill will', 'enmity', 'grudge', 'trouble', 'blunder', 'corrupt', 'jeopardize', 'obstruct', 'finicky', 'slave', 'give pleasure' or 'amuse', 'compliance with'. Each included a "side" that was the character for female. Looking at these characters on the top of each page, a person would see that they each had, in terms of shape, something (this female "side") in common. Each character had on its left-hand side this similar form. And this was apparent even if that character's meaning ('woman') was not known.

Hence, embedded into the visual representation of these derogatory words (but not their audible spoken form) was the meaning for 'woman'. We showed Chinese the separate pages. On the top of each was one of the negative 'woman' words. Underneath each of the top negative words were 10 different lists of characters. We asked the Chinese to select the one character from the list which reminded them of the word above. We speculated (and were correct) that this visual meaning 'woman' carried over into the awareness of the Chinese speaker when thinking of those derogatory words despite the fact there was no logical or semantic connection.

Whereas, again, in English a gender-bias element such as *he* or *man* could be readily eliminated or replaced, within the Chinese visual character system, the bias component was inextricably embedded in the whole Chinese word-character unit.

4. As we continued to identify examples of this interest in the vast two-dimensional character forms, Chinese attitudes, customs and opinions about the nature of such forms in the population became apparent. There was a whole range of negative and positive values, etc., about words, actions, gifts, etc., that connected back to written form. These went deep into the Chinese social practices and often had their basis in the extensive repertoire of homonymous characters. Hence, we suggest a generally literate person would in a visual way

understand these, and this awareness would extend a bias into the avenues of the spoken realm.

We encountered in the substratum of many people's awareness opinions about characters these architectural forms linked to attitudes about motor and perceptual sharpness. These were evidences of a meta-awareness of the system. Some of these recorded in conversations are listed below:

— "Characters are geometric forms";

— "The rules of manual construction of a character are analogous to performing mathematic operations";

— "Our characters, which we practice in our schools, are, in fact, types of formulae";

— "Chinese learn to write, character by character, and this requires discrimination of large numbers of different visual forms together with long hours of practice";

— "Learning to write Chinese characters is like practicing with a stroke design whereby understanding of multifarious visual forms and space is used to produce just the exactly-right character within a constraint of space";

— "Chinese concentrate on the visual strokes' design and notice the strokes' detail in building their frame of character within relative heights and widths";

— "Geometry also is the branch of mathematics dealing with the properties and relationships of lines, angles, surfaces, and solids — and the properties and relationships among those lines, angles, surfaces";

— "We think of characters as being space defined by lines".

— "Each character is a rectangular white space with lines balanced within it".

5. Deviations from a character's exact form were frequently rejected, even to the point of dismissing as "meaningless" the clearly obvious characters. Indeed, even with children's attempts, the expectancy of precision and accuracy about characters was surprisingly vigorous. For example, we asked a Chinese about the possibilities of replacement of a character's component. In one case each of the components had a distinct meaning. We asked about reversing the pattern on the right rather than the left side of the unit. Would not a parent or friend guess the meaning intended by recognizing both "word parts" but reversed accidentally in position? The answer was energetically negative. There was no tolerance for such error, no acceptance of "cute" mistakes.

6. We saw no children's approximations of writing like those sketched notes to parents in the West often displayed abundantly on doors and cupboards as evidence of child-like play.

7. When we asked Chinese adults their opinions of samples of our Western children's "pretend-to-write" tests, they stated (choosing words diplomatically) that they would be embarrassed to have their child perform like those samples. On the other hand, Western parents chose neutral or positive words to describe these same imperfect Western children's approximation. When we reversed our question showing the Chinese samples to Western adults, we received negative descriptions ("mechanical", "mathematical", and "tight") to describe the Chinese child's results.

8. Adding other questions to our interviews on these topics, we asked what the parents, looking at these samples, would expect such children to be like later in school. What in later work life did these adults think these children might chose as professions?

The Chinese parents' comments followed the same patterns as those indicated above, so did the Westerners' — predictions of success for the one and outlandish, artistic, or menial careers for the other.

9. Close to the surface of awareness is a rich Chinese interest in the forms of their writing, a highly specific meta-knowledge of their writing form and its neatness. Indeed, the Chinese page is itself symmetrical with straight edges — each character a whole semantic meaning in equally-spaced units fitting across the page, creating an interlocked visual harmonious unit.

10. In the United States, we were intrigued by the skill of the Chinese children in being able to visualize (from minimal, transient clues) the complex, orthographic shapes. What in American schools would be the learning styles of early preschool children growing up in a society accustomed to these equally-spaced, linear-boxlike graphic phenomena coming from a system with 40-50,000 different forms? Did such dispositions that were interlocked with memory, etc., affect other behaviors? To explore these questions we recruited extensively experienced non-Asian teachers of Chinese children in the United States. We had open-ended discussions over a six-month period with them.

Of course, it is commonplace to hear of Chinese and Asian children being model students, excellent in certain subjects. But setting all this comment aside, we wondered what culturally-based traits these children, as immigrants, might carry into their American school environment. The elementary school teachers we chose to ask had no knowledge of our interests or work, merely that we were studying ethnic groups in schools. They were asked, in informal, brainstorming sessions, to talk in general about their elementary school Chinese pupils. The following summarizes the comments we recorded in three sessions of four hours over a six-month period in open, unstructured discussions. Configuration of skills and dispositions the teachers might trigger among themselves was noted down and discussed with our team of observers. A full

account of this project is contained in the report to the Kluge Foundation (Regan 1992).

- a dislike of tasks requiring general estimates and approximation, rather than precise calculation;
- a similar aversion to "rounding off" rather than giving the exact answer as it was;
- a detailed accuracy of drawings, for example, the almost perfect replication of figures (including, as in one example, the accidental ditto paper lines which crossed a page);
- skill in miniaturization, small motor skills;
- persistence in length of time on micro-tasks;
- detailed accuracy of memory of two-dimensional forms;
- interest in formulaic phenomena;
- interest in precision of geometric forms and formulae;
- insistence that an answer is correct if the numbers were right despite clerical omissions;
- speed and accuracy of mental arithmetic;
- skills in separateness of parts rather than contiguity;
- interest in the importance of linear phenomena;
- desire to do more math, to get other work done so that they could return to math and, hence, the teachers' giving of math exercises as a reward;
- the formal, non-standard look of letters, e.g., artificial hooks or loops linking them (characters are not joined, occupy separate, even spaces);
- rejection of teachers' imperfect efforts to write characters as "not being Chinese writing".

But surely, we speculated, the consequences of such a massive micro-system of shape was not all of positive advantage to the people who used it. Were there not perhaps perceptual disadvantages? Would not the eye of each reader need to be constantly alert to notice very precise details and, therefore, what of, for example, the situation of a person who is dyslexic and whose problem in English orthography is that of b's, d's, g's, etc., moving and flipping so that the words become incomprehensible? An unexpected first result of our investigation into such reading problems in China was that there seemed to be fewer, rather than as we anticipated, exponentially more cases. Reserving final judgment of this topic until further results, we became interested in the

possibility that the visual learning of characters became such that the complexity of each unit is embedded as a semantic whole rather than, as is the case of letters, a result of non-semantically meaningful fragments.

If there exists — as there does in the Chinese writing system — a massively greater number of figures than those in the system practiced by the children in the American schools who learn a 26-letter alphabet, then presumably Chinese parents and teachers will tend to look for, emphasize, and reward different skills than those which the Western parents do. And, we suspect, there will be a type of "back up" into attitudes and behaviors from these different emphases. What, indeed, of the adults' wider-spread expectations of an exactness of replication (if a dot cannot be left off a character, an angle turned and still preserve acceptance — comprehensibility)? In English writing, there can be multiple errors while leaving the meaning still clear and where redundancy of signals is tolerated, "small" differences could be readily overlooked as unimportant. In such a cultural context, perhaps "approximation" might be more acceptable?

Where time and energy needs to be spent on learning such a system as Chinese writing, approximations might be regarded more negatively than in a society where redundancy of clues would allow more playful approximation, while yet retaining meaningfulness.

Such realities of the actual semiotic form of literacy — the orthography itself — acted on by parents could, in corners and crevices of daily life and interaction, become their own initiating impulses to behavioral adaptations. As we survey our multiple projects and results to this point, we are disposed to conclude this is the case. Nevertheless, claiming causes and effects between semiotic systems (such as an orthography and systems of other behaviors) is problematic.

Despite such elusiveness of a clear-cut result in our methodological search, there is indeed a practical conclusion to our speculation. Namely, acknowledgment for educators operating in a multicultural society of this fact: the wisdom in being cautious in coming to conclusions about what (in a complex interlock of nondiscrete cultural information) causes what results.

There is much that our line of research needs to address. For example, there is the question of whether the skills and abilities of the Chinese children (and those skills different forms in Western children) are found in texts of non-character shapes. However, our meta-interest is less in the area of the abilities produced by the practice with the orthography (or some other manifestation of a cultural habit) than in the methods of pursuing a cultural theme.

## 7. Conclusion: The Proximity Problem of What is Related to What?

Something is going on in Chinese children's visual learning that is different from that which occurs in the learning of their North American counterparts. We have identified some components of this difference and we hypothesize a pervasive presence in both literate and illiterate Chinese of a disposition, an interconnected network of interests, opinions, skills, attitudes, practices, expectations, motor abilities, awarenesses that are related to the ubiquitous micro-graphical forms. Children's early, unique grasp of, and sensitivity to, features of the geometric details of Chinese graphical units is part of their society's "learning how to mean," as Halliday puts it. The subtle, non-verbal behaviors and events that constitute sources of this socialization are yet to be recorded.

Ethnographers practicing observational strategies become skilled trackers of cultural themes and patterns. To this general skill, Lamb's theoretical position brings an added feature, and, principally, an efficiency. This position provides a procedural, metaphoric template for the study of information networks beyond that of the more recognized and established linguistic systems. In addition, accompanying the stratificational propositions of Lamb's work are implicit precautionary assumptions concerning leaping to whole cultural meanings from what might seem, to a casual observer, to be a discrete unit.

We have documented our observations, identified and commented on problems and opportunities of studying the visual cultural information system which is one feature of non-verbal knowledge. However, there remain those same issues and questions which we outlined in the opening section. Our sequence of probes from the original event and later for encountering events in that vast network of relationships was not determined by a logic of proximity of one behavior being next in line with another, but rather by the opportunities circumstance placed before us. This strikes a researcher as not being as clean as it should be. But the network is an interactional context, so this strategy is not as "messy" as it might appear. In our work's developing frame of examination of the visual meaning-network related to the visual micro-space character system, each new datum source which we identified we placed as one more node in an interaction spreading, in terms of our discoveries, in galaxial formats from that original bike-ride event. Nevertheless, we find no rules or procedures of tracing a network we can state at this point, but rather simply a prerequisite attitude that we regarded as necessary to the determination of an approximation of "meaning" of an event.

Our form of encounters with the visual sub-theme within the visual semiotic progressed from participant observation to formal testing, was criss-crossed with further observations. But again this sequence followed the logic

of immediate necessity rather than a pre-established, absolute *sine-qua-non*, obligatory, logical strategy. Indeed, any of the recorded or other cultural observation entry points could have led an analytical, persistent observer into a completeness of this semiotic domain and eventually a cultural description, a recording of the complexity of a way of life. Such a view is basic to any understanding of a people whose total cultural knowledge always constitutes a coherence.

There are indeed unique problems for those working in the nonlinguistic domains where analysis and recording categories are still not agreed upon. Issues of relationships, explored by Lamb concerning the linguistic information system, present special problems to researchers examining such nonlinguistic phenomena as those which we have pursued as a result of a query on a bike ride. The reason is that observers' unfamiliarity with the nature of the units make nonverbal events, their components, and categories less available for, or accessible to research, than is the case with the more taxonomically-developed linguistic systems.

Indeed the establishing of categories for this type of nonverbal exploration is a problematic matter. In a symposium exploring Lamb's theoretical assumptions, a striking piece of prose by J. M. Barrie illustrated from a viewpoint outside of semiotics, both the "network" viewpoint of multi-media connected relationships and, consequently, the difficulties of looking for discrete connections of any one section. Furthermore, this viewpoint expresses the complexity of delineating informational associations in either the child's mind, or indeed the microspace universe.

> I don't know whether you have ever seen a map of a person's mind. Doctors sometimes draw maps of other parts of you, and your own map can become intensely interesting, but catch them trying to draw a map of a child's mind, which is not only confused, but keeps going round all the time. There are zigzag lines on it, just like your temperature on a card, and these are probably roads in the island, for the Netherlands is always more or less an island, with astonishing splashes of color here and there, and coral reefs and rakish-looking craft in the offing, and savages and lonely lairs, and gnomes who are mostly tailors, and caves through which a river runs, and princes with six elder brothers, and a hut fast going to decay, and one very small old lady with a hooked nose. It would be an easy map if that were all; but there is also first day at school, religion, fathers, the round pond, needlework, murders, hangings, verbs that take the dative, chocolate pudding day, getting into braces, say ninety-nine, three-pence for pulling out your tooth yourself, and so on; and either these are part of the island or they are another map showing through, and it is all rather confusing, especially as nothing will stand still. (Barrie 1928: 13)

In like manner, neither are those customs, skills, etc., which we have explored discrete pieces. Rather they intrude into other behavioral networks of the culture member's knowledge. The result is that (like Barrie's analogy) placed all together, they constitute a moving, three-dimensional web of embedded connections, a galaxy of meaning in which cross-pathway patterns and customs infuse the totality in nonstatic ways.

From that first observation about a name of a bike rider to structured and planned tests, we were surrounded by evidence of a special and well-developed, pervasive, mostly nonverbal Chinese interest in a small band of visual material. We noticed in the Chinese child and adult subtle skills and awarenesses of diverse micro-variations in the actual form. We saw indications of thinking spatially. At times we saw small variations — miniscule, unintended finger movements when a Chinese would be silently thinking through a character sentence. And we recorded a wide-ranging variety of the use of these special types of visualization being engaged in daily. But despite this work we have noted but a fragment of what exists in the Chinese culture related to this thematic interest. Hence, we conclude that the Lambian "messiness" viewpoint is salutary for educators dealing with the issues of living, appreciating, and working in a multicultural society.

Could a system such as an orthography have an influence in interacting with the users of that system? In such a possibility concerning his central focus, language, Lamb takes a cautious interest. His broader perspective of cultural knowledge favors the perspective that any strand of a network could equally well serve as a starting point; there is no single source of influence or beginning of a cultural theme, whether that theme involves the semiotic system of movement proxemics as in the overpass example or microspace. Suggesting, as we have, connections among early learning of one sign-system — the orthographic—and the wide-ranging behaviors of the people who use that system, is proposing somewhat a Whorfian-like view. However, again from a strictly stratificational standpoint, there would be neither a certain or a best place in the network from which to begin to explore an observed difference, or a way to identify an origin of a cultural theme.

So it is that, while any one strand of the totality of information of a people, or an individual, if followed thoroughly, would surrender to the investigator the entire information system, nevertheless, despite all the complexity or "messiness" (to again use Lamb's metaphor), there are identifiable domains. One of these is a networked knowledge of the seen world. We have explored a small corner of this in the studies reported above. We, too, could have begun from a quite different entry-event, but the fact is that some cultural moments are more interesting to an observer, and hence, are more "obvious". Some details (such as the traffic example) come to a researcher's attention in a more memorable way through their being part of a situation which has more personal

texture. We used the bike-ride context as the ground foundation from which to discuss one thread of China's meaning.

At this juncture in our work, we see the study of the visual semiotic as an area of broad scope containing research themes extending from complex forms of visual creativity (like those practiced by an Albert Einstein, or a Stephen Hawking), to such micro-noticing features as those on which we have reported. But before understanding of the network nature of a cultural information system could achieve the results of which it is richly capable, generations of detailing features of visual learning is necessary. To this end, while puzzling about rules of connections and inter-relationships, we have attempted to make a contribution.

Certainly, what a child knows includes diverse semiotic systems, including the meta system we call the visual: what an object can be used for, who uses it, its feel, shape, where it is usually found, what it looks like, its size, color, and texture. Each of these is an area of knowledge, it is one part on the "maps showing through", as Barrie might say, and each constitutes an interconnected drawing upon data from multiple semiotic universes.

The domain of visual information systems, where our interests have been located, is one area of increasing importance for education, for Lamb himself, and for semiotics in general. Although the emphasis of stratificational work lies principally in the study of the linguistic information system, Lamb's interests and later work includes this additional, nonlinguistic complexity of visual knowledge/culture.

Simple cause-effect descriptions do not touch the reality of a people's information, nor are quick applications to insights of observations about culture likely. In this report we propose to our field of education that the pursuit of understanding cultural uniqueness and excellence as illustrated above is itself without further requirement practical result in a society where increasingly the presence of socially diverse groups is part of the reality.

For educators and others, relationship theory contains a practical reminder of necessary precautions against assuming linear, cause-effect associations. A culture's information system is a cohesive, interlocking reality. Too anxious to find the inner essence of the totality of things, an observer like Goethe's Faust about ultimate knowledge might assume that the examples gathered derived directly from the atomic core of the Chinese orthographic system. But this system itself and its emphases might be results of, not causes, might add to, or be part of, myriads of other connections. The meaning and relationship of a cultural event, like a word, lies in every feature of the self-supporting, interlocking system of knowledge. In a stratificational view, an inextricable combination of causes and effects lies within the enmeshed interacting features of a people's implicit/explicit informational system. This view is problematic

for those wanting swift comprehension of cultural behavior. However, as writers from Machiavelli to Henry Lee Smith, Jr. have advised, description of the way things actually are constitutes the wisest basis for any conclusion.

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