



THE QUARTERLY NEWSLETTER OF THE  
*LABORATORY*  
*OF*  
*COMPARATIVE*  
*HUMAN COGNITION*



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University of California, San Diego

# THE QUARTERLY NEWSLETTER OF THE LABORATORY OF COMPARATIVE HUMAN COGNITION

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## Introduction: Opening Up Questions

In this issue, we have three very different articles. The first one, by Diane Beals, presents a set of preliminary findings from analysis of beginning teachers' discussions in a computer network. Computer networks and electronic mail as new mediators of human activity and cognition have been previously discussed in our *Newsletter* by Levin (April, 1982), Duranti (April, 1986), and by the authors of the special issue edited by Belyaeva and Cole (July, 1989). Adam Rutland discusses the notion of the zone of proximal development - a theme previously discussed by many authors in this forum (e.g., Cazden, January, 1981; Lopes, January, 1981; Schneider, Hyland & Gallimore, October, 1985; McLane & Wertsch, July, 1986; Engeström, January, 1986). Finally, Jens Brockmeier tackles the construction of time in children's development, discussing the relationship between cultural-historical and Piagetian approaches (see for example, Lucy, October, 1988; Gaskins & Göncü, October, 1988; Ayman-Nolley, October, 1988; Brown, October, 1988).

Beals concludes that messages written in the form of personal event narratives have a special status as compared to other types of messages. They receive more responses from peers. This finding opens up a number of questions. Is the special status of narratives specific to teachers discussing classroom events? Or is it specific to discussions in computer networks? Or is it specific to discussions among people who are "at a major transition in their development," as Beals suggests herself. Or is the finding perhaps a more general indication of the status of narratives in human interaction and cognition?

Rutland questions the validity of the notion of "scaffolding" (see e.g., Jacobs, April, 1990) as a characterization of the zone of proximal development. He argues that the zone of proximal development should be seen as co-construction of meaning through negotiation and continual revision of the situation by the participants. Rutland suggests three constructs to clarify this interpretation: appropriation, semiotic flexibility, and affordance. Tempting questions are evoked: What is the relationship between appropriation and internalization? Or between semiotic flexibility and multi-voicedness? Or between affordances and tools?

Brockmeier points out the crucial role of children's prelinguistic understanding of time. Brockmeier identifies three fields of prelinguistic time practices: the sensorimotor or practical field, the interactive or communica-

tive field, and the field of constructing the self. Particularly the latter two were largely neglected by Piaget. An obvious question arises: How are the three fields related, connected and integrated? Is the field of constructing the self somehow similar to the two other fields, or is it perhaps the integrating factor?

It is characteristic of good research that it leads to interesting and fruitful questions.

Yrjö Engeström  
Olga Vasquez

## Stories From the Classroom: Rate of Response to Personal Event Narratives Told by Beginning Teachers

Diane E. Beals

*Harvard Graduate School of Education*

Personal event narratives seem to carry special status in the conversation of adults. According to Polanyi (1985):

people do not choose to talk to each other at length "about" matters which are not of some interest to them . . . . . A "proper" storyteller...will, therefore tell stories whose "points" do not ignore generally accepted truths about the nature of things, but which, rather relate them in some fashion....[S]tories can provide useful insight into what matters to those for whom the story is a "normal," "acceptable," "understandable," commonplace production (p. 1).

"Stories," as Polanyi calls them, carry special insight into the thoughts and beliefs of those who tell them. These stories reveal more about the teller than other kinds of conversation.

According to Labov (1972), a complete narrative includes evaluation, adjunct to the story line, that is the means by which the narrator expresses the point of the narrative. There are numerous ways of reporting the same sequence of events, but it is the process of evaluation, in which the storyteller assigns prominence to some event(s)

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or state(s), that tells the listener what the events and states mean to the teller. It is evaluation that, according to Polanyi, exposes the inner workings of the mind of the narrator to the listener.

The purpose of this paper is to explore the use and effects of personal event narratives told by beginning teachers in their discussions among themselves on a computer network. What kind of narratives appear in these discussions? What effects do these narratives have on their readers?

## Data Base

The narratives used in this analysis come from discussions on a computer network that links beginning teachers to each other (Merseeth, 1989). Members of the network are graduates and faculty members (who are also experienced teachers) of teacher training programs at Harvard University. The purpose of the network is to provide support and continued training throughout the crucial first years in the classroom. Discussions on the network center around issues that arise in the life of a beginning teacher.

Transcripts from the network consist of a series of messages sent by network participants. Each message contains a header (which includes such information as the message number, date and time sent, the addressee, the author, and a "re:" line, suggesting the topic of the message) and the message body (which can be from one to one hundred lines). (A sample of a conversation transcript is found in Appendix A.)

The transcripts represent the public conversations that take place on the network within a "forum." Forums are electronic bulletin boards (or computer conferences) to which each network member has access, both for reading and sending messages. Forums focus on topic areas specific to teaching, such as content area and curriculum (science, math, language arts, and social studies), classroom management, discipline, evaluation, school reform, and educational philosophy.

## Subjects

Thirty-five network members, graduates of Harvard's Teacher Education Program (TEP), were in their first or second year of teaching. They were located throughout the United States; New Mexico, California, Oregon, Florida, Tennessee, Virginia, North Carolina, Illinois, Minnesota, Maine, Connecticut, New York, and Massachusetts were

represented. Five faculty and staff members, all experienced classroom teachers, also contributed to discussions. Each member knew about half of the other participants upon joining the network.

## Analysis

Personal event narratives seem to play an important role in network discussion. In my initial cursory pass through transcripts from discussions over a six-month period, I was struck with the impression that when a networker told about a specific event that occurred in their classroom (e.g., "Today, in my fifth period class,..."), they received a great deal more response than did those who gave a more general description of what happens in their classroom (e.g., "My fifth period class is constantly..."). Through a more systematic analysis of a small sample, then, I explored the relationship between telling personal event narratives and responses by other network participants.

On my second (more intensive) pass through these transcripts, it became clear that the distinction between personal event narratives and general descriptions was a blurred one at best. It was not always obvious when a writer was telling about a specific event and when she was describing, in more general terms, the state of affairs in her classroom. One example is the following message. The writer lists a number of specific incidences in support of her reasoning for a particular means of handling behavior problems:<sup>1</sup>

msg no. 5463 filed 1:36 PM Nov 27, 1988  
from laurie  
to discip  
re: having kids leave the classroom

I have sent two kids from my classroom this year. Once I did it to avoid a further confrontation. I had asked a student to move to up a seat in the front of the room. He had told him to take, or to leave the room. He left. Once, I told a student to leave for using profane language toward another student.

I found it affective [sic] in both cases—because they were followed up with one-to-one conversations.

I have also asked kids to leave for 5 minutes to "get themselves together" (for example when they can't stop giggling, or can't seem to sit still.) This is often helpful as well.

In this message, Laurie recounts an event, but the telling is embedded in her argument in a list of examples,

and is a less salient feature of the message. In order to test my hypothesis of the differential effects of the two types of discourse on the readers, a method of distinguishing the two became crucial.

Transcripts from discussions in the "math" (mathematics curriculum and instruction issues), "discip" (discipline and behavior management issues), and "news" (general discussion issues) forums, from September 1, 1988 to February 28, 1989 (six months), were selected for analysis (a total of 240 messages). Discussions in these forums were representative of the types of discussions that take place in all 11 forums. Since my focus was on the differential response rates to personal event narratives versus classroom descriptions, all messages from these forums that included any kind of narrative about classrooms (with temporal sequencing) or description of a classroom situation (without temporal sequencing) were selected. Twenty-three such messages were identified.

Two "naive" judges (persons not involved in the network, or in the study of narrative) were asked to sort these messages into two categories. The first category included "specific one-time events, that happened to the person telling the event, and told a clear beginning and end within the message;" the second category included all others. The judges reported that the task was difficult for some of the messages. I, too, performed the sorting task.

Agreement between each judge and the author was 78 percent and 83 percent, respectively. Only messages for which there was 100 percent agreement among all three raters were chosen for further analysis. Fifteen messages met this criterion, eight personal event narratives, and seven "others." Messages in the "other" category included one "parable" (fictional narrative with a moral), and six descriptions without temporal sequencing. No other types of narrative were found.

The eight messages that were excluded were examined in order to ascertain the reasons for disagreement. One includes an event told out of chronological order (see Appendix B), reporting the event from different perspectives (her own, a student's falsified version, and the student's mother's perspective), making it difficult to identify it as one event. Four of the messages have a general description embedded in the exposition. The disagreement appears to stem from the issue of whether these are general event descriptions (scripts) or a specific event. In three of the messages, the writer embeds examples (in each case, two examples) to support their arguments, as Laurie did in the above message. Judges apparently dis-

agreed on whether to call those personal event narratives or not.

Length of these 15 messages (in number of lines as the message originally appeared on the computer screen) was recorded. Verbs in main clauses were also counted and the proportion of past perfect tense verbs in each message was computed. Finally, transcripts of discussions in which these messages appeared were reread to ascertain the number of messages written in response to them. Table 1 displays the results.

## Results

**Distinction between event narratives and non-events.** The proportion of past perfect tense verbs (as opposed to all other verbs) in main clauses appeared to be

Table 1

Messages, Response Rates, Length in Lines, and Proportion of Past Perfect Tense Main Verbs

Message Number	Number of Responses	Message Length	Proportion of Past Tense
<b>Personal Event Narrative</b>			
5147	2	19	.857
5517	1	22	.344
5628	8	49	.366
577	3	29	.478
6042	13	84	.067
5648	1	29	.300
4515	0	18	.706
6366	6	44	.114
<b>Not Personal Event Narratives</b>			
5074	1	15	.000
5283	3	34	.133
5371	1	29	.086
5807	1	82	.208
6012	0	29	.000
4786	1	18	.050
4975	0	26	.208

a good predictor of whether a message was judged to contain a personal event narrative (or not), with a moderate correlation between them ( $r = .619$ ,  $p < .0138$ ). The mean proportion of past tense main clause verbs was .404 for messages containing events, while for "other" messages had a mean proportion of .098 past tense verbs.

Labov (1972) argues that narrative clauses use the past tense as a marker of temporality. The findings here suggest that there is a trend toward using past tense as a marker, but past tense is not a requirement. In two of the personal event narratives (categorized as such by three judges), the historical present was utilized. According to the judges in the study, past tense marking is not a strict requirement of a personal event narrative.

As an aside, one of these stories told in the historical present tense, received 13 responses, another received six responses, indicating that the use of historical present tense in the telling of an experience carries (at least) the same power to elicit responses as do past tense stories. (These two writers often use the historical present in telling personal event narratives. And, although I am not sure if this is related, these two writers often receive many responses to their contributions on the network.)

**Predicting number of responses.** Length of message was moderately correlated with the number of responses ( $r=.664$ ,  $p < .0069$ ) in this sample. Longer messages, on average, received more responses.

Messages in which a personal event narrative was told received an average of 4.25 messages in response. However, messages in the "other" category were responded to by only a mean of 1.00 messages. Because of the small sample size, the difference is not significant ( $p < .0831$ ). However, when length of message (number of lines) is controlled for, the difference becomes statistically significant (see Table 2).

Table 2

**Regression Models: Personal Event Narrative and Message Length Predicting Number of Responses (n=15)**

Model	Event (p)	Length (p)	Interaction (p)	R <sup>2</sup> (p)	Delta R <sup>2</sup> (p)
I	3.25 (.0831)			.213 (.0831)	—
II		.112 (.0069)		.442 (.0069)	—
III	2.88 (.0433)	.106 (.0046)		.608 (.0036)	.116 (.0036)
IV	-3.81 (.0055)	.004 (.8331)	.192 (.0001)	.929 (.0001)	.321 (.0001)

There is an interaction between length of message and category of message. For non-event messages, the number of responses remains fairly constant (the slope is not significant) length across a wide range of lengths. However, for messages that include a personal event narrative, longer messages, on average, receive more responses. A message containing a personal event narrative receives approximately two responses (1.96) for each 10 lines of length.

## Discussion

Why this differential rate of response to personal events as opposed to scripts? Close examination of messages suggest that the personal event narratives are more emotionally charged, or in Labov's terms, more highly evaluated, than the general descriptions.

Consider two of the messages, both from beginning teachers at public high schools in Massachusetts. One, by Barbara, was judged to be a personal event narrative; the other, by Paula, was categorized as a general description.

msg. no. 4975 filed 7:56 PM Oct 16, 1988  
from paula  
to news  
re: good news

Thanks for all your support. I haven't been on the network because I have been having problems with my computer. Hopefully things are better now. My classes seem to be getting better. I really have 4 good classes. For the most part, the students in these classes are interested in learning chemistry and earth science. My problem class seems to be becoming a little more manageable. They realize that although I am a young teacher, (in fact they told me I am the youngest teacher they have ever had) I mean business. They were really shocked after the first test. It was much harder than they thought. I didn't mean to make it that hard but after correcting the exams and returning them to the students, I felt that these tests really shocked these students into the reality of the classroom.

ji~I still have days when I feel that the students in this "problem" class really are not listening to me and are not paying attention to what is going on. But then the next day things seem to be better.

I don't know if I told you that most of these students do not have to pass this course. They simply have to take a third science class which ends up being my chemistry class. So I have to contend with this. Many of these students are failing my class. Their averages are below 60 and many of them simply do not care. I still haven't figured out how to deal with this.

I hope everyone is surviving and thanks again for all your support.

Paula

msg. no. 5777 filed 8:07 PM Dec 23, 1988  
from barbara  
to discip  
re: question of discip & control

I know that it has been some time since Wendy first entered her discip issue, but it triggered a lot of reactions in me. First of all, I have discovered that I will not yell at my students, for that matter I will not and can not really yell at anyone. Some of the people that I work with see this as a problem, but I will always believe that proper behavior can come from speaking, embarrassment, and detentions.

I had an oh so depressing experience the other week in one of my classes./ A boy that is totally unmotivated and sees him self as a "tough kid" and "troublemaker" responded to my telling him to move his seat because he would not stop talking to the person next to him, with a "fuck you" under his breath, but loud enough for me and most of the class to hear. I was shocked to say the least. I was silent for a minute and then told him to get out of class and go right to the Asst. Principal (his disciplinarian). I had a hard time continuing the class, but were they ever well behaved.

The next day I gave the class a talking to (the majority of them get out of hand during class). I told them that I guess I had been under the false impression that they were adults, they are juniors in H.s., and that since I was obviously wrong we were going to lay some new ground rules. I then laid down the law with no more side chatting, four (foul) language, etc. Since then for the most part they have been a lot better.

Another run on message, but I think what I was trying to get to is that you don't have to yell to get results and that I am really beginning to hate this word "Control", why are so many people obsessed with having "Control"? Isn't there a better word to use, like maybe constructive cooperation, or something on that line. Well I think I will close with that. Have a good vacation everyone!

-Barbara

Paula's message is a description of how her classes, especially her "problem" class, normally behave. She uses the verb, "feel," and its past tense "felt," a number of times, but a reader does not catch the impact of those feelings as one does in Barbara's message. Twice Paula reports that her students were "really shocked," but does not use strong language to report her own feelings.

On the other hand, Barbara begins with a statement of an opinion about how classroom discipline should be

handled (based on her response to Wendy's earlier personal event narrative). Then she launches into a personal event narrative, in which the reader can catch the edge of emotion she is still experiencing even as she writes the message weeks later. The narrative makes concrete her ideas, opinions, and feelings in a way that catches the reader's attention and empathy. She uses emotionally strong, descriptive language: "an oh so depressing experience," "tough kid" and "troublemaker," "fuck you," "I was shocked to say the least," "obviously," and "laid down the law." It is as if the retelling of the experience made it happen to her again.

The specificity of Barbara's message is prominent. She refers to specific persons and places, and recounts dialogue. Paula's message remains very general, not referring to any specific person (except herself). She does not cite any specific events (her report of returning tests occurred in all five of her classes). Barbara's personal event narrative focuses on a (relatively) novel occurrence, while Paula describes a routine.

Barbara's peers on the network sent three messages in direct response to her message. Paula, on the other hand, received no response to her message. The language of Barbara's specific experience apparently caught the attention of her colleagues and elicited responses in a way that Paula's general description could not.

This pattern is repeated through most of the messages used in this analysis. The writers of general descriptions avoid detail, and thus keep their emotional distance. Providing specific details and evaluations of events peels back one's personal armor, so to speak, exposing what really matters to the teacher. This vulnerability demonstrated by the storyteller invokes the response (and support) of peers more frequently than do the safer, more distant descriptions.

## Conclusion

Based on these preliminary results, the recounting of personal events appears to have a special status in computer-mediated conversations among beginning teachers. They receive more responses from peers. The specificity and evaluation found in these narratives about classroom life reveal more of the writer's feelings, thoughts, and beliefs than general descriptions of the same content. Further analysis of larger segments of network transcripts and clearer definitions of categories are necessary to confirm this trend.

These findings suggest, as does Polanyi (1985), that personal event narratives provide a data base for discovering the beliefs and implicit theories of the teller. The stories these beginning teachers tell about themselves and their experiences can provide useful insight into the life of the novice.

Snow (in press) has suggested that personal event narratives told by caregivers and children together (moving from biography to autobiography) are crucial to the social construction of a sense of self. The results of the current study suggest that this social construction continues in adulthood. The subjects of this study are at a major transition in their development, moving from college life to a career (and the obligations of adulthood), or from one career to another. Both press the subject into new roles and, thus require the development of a new sense of identity. The stories these subjects tell about themselves at this transition point provide readers (and researchers) with a rich source of information and insights about the development of beginning teachers, specificity, of adults, in general.

## Note

<sup>1</sup>Spelling and grammatical errors contained in text and appendices are from the originals.

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## Appendix A

Msg no. 1573 filed 8:48 PM Dec 17, 1987  
from bob  
to latest  
re: bad day

Well, I just had a miserable day today and thought I would share a part of it with you all—although, come to think of it, you all does not seem to be a very large group of people. Where is everyone else??? Well, anyway, I woke up today to find that the heat in my apartment was not working for some unknown reason and the temperature was 53 degrees. Brrrrr. Sneezing my way to school, where I hoped to do some early morning xeroxing, I arrived too late—there was already a line, a line which included an English teacher who always harrasses me about using the xerox machine every morning (which I do, but then again so does she). I decided to forgo that pleasure. My first two classes went well, except for having to deal with the complaints of a little nudge who got the highest mark in the class on a test, a 94, but who insisted on an extra point. Homeroom was a joy—that is if you like having it with 26 kids in a science lab room filled with beakers, pipets, rubber stoppers, etc. My third class would not sit still for one minute it seemed and when I ended

class (just a few seconds before the end of the period, or so I thought) it turned out that the clocks had been reset back five minutes, giving the class five minutes to go berserk. During this time I reminded one student about the quiz he

was to make up that day only to be told that he could not come (for the third straight week) and he told me it was none of my business why. When I told him that that was his choice but that his quiz grade would be a zero if he did not show up, he swore at me and walked out of the class, refusing to stop when I called him. It was then I noticed that while I was talking to him the rest of the class had left, even though the bell had not rung. I yelled down the hall, thoroughly exasperated, for them to come back—which most did, ever so slowly, but some had already left. I did not know whether to scream or cry. I had not felt like that since the first few weeks of student teaching.

The rest of the day was OK, but I am still very tense. Just when it seems like everything is going well and under control, I have a day like this. I wonder if this constant pressure will ever really let up to the point where I can be relaxed in school. It seems like I am constantly on the run, doing this or that.

As a footnote: I arrived home to find the heat still off and the temperature down to 49 degrees. Whoopeee!

Bob  
msg no 1577 filed 9:56 PM Dec 17, 1987  
from judy  
to latest  
re: bob's day

Hang in there bob, its almost vacation. I know how you feel and i have a simple suggesstion (it works for me) just take a couple of minutes (or seconds) during the day and stop and look at yourself and think about what a good job you are doing. Also, laugh about your situation when ever you can; it can really help. Things will get done—papers will get corrected and things will get xeroxed—maybe not when you planned on it happening, but



it will get done. I have a feeling the pressure is never going to let up for anybody who teaches, so it is up to us to figure out how we can live our lives while dealing with this pressure. (i had a rough day today and i feel much better after typing this!)

judy

msg no. 1584 filed 1:21 PM Dec 18, 1987

from john

to latest

re: Bob's bad day at the office...

Or "It could be worse, We could all be selling real estate..."

Yo, Bob...I had lots of days like this, esp. lately during the close of the term. This past wednesday was the last day of the term, we had 12 inches of snow (first storm of the winter).

To be frank, I didn't even try to teach, not math anyway....I devoted the entire day to reflection on the past semester, I asked them what they thought I had done wrong, what they thought they had done right and wrong over the year.

In geometry we talked about whether the course really lived up to its billing as a "logic teaching course". All those neat discussions we've been having long-distance came alive (I got to nod a lot and simply ask more questions). I'll admit that I was surprised to learn that many of my students in my precious "wonderful" period 3 shared their opinion that "Geometry doesn't teach logic as much as it rewards those who are already logical." One student pointed out that he had thought that we hadn't done very much, the HE hadn't learned much until he looked back at the first chapter and saw how EASY everything looked. He wondered how it could have ever been hard...

One student who I really like a lot (a hippie type girl 20 years after her time) had been having what I considered a very hard time with the course. She offered that while she understood what the course was trying to teach, she knew that she didn't want to learn it. She stated that how she viewed the world WAS being effected by the course (LOOK MA TRANSFERENCE OUT OF SUBJECT AREA!!!!) but that disturbed her. She didn't like the fact that she was beginning to view the world in black/white logic.

Now for their part I'm sure that the day was viewed as a good blow off day...For my part I think that the issues of teaching, the issues which keep coming up on this forum are some of the neatest issues of life in general. But you'll never see this on anyone's curriculum list.

msg no. 1586 filed 1:25 PM Dec 18m 1987

from john

to latest

re: On the other hand..

During 6 and 7th period we stared at each other...

Too much drugs I guess, I couldn't be my fault.

msg no. 1587 filed 4:51 PM Dec 18, 1987

from tack

to latest

re: Bob's Bad Day

Bob,

You have my sympathy and empathy.

On occasion, I have found it helpful to drop back and tell myself that I cannot always take it so personally if something goes wrong. Certainly I care, but, like everybody else we'll have bad days based on what we do and on what the environment does to us. I'm doing the best I can and plan to grow and learn as I go. The kids are lucky to have you. Actually just yesterday I was started to loose my control of my temper because they would not chattering. I myelled at the for one brief second, saw the reaction and heard myself. I was able to then shift gears. I told them that I would no longer tyake it personally if they talked out od of turn, i.e., to each other. I reminded them of the mutual respect atmosphere I require in the classroom, reminded that of the possibel disciplinary conseqesnce, and told them that thje choice was up to them. It worked for the next 20 minutes, until class ended. I still have real difficulty throwing a kid out of class. I have to look at that again in terms of the impact keeping the student will have on the resst of the students.

msg no. 1590 filed 9:47 PM Dec 18, 1987

from matt

to latest

re: Bob's bad day

As everyone else has said, you are hardly alone. I have found it helpful to bring up incidents with the other teachers. I have found, much to my relief, that some of the hardened vetererans do not fair a whole lot we do on a daily basis. It's easy to see the veterans going about their work and assume that their job is all going smoothly. However, other teachers are watching you go about your job and probably making the same assumption about you.

When I am in the midst of a good day, or just a good class, I just try to enjoy it because I know that the next day or the next period may be a disaster. Likewise, when I realize that I'm in the midst of a bad day I try to minimize the damage by not trying anything too ambitious and lowering my expectations for that day a little bit.

The thing that I find I need to work on is not letting a particularly bad class sour all the rest. I only have five minutes between periods so I don't have too much time to calm myself down before the next wave hits. I have found that if I can mask my frustration that remains from the previous class, rather than let it spill over into the next class, I can usually calm down and make a "come back".

However, sometimes circumstances don't allow us to bounce back and it just continues to be a bad day. For example, I have

a low level math class (ninth graders) that is split by the lunch period. So when they come back from lunch they are still on a sugar high and are impossible to settle down (these kids still need a recess but don't have one). Well today they came back and were beginning to settle down when there was an explosion followed by the sound of breaking glass. I went outside the class room to find that a toilet in the boy's bathroom across the hall had been blown to bits by some sort of bomb. Needless to say my class went down hill from there and I let it upset me. In hindsight I realize I shouldn't have tried to fight it so hard. Sometimes I think it is more healthy to go with the flow than try to fight it. Maybe I should have tried to relate the explosion to math or something crazy like that than to expect the kids to settle back into multiplying fractions.

## Appendix B

msg no. 5068 filed 10:21 PM Oct 26, 1988  
from laurie  
to discip  
re: dishonesty

This has been quite the week for dishonesty in my classes. I have caught 4 kids cheating and had one kid tamper with a note from his mother! The last really blew my mind. I had my freshman class take home their mid-term grade report and have it signed. One kid returned a note from his mother saying "My son lost his midterm sheet. He thinks he left it at school. He told me his midterm grade was a D+." The fact is, however, that he told his mother he had a C+ and then tried to change the C to a D. It was a pretty sloppy job. I spoke to his mother in an effort to figure out exactly what transpired. . . .Neither of us is too pleased!

\*sigh\*

## The Zone of Proximal Development: A Mutual Construction of Meaning Between Adults and Children with a Learning Difficulty

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### Introduction

Vygotsky (1978, 1986) considered the zone of proximal development (ZPD) as the central tenet of his explanation of the transition from the interpsychological level

to the intrapsychological level of human functioning. The ZPD has proved useful theoretically and in the assessment of cognitive ability. However, in Vygotsky's definition of the ZPD he never provided an explanation of what actually constitutes "problem solving under adult guidance or in collaboration with more capable peers." There is a real need to discursively explore the joint constructs that can be interpreted as making up a ZPD. By examining the exact nature of the instructional process one can gain insight into the construction of the ZPD. This paper will take up this enterprise, while drawing on concrete examples of everyday interaction between adults and children with a learning difficulty.

Experimental research by Wood, Bruner, & Ross (1976) suggested the notion of "scaffolding" as an explanation of the instructional setting during joint problem solving. This idea implies the adult structures the child's activity by reducing the degrees of freedom in task performance, then gradually introducing the child to each component sub-routine of task completion. However, it seems that the concept of "scaffolding" is a product of the socio-cultural context of the experimental laboratory. This social environment artificially constrains the possible interaction between people. The experimenter's role is clearly to instruct and set the goals of the task, while the child takes a more passive role of responding to the experimenters' motivated instructions. The concept of "scaffolding" suggests a rigid sequential structure to the process of cognitive change, while sidelining the reciprocal nature of the interaction in the ZPD. Experimental investigation into the nature of interaction in the ZPD fails to capture the fluid and creative nature of development. Thus the process of joint problem solving is distorted within the laboratory context. It seems necessary to go beyond experimentally derived notions of what makes up the ZPD towards a genuine appreciation of the mutual negotiation of the meaning of objects and events between adult and child.

The need for a co-construction of meaning in the ZPD results from the fact that objects and events within the ZPD have multiple possible interpretations, depending on the socio-historical constructed view of each participant. In a sense the parties within the ZPD have different situation definitions (Wertsch, 1984). They have different functional definitions of objects, varying overall goals and contrasting action patterns to reach such goals. This need not hinder social interaction within the ZPD, so long as the participants can act "as if" their understandings are the same. Indeed, it is the very divergent nature of situation definitions that allows for cognitive change in the

ZPD. This point has been made in a similar manner by Newman, Griffin, & Cole (1989).

By studying examples of joint problem solving involving adults and children with a learning difficulty the wish is to provide a more positive approach to the developmental problems of these children. Firstly, this is achieved by focusing on the potential development of the children under guidance, not on their individual cognitive faults. Secondly, theoretically problem solving will be seen as surmounting the difficulties of constructing shared cultural meanings within a collaborative situation, not as any individual cognitive deficit within the child's mind. The aim is to show that shared problem solving for these children is more a matter of the joint negotiation of goals and meanings, not the adult's structuring of activity so the child forms a new representation in their mind to reach the next task level.

The hope is to move away from the didactic nature of "scaffolding" towards a real emphasis on the active role of both participants in the ZPD. The child may be the novice in the situation, but ideally they are continually striving to achieve proximity and involvement with others. Motivation is essential to any child who wishes to enter the complex world of human culture, by negotiating with adults the socio-historical meanings people give to objects and actions. The adult's role is to guide the participation of the child towards their own culturally defined system of activities. This emphasis on reciprocity within the zone is shown in the following three joint constructs that describe interaction within the ZPD.

### Appropriation

This concept is a joint construct between the adult and child within the ZPD. Appropriation was first suggested in the work of Leont'ev (1981) as a recognition that children actively construct their knowledge within a socio-historical context. This notion has also been used in the recent work of Newman et al., (1989), Wertsch & Rogoff (1984). Children do not just learn through interaction with the physical environment, but they also gain knowledge by active negotiation with others in their culture.

In understanding the idea of appropriation it is essential to recognize that objects or words in the world have a social history and functional meaning that is culturally specific. An understanding of these "tools" (i.e., objects or words) only evolves from interaction in culturally organized activities. The child does not individually reinvent each "tool," but they need to become aware of its socially

constructed meaning. The joint negotiation of the meaning of "tools" is a two way process between adult and child. Both bring their own interpretation of the "tools" into the situation, either they can select the culturally appropriate meanings or the "tools" themselves can be transformed and given new cultural meanings.<sup>1</sup>

The contradictory nature of each participants' definition of the meaning of "tools" in the situation does not necessarily hinder cognitive change in the ZPD (Newman et al., 1989). Social interaction can still occur so long as the teacher interprets the child's activities as if they had been produced with the teacher's goal in mind. Thus the child's actions, no matter their nature, are viewed as an attempt by the child to solve the problem in the appropriate manner.

The process of appropriation can be seen in this example of a ZPD, in which two adults are instructing J. to solve the problem of how to thank the owner of the house for cooking the meal:<sup>1</sup>

### Sequence 1

Owner: Have you enjoyed your meal  
Adult 1: Yes//Have you enjoyed yours (looking at J.)  
J.: Umm... (nodding head)  
Adult 1: Have you/What should that umm be//Have you enjoyed your dinner or supper  
J.: [ Umm...  
Adult 1: [ Yes/Come on  
Adult 2: What's that little word  
J.: Yes  
Adult 1: Yes what  
J.: Yes please  
Adult 1: No try again/Yes what  
J.: Yes thank you

J.'s words were interpreted by the adult in terms of her definition of the required meanings to use in the discourse, which in turn were influenced by the culturally polite manner of thanking a person. The adults continually interpreted the child's activities as an attempt to solve the problem. Equally, J. actively tests out possible solutions to the problem, like "Yes" and then "Yes please." J. finally appropriates the suitable definition of the task and the co-construction of meaning is complete.

### Semiotic Flexibility

This notion is an important element in the process of appropriation. Objects and events can have numerous meanings to different people within the ZPD. Semiotic

flexibility is an ability on behalf of the participants to appreciate the different linguistic meanings used within the ZPD. It is through this grasp of the cultural meaning of words that the child finally enters the appropriate system of activity. Both participants bring semiotic flexibility to bear in the mutual construction of meaning in the ZPD.

Semiotic flexibility is a prerequisite for success when participants engage in the mutual construction of meaning within the ZPD. Adults generally have this ability, but often use semiotic mechanisms like reference and abbreviation to improve the child's semiotic flexibility (Wertsch, 1985). Reference involves drawing the child's attention to a specific event using signs. Abbreviation implicitly requires the child to compare their behaviour with the appropriate actions.

Attending to the communication of others is essential in showing semiotic flexibility. It is through listening to others communication that participants understand the appropriate meaning of an action. Only then can they redefine their actions in accordance with the required activity pattern.

The importance of semiotic flexibility is seen in this example of the ZPD. A. has a problem realizing the adult's different definition of the necessary height to go on a swing:

### Sequence 2

(A. is going very high on the swing)

Adult 1: A. please

Adult 2: A. don't get to high

.  
.  
.

Adult 1: A. come off there/A.//Come off there (runs to the swing and tries to take him off)//  
Come off [Come off come off

A.: [Sorry sorry (covers face)

Adult 1: It is very very dangerous if you go up high (takes him in her arms)

A.: Sorry

Adult 1: Now look at it (pointing to the swing)//It will fall over and your fall on your head//You are going to hurt yourself and what's more if you have your feet sticking out you are going to hurt somebody else/And it would be to late to say you are sorry

Later on during the same play session A. shows his semiotic flexibility, as he appropriates the required activity pattern, as seen here:

### Sequence 3

Adult 2: You're getting to high there A. aren't you//  
You're getting to high aren't you

A.: Umm...(P. begins to push A. and the swing higher) No more P. no more//M. (Adult 1)  
M. M. look down now

.  
.  
.

A.: M.//Look down [Look down

Adult 1: [Down yes (P. starts pushing A. again)

A.: Ah P. No

P.: (Laughs)//Alright

A.: Yes

The adult in this situation really does have a cultural understanding of the meaning of objects and events, but she does help the child gain semiotic flexibility by making references; like, "Now look at that (pointing to the swing)" and using abbreviations, like, "It is very very dangerous." Subsequently, A. develops a good understanding of the linguistic symbols or actions in the situation; such as "up" or "down," "push" or "not push" and "bad" or "good." Then in the second sequence it is through an appreciation of these meanings he enters into a more appropriate activity pattern.

### Affordances

Gibson (1979) initially proposed the notion of affordances. He contended that humans directly perceived affordances within activities which were supported by the environment. It follows from this argument that if the environment encourages certain activities, which are culturally constructed, then affordances must be social too (Still & Costall, 1989). However, Gibson never built on this implication of his theory of affordances as he was unwilling to abandon his earlier opposition to relativism.

Both Vygotsky and Gibson attempted to escape from the philosophy of dualism, which dominates cognitivism nowadays. They focused on the interrelationship between organism and the environment, in particular, the social environment in Vygotsky's case. Gibson and Vygotsky offered theories of perception and cognition respectively that were anti-dualist because of their emphasis on hu-

mans as active creatures engaged in giving meaning to their existence.

The aim here is to combine Gibson and Vygotsky so enriching the concept of affordances by defining it as socially constructed environmental opportunities provided within a ZPD. Every social setting defines the physical limits of possible activity, this depends on the meaning given to actions by the adult and the manner in which the meaning is interpreted by the child. Therefore, a new environment can offer the child a greater variety of meanings within a ZPD, so allowing for the appropriation of more activities.

Environmental opportunities afford the child the liberty to actively explore new novel ways of acting within the complex maze of human culture. Affordance is a process mutually constructed by the participants in the ZPD which allows for the increased possibility of appropriation.

The research and theoretical discussion of Valsiner (1984, 1985) also emphasizes the process of affordance in cognitive change. He suggests the socially constructed concept of the "zone of free movement" as an important factor in determining a child's mental activities, because it determines the action boundaries of the child. Similarly, Valsiner focuses on environments that afford new parameters for activity that aid the joint development of meaning within the ZPD.

The importance of environmental affordances can be seen in this example of the ZPD. In the example, P. solves the problem of keeping his balance and moving quickly, so he can cross a swinging bridge in an adventure play ground:

#### Sequence 4

P.: (Sits in the middle of the bridge)  
Adult: Come on stand up stand up/stand up//stand up P.  
A.: (Walks on the bridge towards P.) P., get up ah (Picks him up by his arm) There you go (Walks away)  
P.: (Starts walking towards adult and loses his balance. Then starts walking in A.'s direction)  
Adult: P. P. P./Come on  
P.: (Crosses the bridge)  
(At the end of the play session P. crosses the bridge without aid)

P. is not usually allowed by his parents to experience environments that challenge his ability to balance and move quickly, which he finds difficult as he has a hearing problem. In this case P. was allowed by the adult to enter an environment that afforded him the opportunity to learn a new meaning to the situation and a new action pattern. The affordance offered P. in his situation allowed him to appropriate a new form of activity, which was suited to the new physical and social environment.

#### Conclusion

The three constructs outlined above are an attempt to explain the process of joint problem solving implicit within Vygotsky's definition of the ZPD. It is necessary to fully understand this process as it is central to a Vygotskian explanation of the transfer from dyad problem solving to individual mental functioning. Appropriation, semiotic flexibility and affordances together are a description of the construction of the ZPD which suggest shared problem solving should be viewed as a mutual negotiation of the meaning of objects and events.

This perspective on the instructional setting recognizes the genuine reciprocal nature of interaction and the active roles played by both participants within the ZPD. To view the formation of the ZPD as a co-construction of meaning has more ecological validity than to use the idea of "scaffolding" (Wood et al., 1976). Within the term "scaffold" it is not possible to include the essential element of continual revision of the situation in the ZPD. The notion of "scaffolding" does not capture the fluidity of everyday social interaction, because it is an experimentally derived concept.

To view the instructional situation as a mutual construction of the meaning of objects and events challenges traditional perceptions of children with a learning difficulty. This suggests children with a learning difficulty often have an inappropriate definition of a given problem situation, rather than an internal cognitive deficit in knowledge of the sequence of task stages, which is implied by the idea of "scaffolding."

This concludes the explanation of the exact nature of the instructional setting within the ZPD. It is hoped that in describing the formation of the ZPD as a mutual construction of the meaning of objects and events one has extended and enriched Vygotsky's ideas. So encouraging all thinkers interested in and involved with people to consider the human being as, "not an island, entire of itself, but as part of the culture he inherits and then recreates" (Bruner, 1986).

## Note

<sup>1</sup>Spelling and grammatical errors in transcripts are from the originals.

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## The Construction of Time, Language, and Self

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The following paper sets out to provide a sketch of the problem of time, language and the self; thus it is to a large extent formulated in the form of theoretical theses. The starting point is the general philosophical and psychological question concerning the relationship of human beings to time. It will be set in a cultural historical perspective which allows for a developmental psychological approach. (1) The ontogenetic construction of time will be considered in connection with the child's language acquisition, especially the acquisition of the linguistic system of time (2) Finally, in a more precise formulation of the question the problem of the prelinguistic experience of time will be outlined, particularly emphasizing the importance of the prelinguistic and prereflexive practices to handle time (3) and the beginnings of the concept of the self (4).

### 1. The A Priori of Time: A Philosophical and Psychological View of the Problem

As is the case with few psychological questions, the question of the relationship of the human being to time has a philosophical prehistory to which it is heir - whether we like it or not. Ever since Augustine first formulated it, many others have agreed with the insight that time, although it seems to be familiar to everyone, is not comprehensible "as such," as a detached phenomenon. It is hard to compare its existence to that of a thought, a sentence, a perception, an action, or an emotion, despite the fact that we encounter time in all these psychological phenomena. We owe to Kant the detailed explanation of the recognition that we are always captured in the net of time, that we always move within its structures and perceive the world as well as ourselves through it. As Kant put it, what makes the rational quest for time so difficult is that time represents the "subjective condition under which all our intuitions take place." His analysis of time as "reine Form der Anschauung," "pure form of intuition," which precedes every perception and which even makes perception possible, is the critical point of departure as well as a potential cause of friction in every modern reflection about time as an anthropological dimension. "Time," as Kant (1965, pp. 74-75) writes,

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is not an empirical concept that has been derived from any experience. For neither coexistence nor succession would ever come within our perception, if the representation of time were not presupposed as underlying them a priori.

Time is a necessary representation that underlies all intuitions. We cannot, in respect of appearances in general, remove time itself, though we can quite well think time as void of appearances. Time is, therefore, given a priori. In it alone is actuality of appearances possible at all. Appearances may, one and all, vanish; but time (as the universal condition of their possibility) cannot itself be removed.

Kant's question is epistemological. It is concerned with the general conditions of the possibility of experiencing time - independent of any particular one. Yet there is another fundamental aspect of our empirical and practical relationship to time which is outlined in Kant's approach. This is why the strange ubiquity of time derives not least from the fact that the dimension of temporality is indeed given - *vorgegeben* - to every single person. Perhaps we can even say: this is way the world is presented - *aufgegeben* - to us. Whatever may be the case concerning their intellectual constructions, psychologically there is no doubt that human beings have no possibility of evading temporality in any area of their lives.

Further, time is our most existential psychological dimension, since finally it also embodies the problem of our own transience - a problem which includes the "condition of possibility" of its own perception and imagination. What that means becomes clearer if we take into account that both all possible forms of sensual experiences of time and of reflection on it are themselves temporal processes. This is not just in the sense that they avail of means and media which are in their nature sequential - if we think, for example, of language or sensual imagination - but also because all psychological time forms are always certain historical forms of time.

Hence, even in sensual experience the aspect of micro-temporality combines with the aspect of macro-temporality. The former is expressed in our individual experience of the moment: time - that is a sequence, a flow of time units. Aristotle (1984, pp. 29-31) saw time this way when he defined it as a connection of single elements - like movement, "for these are called quantities and continuous because the things of which these are attributes are divisible." From this micro-temporal point of view Aristotle formulated an idea which we find again *mutatis mutandis* in Kant's conception of time: "But it is impossible that movement should either come into being or cease to be. Nor can time come into being or cease to be; for there

could not be a before and an after if time did not exist. Movement also is continuous, then, in the sense in which time is; for time is either the same thing as movement or an attribute of movement" (Aristotle 1984, pp. 6-11).

The second, macro-temporal aspect refers to the historicity of experience and its structures as our overall mentality of time or, in the words of historian and anthropologist Keith Thomas (1988, p. 18), to the "historical deep dimension" of our "mental world." Even in modernity when time began to become a problem, its representation as a subject of science, humanities, arts, and social consciousness, is itself to be understood as a phenomenon of contemporary history (cf. Nowotny, 1989). The psychology of time perception shows itself to be a subject matter par excellence for historical psychology.

Thus, time is not simply the "timeless" universal psychological condition of the possibility of experiencing and thinking. There is no *deus absconditus* hidden in it. Rather, we directly experience time in a twofold sense: On the one hand as those structures which preempt every individual constitution, which even make it possible, just as Kant claimed; on the other hand as the "empirical reality of phenomena," i. e., as those time events which we believe that we cause or influence in our actions. We can do something "quickly" or "slowly," we can comprehend a thought "earlier" or "later," or we can experience a certain period of time in a way which we find for instance described in a detective story by Raymond Chandler: "The next hour passed like an ill cockroach." In the first case we perceive time as something we live in; in the second case we ourselves seem "to live" time. Yet both the macrotemporal and the microtemporal form of experience of time converge as functions of our practical life, as psychological and sociological constructions of reality (although each with a special genesis and structure).

So we can see time as a particular subjective-objective structure of cognition. But to understand it in this way as a "format," to use Bruner's (1983) expression, of acting and operating, as a relative a priori of every individual genesis of consciousness (cf. Brockmeier 1983, p. 81) we don't depend only on the constructions of philosophical transcendentalism. The structures of time which precede every individual experience of constitution are deeply engraved in our social activities and in our cultural "Lebenswelt."

In the perspective I have just outlined, time appears as a certain cultural historical fabric which, insofar as it transcends the horizon of individual experience, repre-

sents not a transcendental but an empirical and social, a priori. It is not an easy task (and requires a quite extensive theoretical justification - if one does not want to ignore the standards of the philosophical tradition) to explain how the structures of activity embody the material "conditions of possibility" of human cognition and, thus, can be understood as historical a priori of our mind. This cannot be undertaken within the framework of this argument. The point of departure for such a justification is that the human being always moves in a social space which is cognitively and intellectually given, historically handed down, and transmitted from one generation to another. This is indeed a fundamental premise to every individual empirical "form of intuition." In this the individual is to be seen as a concrete moment or, psychologically speaking, a subject of action and of experience within an ensemble of spatio-temporal relations of culture and history which goes beyond the individual. The question I want to focus on is: How does one get here?

It is beyond doubt that "Bewußtseinsphilosophie," the philosophy of consciousness, from Kant to Husserl was above all concerned with the autonomous intellectual subject, which, however we imagine it, involves only the adult human being and its fully developed intellect. But, as we know, the adult does not enter either life or the psychological dimension of temporality as an adult. He or she grows into it, or more precisely, develops within what we can call with Whorf (1956) the temporal fabric within the "Standard Average European" (SAE) "time-line."

Because of this the psychological question concerning time must also be treated in a twofold way. First, there is a question concerning the cultural historical character of the social order within which our time concepts are structured: How our material as well as ideal structures and processes, how those highly differentiated social "figurations" of human life (Elias, 1984) which are due to our cognitive and emotional order of time, have come about "societally" (and how do they reproduce themselves in the social institutions, discourses, and figurations)? Second, there is a question concerning the subjective acquisition of these concepts and with that of the individual-social micromechanisms of its reproduction: How does the understanding of time come about within the ontogenesis, embedded in the multi-layered processes of interaction between the social culture and the developing individual?

For example, in dealing with historical anthropology of time we can focus between on the one hand on the question concerning the cultural historical genesis of the time-a priori of our mind. In the sense of Foucault, here we

ask about the origin, the "archaeology" of the "order" of our time-discourse. On the other hand, we can investigate the way in which the order of these discourses regularizes the consciousness of time of the developing individual - how it becomes self-regularized. How does time transform individually into a discourse, into that "power which one wants to take hold of" (Foucault, 1971, p. 8)? Psychologically, how does the child acquire cognitively and emotionally this order as an "instrumental a priori" (cf. Brockmeier, 1983, p. 76)? How does he or she learn both to live it and to live in it, how is the individual order constructed within his or her own development? In view of our understanding of time, how does the "socialization" of the child's thought take its course, which, according to Vygotsky (1986), is at the same time a development that leads "from the social to the individual"?

We have separated these two questions, the "cultural historical" and the "ontogenetical" question, rather formally. In reality they are linked together in a way which since Hegel can be called *dialectical*, philosophically as well as psychologically (Brockmeier, 1988a). As soon as we begin to tackle one of these questions, we will notice that we also always move in the shadow of the other.

## 2. Time and Language

In the following I will concentrate on the "ontogenetical" question. To begin with, I would like to present again some theoretical and methodological theses which present my own point of view and then draw the reader's attention to a specific research problem. This is because I think in the area of time research the question as to why something becomes a problem is often just as interesting as the problem itself. That becomes clearer when we remember that there is a series of very different theoretical and methodological approaches reflecting the whole range of positions which are held in 20th century psychology and philosophy: from empiricism and behaviorism through interactionism, cognitivism and linguistic turn to naturalism and nativism.

The approach I would like to follow here sees the construction of time in a close connection to the construction of language. Methodologically this means that the developmental psychologist's view of the understanding of time focuses first on the child's language acquisition. That is, as language acquisition researchers have known since the beginning of the 1970's, the "prelinguistic child" does not actually exist. Language acquisition starts in early infancy and extends up to the time when the school-child has become fully literate.



This view supposes a general assumption of wide-ranging socio-cultural significance (and with that I hint implicitly at a certain answer to the first, cultural historical question, as a premise to the ontogenetical question). This assumption says that language and particularly the socially asserted system of literacy fulfills the function of a central relay for the cognitive type which characterises our civilization (cf. Brockmeier, 1988c). This includes the conception of time in this type of civilization. The aforementioned "SAE time-line" cannot be comprehended without the traditions of writing and its social institutionalization, in short, the "alphabetic mind" which has increasingly shaped European culture in the last 2500 years. We have come to realize its fundamental cultural and cognitive function only now when there is much evidence indicating its replacement by a new generation of symbolic representations.

Even if this assumption could be substantiated and in addition we could take for granted a close interconnection of the cognitive structures of language and of time our problem would by no means be solved. Rather it is really exposed because language is certainly not the basic structure of our psyche or our mind, it is not even the basic structure of thinking - if I may be dogmatic at this point (leaving undiscussed the arguments of analytical philosophy). At least psychologically there is no doubt: *language* cannot be explained without cognitive functions like perception, idea, imagination, memory, thought and the emotional and motivational aspects of human subjectivity - as well as (discursive and conceptual) *thinking* cannot be explained without the forms of language, not to mention further differentiations of the forms of nonverbal languages like music or non-natural sign systems.

Against this background the problem field *time - language - thought* can be divided into the following three sections which correspond to the three most essential areas of language acquisition (and the corresponding relationship between language and thinking): (1) The acquisition of the elementary sensomotor and practical, communicative and symbolic capacities of the child up to the beginning of the first speech acts on the level of sentence grammar (circa in the first two years); (2) the acquisition of the system of oral language (5th to 6th/7th year); (3) the acquisition of the system of written language up to relatively complete literacy.

Along these lines it can be observed that the amount of respectively achieved temporal differentiations corresponds to the level of acquisition of the linguistic time system. This is demonstrated by the clearly developed

capacity of the child, towards the end of the first period, to distinguish between the *now* and the *not now*. At the same time the first signs of further differentiations are shown. Some researchers believe that there is evidence that these first refer to the past, others believe they first refer to the future (cf. e.g., Weist, 1986; Harner, 1982; Nelson, 1989c).

Seen as a whole, a great advance in the understanding of time is made with the acquisition of *differentiated* linguistic references of time (this is what I understand by references which go beyond the elementary difference of now and not now) at the end of the second/beginning of the third year. The child learns to distinguish between present, past and future in general, "near" as well as "far," past and future in particular, i.e., the completeness and continuous forms of events (in English *-ing* and *-ed* forms), "timeless" present or general, the relativity and overlapping of several temporal events, realis and irrealis. He or she also develops the ability to organize the reference system of speech time (ST), event time (ET), and reference time (RT) (cf. Smith, 1980; Gerhard, 1989; Nelson, 1989c).

At this point the close connection with the linguistic time system is striking. Language acquisition research and linguistics have investigated extensively the construction of this system. This includes grammar, i.e., verb morphology, time adverbials, and temporal causal structures of clauses; yet it also includes the techniques of narrative discourses like sequences, frequency- and contingency marking, modus (particularly modality), and a variety of rhetorical and narrative devices which have been recently investigated, especially by the New York Language Acquisition Group (NYLG) (cf. Bruner & Lucariello, 1989; Gerhard, 1989; Nelson, 1989c; Bruner, 1986). These devices of the "narrativization" - Bruner & Lucariello (1989, pp. 94-95) call them "dimensions": strong sequencing, canonicalization, stance marking, intentionalization, metacommentary, and timelessness - "provide a means, early in life, for the child to accomplish one of her first 'developmental tasks': to differentiate and then reintegrate action, affect, and cognition."

In the face of the complexity of our temporal linguistic system (which overlaps with the deictic systems of spatial and temporal reference) it is hardly surprising that only the advanced schoolchild is able to master the time concepts (cf. Harner, 1982).

According to my above mentioned thesis, this process is basically dependent upon the acquisition and the mastery of literacy (as well as the associated forms of reflexivity) through which the "SAE time-line" has forged

our culture and the consciousness of the individual. Only when literacy has been consciously mastered have the conditions been created under which our (normative) time concepts become finally fixed in the context which is referred to as "isomorphy" in philosophy of language and philosophy of mind.

### 3. The Problem of Prelinguistic Language Experiences

The child's comprehension of time is shaped by the acquisition of the system of linguistic time references - that is the thesis which I have outlined so far. In light of this thesis when one observes the beginnings of oral language acquisition and the related understanding of time one discovers an empirical-methodological difficulty. This seems to hinder the investigation of the developmental context *language - time* in its fundamental early phase.

Since the middle of the 1970's many language acquisition researchers have become convinced by the pragmatic idea that the child learns a language because within a close net of interactive communicative relations with the parents he or she has acquired a series of abilities which are necessary for that, and this even before he or she begins to speak at all. Language is revealed in that way as the extension of his or her social actions with other symbolic means. Only because the infant already prelinguistically understands what is meant does the child gradually understand the linguistic meanings (Hörmann, 1978). And only because he or she has learned first to act within communicative contexts and to express intentions symbolically can he or she also utilize the means of language references and as a result reach goals of actions more efficiently. Because the child has previously experienced in his or her social actions that the world does mean something, he or she is consequently able to handle its linguistic meanings.

So it can be said concerning reference in general that only by understanding its pre-linguistic forms and the framework of action in which it appears, such as deictic indicating and "acting by meaning," does linguistic development become comprehensible (cf. Bruner, 1974, 1975; Lyons, 1975; Brockmeier, 1988b). Yet not only the genesis of reference but also its structural effectiveness can be explained purely on the basis of its wide-ranging dependence on the context and its embeddedness in the semantics of actions and the non-linguistic knowledge of the world.

Seen in this way, the elementary forms of linguistic reference could only be constructed when they have already been prelinguistically built up to a certain degree. This is supported, too, by considerations in linguistics

which suggest that the development of reference is dependent on the child who is able not only to manage the self-references "I" and "You" but also spatial and temporal indicators (cf. Lyons, 1975).

Yet, how can we imagine pre- or non-linguistic references of time? Is there any possibility whatever of examining prelinguistic understanding of time in an empirical way? Some developmental psychologists doubt this fundamentally. As Katherine Nelson puts it (1989c, p. 293): "A nagging problem here is that for complex concepts such as time we have no way of assessing a prelinguistic concept." This would, however, undermine our working hypothesis at least on this point to a considerable degree. Indeed, some researchers in the Whorfian tradition of linguistic relativity go so far as to claim that time conceptions are constructed exclusively linguistically. And in fact, investigations have shown, that "children (can) prelinguistically respect sequential order and relative temporal duration (such as the time between feedings), but non-linguistic concepts of *past* and *future* do not appear to be assessable. Is it then the case that language is *necessary* for the very formation of these concepts and not merely for their expressions?" (Nelson, 1998c, p. 298).

In contrast to this it seems to me, when we carefully analyse the relation of the infant to time from the point of view outlined above, we will notice that without doubt the prelinguistic child develops an understanding of time and that this understanding lays the foundation for the acquisition of linguistic forms of time reference as well as building up the cognitive (and affective) basis for their actual construction. There are some good reasons why there is also in the case of time a prespeech phase of thought development which, as Vygotsky pointed out, precedes the actual beginnings of speech independently of the speech's own early development, until its line of development turns into that of language and starts to coincide with it. "The most important discovery is that at a certain moment at about the age of two the curves of development of thought and speech, till then separate, meet and join to initiate a new form of behavior" (Vygotsky, 1986, p. 82).

The child cannot "discover" speech without thinking - Vygotsky analysed this connection in the genesis of the symbolic function of the word. His question was: What does a child need to know before he or she begins to speak? And with this he focused on the same dialectical relation which also links the prespeech phase of the child's understanding of time with the conceptual and linguistic construction of time. It is at this point of the construction of

time, too, where, as Vygotsky put it, referring to the general development: "the knot is tied for the problem of thought and language." Let us consider exactly what it is that happens before the cognitive development has attained this turning point, since we must assume that this kind of co-development of conceptual and linguistic construction of time only becomes possible, when in the general cognitive development "a relatively high level of thought and speech development has been reached" (Vygotsky, 1986, p. 83).

What we have assumed here as prelinguistic understanding of time develops above all on three empirically accessible fields on which the child first tackles the phenomenon of time. The first field consists of the sensorimotor and practical activities in which the infant, as Piaget's pioneering analyses have revealed, also reaches a certain cognitive coordination of space and time structures. The second field is characterized by the interactive practices of the structuring of time. The third field is determined by the development of the self-concept. I would like to go into the latter two points (which have been disregarded by Piaget to a large degree) in more detail.

As already mentioned in the quoted remark of Nelson, there are very elementary temporal subdivisions in the child's process of life based, for example, on the times between feeding. Yet the approach to time, indicated in this way, embraces much more. It reveals an approach to a multitude of social practices structuring the world in which the child begins to handle time. They are first carried out within the natural divisions, the "physiological curves," of the child's process of life and its social organisation in certain rhythms, sequences, and routines. Besides these various common action patterns which concern the child's process of life in an elementary sense, further sequences of interactions develop, structuring time as they themselves are structured by time - as, for example, the "purely" communicative dialogue or play between child and adult.

The action and time structuring play with the adult have from the very beginning a major developmental function. In early play the child is passively as well as actively involved in interactions which are characterized by very different kinds of sequential-temporal status. Activities are first initiated by adults who try, in close coordination with the infant (whose obvious signals of pleasure further promote their efforts), to create and maintain an optimal level of attention and excitement. For that the adult uses, apart from the direct address, several means consisting of a series of sounds and noises, move-

ments and physical contacts, particular facial expressions. Often all these are linked or combined in several connections and successions. "A parent can vary these in speed, intensity, scope, and combination, producing changing and varied sensations. Close observations of infant and parent together suggest that elements of the parent's repertoire become grouped into distinctive, repeatable sequences" (Garvey, 1977, p. 30). Within these sequences, many elements of the adult's action which mark its temporal construction such as the speed, duration, intensity, and breaks are to a large extent controlled by the infant's activities.

In this way the child as an active protagonist is increasingly drawn into the common scheme of action in play (respectively in the context of interaction which has variously been called "communicative pattern," "format," "genre," "script," "discourse," "dialogue," or "figuration"). Now the infant acts not only within given structures of actions but creates them intentionally by him- or herself and with that almost creates an individual order of time and space, too. Yet this individual order can only be constructed because it fits at the same time into the framework of the "superordinate" cultural-historical discourse: "it makes sense." Otherwise no development of any interaction, communication, and "action potency" of the child would be possible. At the beginning the social-cultural discourse in which the child becomes integrated to the same extent in which he or she simultaneously builds up an individual approach to the world is based on familiarly shared practices and meanings which in the further psychological development gradually expand and transform into the "societal" discourse of generalized practices and meanings.

In the course of growing older the child's capacity to actively take part in more complex common forms of sequential play increases, as well. I would like to discuss here only the example of the highly developed structuring of time practised in the common action pattern of child and adult in the "Peekaboo"-play format which Bruner (Bruner & Sherwood, 1976; Bruner, 1983) has examined. This play is based, like every hide-and-seek game, on the exact meshing of all its constituents in temporal succession and duration with the actions of the child and, on the other hand, of these with the actions of the adult, too.

When we analyze this kind of play once more from the point of view of our time problem, we notice that it also fulfills another function. It is, in fact, not just the use and exchange of language which it includes (this has been the focus of Bruner's (1983) analysis: games which are deter-

mined by language and exist only where language - or the structures of its acquisition to which they serve as a kind of ladder - exists). Play also serves as practice in the use and the exchange of fundamental discursive time patterns. This consists above all in the practice, to give only some brief points, of the concepts of "earlier-later," simultaneousness and non-simultaneousness, patterns of sequences and cycles, the spatial and temporal decentering of social perspectives, the difference of symbolic and real acting, and how to handle the "right moment."

Particularly this practicing character demonstrates that play, since it is an "experimental dialogue with the environment" (Eibl-Eibesfeld, 1967), is always an experimental dialogue with time, too. Through the exchange and the practical handling of temporally structured processes the infant begins gradually to come to understand what it means "to live time" as well as "to live in time." Hence, the child also makes the transition "from 'knowing how' to 'knowing that'" (Bruner, 1976, p. 54) concerning the construction of the elementary time concepts. While the child learns, embedded in the time scaffolding of the culture, to act socially he or she finds out how to situate oneself within the world of other people engaged in activities organized in time.

#### 4. The Emergence of the Time-Self

The construction of the self concept opens up a second field of experiences of prelinguistic time practices for the child. The construction of the self precedes the actual language development and, as I see it, contributes to the origin of basic time structures to an important extent. To examine this connection between the concept of the self and the concept of time more precisely, it is useful to consider first some central aspects of human time experience.

Every understanding of time is based on the difference of now and not now. The fundamental experience of time is the experience of *different* times, and this means first of all: various states of being are perceived as different states of time. Only the psychological realization of temporally and spatially distinct aspects of the world (from the momentary disappearing, over the present which lasts for a certain duration, to the single, several times or cyclic recurring, or the resisting a reluctance or opposition) makes cognizing of the common through the disparate possible.

The child starts out from this perception. From the very beginning there is neither a single space nor a single

temporal order in the infant's spatial-temporal world. Piaget and Inhelder (1966) called this a "system of heterogeneous spaces" which, as they assumed, all are centered upon the individual body: mouth, touch, sight, hearing, and positional spaces. Even though Piaget's individuocentric view is certainly not without problems (cf. Brockmeier, 1983), it focuses correctly on the different distinct space and time structures of the child which only gradually become coordinated.

Also in the case of time, the first step in this direction is taken by what H. Wallon (1942) called "symbiotic thinking" as well as the "sympractical thinking" (K. Buhler, 1934; Luria, 1976) of the infant. Here the symbolic meanings are still completely fused together with the objective meanings which the child first acquires in his or her practical actions (cf. Brockmeier, 1986, p. 113), since it is in a dominant practical cognitive mode in which the child becomes aware that there is something which continues to exist in the flux of time. He or she encounters constants in an ever changing world. The permanent flow of events, encounters and impressions impinges on all the senses of the child. Throughout every modality a "dynamic spatio-temporal perspective on perception" (cf. Butterworth, 1987, p. 103) corresponds to it. Yet, in this flow of being, something remains constant: moments like *fermate* which last and survive.

Since Piaget's fundamental studies, it has often been pointed out that the development of concepts of permanence and constancy is of utmost importance for the construction of reality, even for the whole psychological development of the child. In this, the (spatial) concepts of constancy prove to be (temporal) concepts of permanence as well, even if both are not identical. Thus, as Piaget (1950) analyzed, the permanence of the object stems above all as a function from its localization in space - in the space of an external world. Piaget even went so far as to see in the construction of the permanence of the object the pivot of the "objective" coordination of time and space in the child's thought. It appeared evident to him, as he wrote, together with Inhelder (1966, p. 25), "that the construction of the scheme of the permanent object corresponds to the whole spatial-temporal organization of the practical universe and in the same way, of course, to its causal structuring."

Having indicated the emergence of these first cognitive "constantizations," we have at the same time outlined the genesis of the symbolic function (or the semiotic function). The sign becomes the *fermata* of the reference, it is now going to be the symbolic representative both for

others and for one's self. It separates itself from the denoted object and becomes a differentiated, finally an independent sign. As such, it removes itself from the immediacy of the here and now, detaching itself from its primary basis of meaning (cf. Brockmeier, p. 1990). In being fixed and conventionalized it gains permanent existence beyond it - an existence independent of time, an essential prerequisite of every real semiosis.

There are several experiences of "constantization" already familiar to the child even before he or she begins to operate with the semiotic constants of language. These experiences touch the psychological functions of perception, imagination and thought. They affect, in the sense of A. N. Leont'ev (1978), the levels of "activity," "action," as well as "operation." They include also the emotional dimension of the child's development. Yet, above all they influence the subjectivity of the child as a whole, since they have virtually not yet been differentiated in psychic partial functions. They converge at that point where the child seems to have his or her critical experience of the contradiction of permanence and change: in the development of the self.

Since "personality" represents primarily the significance of an individual for others, I understand as "self" above all the significance of an individual for him or herself. From this, then, results "identity" as a *conscious* self (or, to be more precise, "identity" defines, in contrast to the "I," a conscious self-concept in time).

The development of the self-concept of the child cannot be, of course, separated from the experiences of social communication and interaction which he or she acquires in various contexts of action. However, the major basis of experience here is the development of his or her self. In self-development the child encounters a unity which, at least at times, is experienced as an autoreferential context. A "self-system" of "I" and "Me" (Harter, 1983) in which the child realizes by and with regard to him- and herself the fundamental differentiations of something which remains identical in change. The infant, as a subject, intervenes actively in the temporal processes and becomes aware of him- of herself, as an object, which undergoes changes.

In these differentiations the child carries out, in the Piagetian sense, an epistemological decentering of his or her self and the world of this self. This decentering only becomes possible because at the same time a new centering of the self develops, representing a development which we can perhaps clarify using the image of a move-

ment from a "first or original centering" over a "decentering" to a "recentering" (Raeithel, 1983). Thus, a concept of self in time arises even prior to the forms of conscious identity which are always bound to the means of linguistic reflexivity. The construction of the self-concept is performed simultaneously with the construction of a time-self. Integral of the "self"-experiences of "I" and "Me," it embodies a subjective time structure *sui generis*, an island in the unstoppable river of life.

This time-self is a general human phenomenon as well as, I think we can say, an exclusively human phenomenon. The conscious and unconscious coordination of time of the daily course and of the course of life conveys to us a sense not only of the "external" but also of the "inner" context of our self. It contributes essentially to our neuropsychological balance (cf. Pöppel, 1986) and, generally, to our stability in everyday life. Furthermore, the stability of our memory, our relationship to the world and to ourselves crucially depends on our relationship to time, on *our sense for time*. Our whole sense of self is intimately related to the subjective awareness of the continuous process of time. Only here we have the immediate experience of the continuity of life. So any break in personal time, any "time-gap experience" (Reed, 1987) is alarming, because it suggests some disintegration of psychic synthesis. The failure, for example, to register internally a period of time and the sudden impression that there has been an inexplicable blank in one's awareness of the passage of time can often be experienced as a failure of one's own construction of the self. As clinical psychologist Phillidia Salmon (1985) emphasizes:

Time and its passing represent a vital anchor in defining ourselves and our lives - and the days, the hours, can we feel we are retaining a firm hold on stable reality. This itself is paradoxical. The essence of time is that it brings change; it alters things, it ushers in what is new and unpredictable. Yet, despite this, somehow it is time itself which provides us with a fundamental sense of security. (p. 10)

The dissolution, the crisis, the threat of the "I" "strikingly demonstrates how closely our personal identity is inwardly fused with our time-self. Many examples of this are known from neuropsychology (cf. e.g., Luria, 1968, 1972; Sacks, 1985) and from characterizations in modernist literature. Hans Castorp, for example, a central character in Thomas Mann's novel "The Magic Mountain," has the experience of his usual references to the world becoming dubious, fragile and fading away and with that his own identity, his own self. He has in a literal and direct way a crisis of time. The safety net of the individual in the world

is torn to shreds: "The dizzying problem of identities grew grander in its scale" (Mann, 1960, p. 545). The difference between the now of today and the now of yesterday, between the still and the again, the next moment and the moment before fades away; the quantities of time - we remember Aristotle - lose their inner connection. And if today's now is not easy to distinguish from yesterday's, is it not also capable of being confused with the now which had been in force a month or a year ago, is it not also likely "to be mingled and rolled round in the course of that other, to blend with it into the always"? (pp. 545,546) Finally, Hans Castorp does not even know any more how to state his own time, his age, although apart from that his mind is fully clear. "All of which may sound preposterous," writes Thomas Mann (1960, p. 543), "yet there are conditions under which nothing could keep us from losing account of the passage of time, losing account even of our own age; lacking, as we do, any trace of an inner time-organ, and being absolutely incapable of fixing it even with an approach to accuracy by ourselves, without any outward fixed points as guides."

The anchorage which we have in the world, the self, and time are, as Hans Castorp's diffusion of identity displays vividly, corresponding weights in our self-system. Only if we are able to continuously establish a balance between the two extremes of our life in time, fixation and liquidity, continuity and change, and to find our "Eigenzeit," our own and individual time (Nowotny, 1989), does a time-self develop. Only then do we have the feeling, in the words of Thomas Mann (1960, p. 541), that we *fill up* our time.

But as human beings, not only do we use time to mark what, in a sense, transcends time; we feel our lives and our selves to be time-marked in another sense, too. Maybe it is for this reason that we experience time not just as a seismograph of existential transience, as a permanent loss in which we take part in an inescapable way - what Joseph Conrad called "the remorseless rush of time." We also see it as an indicator of what is unchanging. A hold on the reality of our outer world as well as of ourselves, a "raster" which allows us to come to an understanding of continuity, stability, and identity. After all, it is also time which makes it possible for us to represent to ourselves the, albeit relative, permanence of what is deeply meaningful and important for us.

Against this background, perhaps one can more easily understand how the developing infant builds up in an elementary manner a system of prelinguistic time references. Constructing with one's self necessarily a time-

self, one constructs simultaneously one of the (not only epistemologically but also psychologically) fundamental frameworks of orientation of the consciousness - a "frame of mind," to use Howard Gardner's (1983) metaphor.

Nelson (1989a, 1989c) and Gerhardt (1989) have shown by analyzing the monologues of the two-year-old Emily how the child comes to understand and represent events and impressions in a way that they unfold in a social system of time and space. "These two critical perspectives are reflected in language in the system of self and other reference and in the linguistic system of temporal references using verb morphology and time adverbials" (Nelson 1989c, p. 285). In this, in the development of these two systems an evolving sense of the place of self in its decentered relation to the social world finds expression. However, according to the thesis which I have developed here, this co-evolution of both the systems of differentiated self references and time references does not only begin with language acquisition in the narrow sense (i.e., about the end of the first year when also the monologues of Emily start). The child's great project of development - the construction of self within a temporally organized social world - begins a long time before the child seizes hold of language and, vice versa, before language seizes hold of the child.

The development of a self-concept contributes in a significant degree to the dissolution of what Piaget has described as the original "non dualism" or "adualism" of the early child's psyche. In this, on the one hand, the child realizes the concept of non-self, say, the "concept of the other" and, on the other hand, very generally, the here and non-here as well as the now and the non-now begin to differentiate themselves. It is these prelinguistic decenterings and differentiations which form the basis for the development of the linguistic references of time, space, and persons.

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