

The final version of this paper is to be published in *Human Development* 50(5).

SEMIOTIC MEDIATION, DIALOGUE AND THE CONSTRUCTION OF KNOWLEDGE

Gordon Wells

University of California, Santa Cruz

When children learn language, they are not simply engaging in one type of learning among many; rather, they are learning the foundations of learning itself. The distinctive characteristic of human learning is that it is a process of making meaning – a semiotic process; and the prototypical form of human semiotic is language. Hence the ontogenesis of language is at the same time the ontogenesis of learning. (Halliday, 1993, p.93)

In this paper, I want to explore how this claim relates to the concept of semiotic mediation in cultural historical activity theory (CHAT) and the writings of the Bakhtin circle and then to consider how the theoretical framework that these scholars provide can be brought to bear, first on early language development, and then on the activity of education. I shall argue that the development of children's understanding of their world -- of themselves as well as of the content of the curriculum -- needs to be understood in terms of a co-construction of knowledge through jointly conducted activities that are mediated by artifacts of various kinds, of which dialogue is the most powerful.

Semiotic Mediation

We owe the concept of semiotic mediation largely to the work of Vygotsky and his colleagues, in which they attempted to create a theory of human activity and development that would give a central place to consciousness while avoiding Cartesian dualism. Following the lead of Marx, they built their theory on the axiom that activity is the explanatory principle and that consciousness emerged through the use of tools to mediate activity. In his writings about the use of tools as mediating artifacts, Vygotsky (1978, 1999) made a distinction between 'tool' and 'sign' in terms of the object of the actions in which they function as mediational means: a tool,

such as a knife or a spade, mediates object-oriented material activity, whereas signs function as a means of social or intrapersonal interaction:

The invention and use of signs as auxiliary means of solving a given psychological problem (to remember, compare something, report, choose, and so on) is analogous to the invention and use of tools. The sign acts as an instrument of psychological activity in a manner analogous to the role of a tool in labor. (1978, p. 52).

However, this distinction needs to be qualified in several ways in the light of further research on mediated action (Wertsch, 1998).

First, the same artifact, for example, a spade, can function both as tool and as sign in different contexts. When I am digging my vegetable garden, the spade mediates my material activity as I turn over the soil; in this context it is clearly a tool. But if I am interrupted, I may leave the spade at the point I have reached as a sign to ‘tell’ me where I should continue when I return to the task. This may seem to be a rather trivial example, but it points up a more general problem with making a sharp distinction between tool and sign. As Cole (1996) makes clear, all artifacts “are simultaneously ideal (conceptual) and material,” since, in every case,

they are manufactured in the process of goal directed human actions. They are ideal in that their material form has been shaped by their participation in the interactions of which they were previously a part and which they mediate in the present.

Defined in this manner, the properties of artifacts apply with equal force whether one is considering language/speech or the more usually noted forms of artifacts such as tables and knives, which constitute material culture. What differentiates the word ‘table’ from an actual table is the relative prominence of their material and ideal aspects and the kinds of coordinations they afford. No word exists apart from its material instantiation (as a configuration of sound waves, hand movements, writing, or neuronal activity), whereas every table embodies an order imposed by thinking human beings. (p. 117)

Viewed from this perspective, it becomes clear that the distinction between tool and sign is dependent on the context and form of the activity that is mediated. In practice, moreover, all

joint activity involves the coordinated use of a variety of artifacts, all of which have material embodiment and the potential to mediate communication, collaboration and joint problem solving. However, there is no doubt that it is ‘signs’, and particularly linguistic signs, that play the principal role in mediating the emergence of consciousness and the construction of knowledge on the part of individuals during the course of their ontogenetic development. It is, therefore, to the development of the sign system of language and the relationship between ‘linguaging’ and thinking that I turn in the following sections.

Language Development

The question of how children learn their first language has been a topic of debate over many centuries. On the one hand, it has been proposed, from earliest times, that language learning is simply a matter of imitating the speech of others in contexts where the learner is able to make associations between the utterances heard and the situations to which they apply. Chomsky and others, on the other hand, have claimed that the child is innately equipped with a ‘language acquisition device’ or ‘language organ’ that provides built-in knowledge of the universal principles of grammar from which all languages are constructed, making it possible for the child to discover the grammar of his or her community’s language simply by exposure to instances of the language in use (Chomsky, 1965; Pinker, 1994). However, the problem with both these proposals is that they give scant attention to the *co-construction of meaning*, which is the most basic function that language performs and which may therefore reasonably be supposed to be the basis on which language is learned (Halliday, 1975, 1993).

Nevertheless, given the complexity of any language, both in its form and in the relation between utterances and the contexts in which they occur, it is reasonable to ask, as Chomsky (1965) does, how an infant of a few months could begin to make sense of this complexity or why she or he should even be motivated to do so. Yet, by the end of the second year of life, children in all societies have begun to communicate linguistically with their significant others, provided that there are no physiological or experiential impediments.

In attempting to answer these questions, a number of scholars have adopted a phylogenetic perspective, arguing that the earliest language-using humans must have already achieved some ways of sharing intentions about activities in which they were engaged together (perhaps through gesture and facial expression) for there to have been a motive to make use of

and refine the communicative potential of rapid, discrete vocalization that became possible with the physiological development of the vocal tract (Donald, 1991). Tomasello (2005) spells out this proposal from the point of view of ontogenesis:

We propose that the crucial difference between human cognition and that of other species is the ability to participate with others in collaborative activities with shared goals and intentions: shared intentionality. Participation in such activities requires not only especially powerful forms of intention reading and cultural learning, but also a unique motivation to share psychological states with others and unique forms of cognitive representation for doing so. The result of participating in these activities is species-unique forms of cultural cognition and evolution, enabling everything from the creation and use of linguistic symbols to the construction of social norms and individual beliefs to the establishment of social institutions (p.675).

From a somewhat different ontogenetic perspective, Trevarthen (1979; Trevarthen & Hubley, 1978) gives an account of the development of this shared intentionality in terms of the development of primary and secondary intersubjectivity. Primary intersubjectivity emerges in the reciprocal behavior of infant and caregiver as they engage in episodes of joint attention to each other, and secondary intersubjectivity includes a third party as the object of their joint attention and action. In this latter stage, the object of attention has both material and symbolic functions. Radzikhovskii (1984) explains this latter form of intersubjectivity as follows:

[T]he general structure of ontogenetically primary joint activity (or, more accurately, primary joint action) includes at least the following elements: subject (child), object, subject (adult). The object here also has a symbolic function and plays the role of the primary sign. In fact, the child's movement toward, and manipulation of, an object, even when he is pursuing the goal of satisfying a vital need, is also simultaneously a sign for an adult: to help, to intervene, to take part. (...) In other words, true communication, communication through signs, takes place here between the adult and the child. An objective act is built up around the object as an object, and sign communication is built up around the same object as the sign. Communication and the objective act coincide completely here, and can be separated only artificially (quoted in Engeström, 1987).

In all these accounts, however, there is one element that is largely ignored, which is the affective dimension of joint activity. As has been argued by a variety of scholars, the motivation for the early emergence of joint attention and shared intentional actions grows out of the infant's emotional bond with his or her caretaker and subsequently with close family members and friends (Bloom, 1993; John-Steiner & Tatter, 1983). It is the satisfaction that the infant experiences in these events (as does also the adult) that sustains joint engagement in repeated episodes and creates that intersubjectivity which is both the prerequisite for and the intended outcome of their object-oriented communicative interaction (Bruner, 1983).

This, then is the beginning of sign-mediated communication, the basis on which children begin to develop language, first in the form of a protolanguage (an idiosyncratic system of signs, vocal and gestural, which enables them to communicate their wants, interests and enjoyment of togetherness with their immediate family) and then, towards the end of the second year, in the form of a particular human language, as they begin to take over the language spoken in their community. As Halliday (1975, 1993) makes clear, it is only when the child has constructed a 'linguistic meaning potential' organized in terms of the interrelation of semantics, lexicogrammar and phonology (meanings, wordings and soundings) that he or she is able to communicate information, both asking for information from others and, still later, telling others what they do not already know.

Though less fully spelled out, a similar and complementary account of language learning is proposed by Vygotsky (1978); and later by Bruner (1983), with emphasis on the supportive assistance provided by the more mature speakers who interact with the language learner. However, from the perspective of the child's intellectual development, what is important about both Vygotsky's and Halliday's accounts is that they both emphasize that, in learning language, the child simultaneously encounters and takes over the culture's way of making sense of human experience, as this is 'encoded' in the utterances that accompany joint activity, both organizing and commenting on what is done together. As Halliday puts it, "Language has the power to shape our consciousness; and it does so for each human child, by providing the theory that he or she uses to interpret and manipulate their environment" (1993, p. 107).

In the early years, this learning takes place mainly in the spontaneous conversations that the child has with others in the course of everyday activities. The following is a very clear example.

Elizabeth, age 4, is watching her mother shovel wood ash from the grate into a bucket.

Elizabeth: What are you doing that for?

Mother: I'm gathering it up and putting it outside so that Daddy can put it
on the garden

Elizabeth: Why does he have to put it on the garden?

Mother: To make the compost right

Elizabeth: Does that make the garden grow?

Mother: Yes

Elizabeth: Why does it?

Mother: You know how I tell you that you have to eat different things like eggs
and cabbage and rice pudding to make you grow into a big girl?

Elizabeth: Yes

Mother: Well, plants need different foods too. and ash is one of the things
that's good for them

(Wells, 1986, p.59)

There are a number of features of this brief episode that are worth drawing attention to. First, the conversation arises out of an event in which both Elizabeth and her mother are involved, even though Elizabeth is not performing the action herself. Second, for the mother, the material action she is carrying out is imbued with 'ideal' significance. That is to say, the wood ash is not simply a 'thing in itself,' it is also something that has value in the activity of growing plants, in which, as a type of fertilizer, it can mediate their cultivation. Third, the conversation is initiated by Elizabeth who, assuming her mother's action has a purpose, asks questions in order to learn about the means-end relationship of what she observes. And finally, in answering her daughter's questions, the mother tries to give an explanation that will make sense to Elizabeth in terms of her existing knowledge. This is clearly a learning opportunity for Elizabeth that is mediated both by discourse and by the material that the mother is acting upon; although

spontaneous rather than preplanned, it is also an excellent occasion for teaching on the part of her mother.

However, as will be discussed below, not all parents take up such opportunities, even when the opportunity arises. And indeed, as has been amply documented, such settings for learning through conversation with a responsive adult occur rarely, if at all, in some cultures (Gaskins, 1999; Rogoff, 2003; Schieffelin & Ochs, 1986).¹ Yet, by the middle years of childhood, children everywhere have learned the basic organization of the language of their community and have come to make sense of their experience in terms of the categories of meaning that the language makes available. It is clear, therefore, that, as suggested by Tomasello, human infants have a strong innate predisposition to share psychological states with their conspecifics and to master the semiotic means that make this possible across the wide variety of forms of joint activity into which they are enculturated.

Inner Speech: The Relationship Between Language and Thinking

The conversation between Elizabeth and her mother quoted above exemplifies the role of language in what might be called ‘thinking together’ (Mercer, 2002). Although the disparity in knowledge tends to decrease as we grow older and more conversant with the cultural ways of thinking that are assumed as the basis for purposeful action, conversations of this kind continue to take place in many contexts throughout our lives. For example, when joint plans and decisions have to be made, participants frequently think through them in conversation; similarly, when an important event occurs, people often want to discuss it with friends in order to determine how to understand it.

However, not all our thinking takes place in face-to-face action and interaction with others. As adults, we also engage in ‘solo’ thinking, as we read, reflect on past events or make decisions about future courses of action. In other words, there comes a point when we no longer need a collaborative interlocutor in order to think. Questions that therefore arise are: when does solo thinking become possible and what form(s) does it take?

As is well known, Vygotsky (1987) argued that most solo thinking is mediated by what he called ‘inner speech’, and proposed that this emerged between around seven years of age as the result of a differentiation of early speech into social speech and egocentric speech. Contrary to Piaget’s explanation of egocentric speech as speech which is a vestige of the child’s

incomplete socialization, Vygotsky interpreted the phenomenon of children's self-directed speech while in the presence of peers as evidence of an emerging separation of speech intended for co-interlocutors from speech intended for self. The primary importance of this development, according to Vygotsky (1981), was that, henceforth, the child would be able to regulate his or her behavior 'from outside', by using what had been the commands of others as self-initiated commands to control his or her own behavior. But, as he also emphasized, speech for self comes to serve an equally important function in enabling the child to carry on internally the sort of thinking actions that previously occurred in the interpersonal mode of thinking together.

Much of Vygotsky's writing on inner speech was concerned with the ways in which it comes to differ from social speech as a result of its abbreviation and its characteristic predicativity (i.e. omission of the subject) because of the 'speaker's' full knowledge of the subject under consideration. In these ways, Vygotsky's investigation of inner speech yielded important insights that are in accord with most people's introspection on their own verbal thought. However, it still leaves unexplored such questions as whether children are able to engage in self-initiated verbal thought before the internalization of egocentric speech, and whether solo thinking can only take place in inner speech or whether other forms of sign may be involved.

Vygotsky's position on these questions is unclear. He certainly referred to a period of prelinguistic thought, but did not explain in any detail how he conceived of such thinking. Perhaps what he had in mind was the kind of mental actions corresponding to the behaviors observed in what Piaget termed the sensorimotor stage of development. In terms of Vygotsky's distinction between the 'natural' and the 'cultural' lines of development, such thinking would almost certainly be ascribed to the natural line, since such mental actions are quite similar to those attributed to other primates on the basis of their problem-solving behaviors. In his final major work, however, Vygotsky (1987) was more interested in the formation of 'higher mental functions', which he considered to be mediated by the word meanings corresponding to 'true' or 'scientific' concepts. These tools for solo mental functioning were, in his view, appropriated from instruction during the early school years, during which period the child was also learning to read and write. Unfortunately, because of his premature death, Vygotsky did not explore the development of thinking in the years during which the children learn their first language in the

spontaneous events of daily life. It is impossible to know, therefore, whether Vygotsky considered that children were able to engage in silent solo thinking during the preschool years.

However, at about the same time as Vygotsky was carrying out his experiments on the shift from egocentric to inner speech, Voloshinov, a member of Bakhtin's circle, was addressing the relationship between language and thought from the perspective of a linguist. In expounding his theory, his use of the term 'inner sign,' makes it clear that it is not so much the linguistic medium that is crucial for the mediation of thinking as the function of the sign as an 'ideological' artifact, that is to say as a carrier of cultural meaning that enables the individual to make sense of his or her experience in a manner that is in conformity with the society of which he or she is a member. However, while Voloshinov recognized the variety of modalities in which signs might be materially embodied, like Vygotsky, he also focused on the linguistic sign. On the other hand, unlike Vygotsky, who posited a stage of prelinguistic thinking, Voloshinov considered that all thinking involved mediation by (mainly linguistic) signs and argued that it is only through the construction of inner signs in the course of interaction with others that consciousness itself can arise. Indeed, for Voloshinov, "experience exists even for the person undergoing it only in the material of signs. *Outside that material there is no experience as such.*" As he explains:

The reality of the inner psyche is the same reality as that of the sign. Outside the material of signs there is no psyche; there are physiological processes, processes in the nervous system, but no subjective psyche as a special existential quality fundamentally distinct from both the physiological processes occurring within the organism and the reality encompassing the organism from outside, to which the psyche reacts and which one way or another it reflects. By its very existential nature, the subjective psyche is to be localized somewhere between the organism and the outside world, on the borderline separating these two spheres of reality. It is here that an encounter between the organism and the outside world takes place, but the encounter is not a physical one: the organism and the outside world meet here in the sign. Psychic experience is the semiotic expression of the contact between the organism and the outside environment (1973, p.26).

If we accept Voloshinov's proposal, then, thinking is simply those types of mental activity made possible through the mediation of sign, outwardly in interaction with others or in

the medium of inner sign. As soon as the child begins to communicate with others through external signs, so he or she begins to use these same signs to interpret events, both external and internal, along the lines laid down by their use in the society to which he or she belongs. Moreover, learning the meanings that correspond to the words and grammatical structures (e.g. subject-object, modifier-head) of a child's first language also involves learning the concepts that are encoded thereby - albeit 'spontaneously', that is to say without conscious awareness.

But perhaps Voloshinov and Vygotsky do not differ as much as may at first sight appear. Vygotsky would certainly agree that children's thinking is shaped by the increasing range of signs that become available from the very beginning of their appropriation of the sign systems of their community. For example, he refers to the sign mediation that can be observed in children's play, as they use one object as a sign for another, citing the case of a child using a stick to represent a horse on which he can ride (Vygotsky, 1978). Other commonly observed examples include pretending to feed dolls or stuffed animals or making a pretend car in which to take them for a drive (Kress, 1997). Furthermore, in their egocentric speech, what is spoken often appears to function as a means of guiding their attention and action. Even more to the point is Vygotsky's discussion of the beginning of verbal thought, in which he argues that grammatical functions as well as word meanings develop as the child engages in interaction with more mature speakers about their shared situations. These linguistic meanings enable him or her to refer to particular objects as tokens of more general classes, to use the subject-predicate structure to describe events, and to make connections between them. Presumably these linguistic meanings provide a medium for silent thinking as well as for the formation of spoken utterances.

This, in fact, seems to be the implication of Vygotsky's final account of the relationship between thinking and speaking. In the closing pages of *Thinking and Speech*, he writes of the progression from thought to utterance:

It moves from the motive which gives birth to thought, to the formation of thought itself, first in inner speech, to its mediation in the inner word, to the meanings of external words, and finally, to words themselves ... The relationship of thought to word is a vital process that involves the birth of thought in the word. Deprived of thought, the word is dead ... The connection between thought and word is not a primal connection that is

given once and forever. It arises in development and itself develops. (1987, pp. 283-4)

This certainly seems to suggest that, with Voloshinov, Vygotsky would agree that some form(s) of solo thinking mediated by linguistic and other signs emerges in parallel with the development of speech.

However, the most important point upon which both Vygotsky and Voloshinov agree is that all sign-mediated activity is inherently social. That is to say, the meanings that mediate individual thinking are those that are appropriated from the sign functions of artifacts that mediate the wide range of activities in which people engage together in their everyday lives. Nevertheless, as Vygotsky emphasized, the meanings of those inner signs are not simply copies of their meanings in social interaction, nor are they identical from one individual to another. In the first place signs are transformed as they become part of an individual's resources, in the light of the activity in which they are encountered and in relation to the individual's past experiences. And second, as Vygotsky (1987) insists, this is because the meanings of words or signs do not remain constant for individual persons, but develop as they are encountered in new contexts of activity and as connections of various kinds are established with other meanings. His work on the development of concepts and, in particular, on the relationship between 'spontaneous' and 'scientific' concepts, exemplifies this developmental process.

But sign meanings also differ between individuals because of the specific situations in which they have been encountered and on the affective loading they take on as a result. If a child's encounters with dogs, even large ones, have frequently been enjoyable, the meaning of the sign 'dog' will have a positive emotional coloring. Similarly, if tapioca is known chiefly as a milk-based dessert with a texture like frogspawn that one was forced to eat at school, one will be unlikely to react positively to an offer of tapioca pudding, even in mature adulthood.

In this context, Vygotsky (1987) made a distinction between 'meaning' and 'sense', the former corresponding to the relatively stable meanings of lexical items, as they are defined in dictionaries, and the latter as corresponding to their significance for the user of the word. Citing Pulhan, he wrote:

A word's sense is the aggregate of all the psychological facts that arise in our consciousness as a result of the word. Sense is a dynamic, fluid, and complex formation

which has several zones that vary in their stability. Meaning is only one of these zones of the sense that the word acquires in the context of speech. It is the most stable, unified, and precise of these zones. In different contexts, a word's sense changes. In contrast, meaning is a comparatively fixed and stable point, one that remains constant with all the changes of the word's sense that are associated with its use in various contexts. (1987, pp. 275-6)

He further proposed that inner speech is characterized by the predominance of sense over meaning, or, to put it differently, that when thinking in inner speech, the personal and affective dimensions of meaning are much more salient than would be appropriate when attempting to communicate one's thought to others in external, social speech. Perhaps it is because the incompatibility between the speech that mediates thinking for self and that which mediates thinking with others increases with age that speech for self eventually becomes interiorized, in which form it is less constrained by the linguistic conventions of social speech. Such an explanation certainly seems compatible with the introduction to the final chapter of Vygotsky's (1987) *Thinking and Speech*.

Word meaning is inconstant. It changes during the child's development and with different modes of the functioning of thought. ... It is important to emphasize however, that the fact that the internal nature of word meaning changes implies that the relationship of thought to word changes as well. (p. 249)

The remainder of the chapter attempts to work out the implications of these two insights but, regrettably, he was forced to leave many loose ends remain untied.

To sum up the argument so far, I have attempted to present a conceptualization of the developing relationship between communicating and thinking that is universal in scope and is based on the concept of semiotic mediation. More specifically, I have put forward and attempted to justify three major claims:

- Signs, particularly linguistic signs, are semiotic artifacts that are created and used in the different institutions and spheres of activity, such as home, work and leisure, which

organize the way of life of a culture and enable people to ‘think together’.

- Individual thinking is mediated by these same signs, which are appropriated and imbued with personal significance as a result of the situations and interactions with others in which they are encountered.
- Children progressively master the culture’s resources of signs as they take part in the various activities in which these signs are used to mediate actions jointly undertaken with more mature members of the culture.

In the following sections, I shall attempt to show in more detail how the signs that constitute a society’s ‘ideology’, as Voloshinov puts it, are transformed as they are taken over to become the personal ‘meaning potential’ that individuals draw on as a resource for communicating with others and for solo thinking in the medium of inner sign. At the same time, however, I shall also seek to show how the meaning potential that individuals appropriate depends on the particular social groups to which they belong and on the characteristic ways in which meaning is jointly constructed according to the social positioning of the groups concerned and the cultural capital to which they thereby have access.

I shall continue to focus on linguistic signs because, although non-linguistic signs certainly contribute to the mediation of thinking, little of a systematic nature is known about how they do so. Furthermore, the linguistic sign system is unique in that not only is it “the prototypical form of human semiosis” (Halliday, 1993, p.93), but it also provides a way of representing the meanings made in all other forms of semiosis. In other words, if two or more people want to explore together the significance of non-verbal events or communication through other media, such as music or painting or the movements of dance or ritual, they necessarily have recourse to language in order to communicate their personal interpretations of these other semiotic artifacts. Thus, more generally, most of our learning about the cultural world we inhabit is through dialogue with others.

Entering into Dialogue: Negotiating the Meaning of Experience

‘Entering into dialogue’ can be understood from one point of view as identifying the start of a communicative encounter between two or more individuals. However, to initiate and sustain an

episode of linguistic interaction, participants have to work at establishing and subsequently maintaining agreement about the topic and purpose of their talk. That is to say, they continually have to aim for sufficient ‘intersubjectivity’ to allow the conversation to proceed. As will be recalled, Trevarthen (1978) established that this is typically achieved in a very rudimentary form toward the end of the first year of life. Nevertheless, complete intersubjectivity remains elusive both in casual conversation and even in more purposeful communication and, for this reason, it has to be constantly negotiated.

Paradoxically, however, as Rommetveit (1985) points out, “intersubjectivity must in some sense be taken for granted to be attained” (p. 189). For when two or more people enter into dialogue they both assume that the other(s) will enter into and honor a kind of contract to alternate between two roles, which Rommetveit explains as follows.

States of intersubjectivity are, in fact, contingent upon the fundamental dyadic constellation of speaker’s privilege and listener’s commitment: The speaker has the privilege to determine what is being referred to and/or meant, whereas the listener is committed to make sense of what is said by temporarily adopting the speaker’s perspective. (p.190)

In identifying what is being referred to, participants have to assume – at least initially - that the words spoken have their stable, publicly agreed meaning; but, in practice, this is rarely all there is to understanding ‘what is meant’. For, on the one hand, the referents of some words, such as deictics (‘this’, ‘here’, ‘now’), have to be determined from the situation in which the conversation takes place and, on the other, some words and phrases will refer to particular entities and events outside the conversational situation, which the speaker assumes the other participant(s) will be able to identify. Fortunately, however, there is more to interaction than just the words spoken. Frequently, the participants’ concurrent actions and the material artifacts involved provide another basis for interpreting what is meant, as do accompanying gestures and the intonational features of the utterance. Furthermore, clarification can be sought if the listener is in doubt about what is being referred to.

While the foregoing account is probably adequate for occasions of interaction that are concerned simply to impart information of an impersonal kind or to request action, the

participants in most conversations do more than simply draw attention to features of the to-be-shared situation. As Voloshinov puts it, “in actual speech [any word] possesses not only theme and meaning in the referential, or content, sense of these words, but also value judgment” (1973, p.103). In other words, in speaking, the speaker *takes up a position* (Shotter, 1993) both to the ‘content’ of his or her utterance and also to the person to whom it is addressed.

Not only do participants have to identify what is being referred to, therefore; they also have to decide on the position adopted by the speaker and on how they themselves are positioned by it. They then have to decide on the position they will take up in response – whether they agree or, if not, how far they feel the need to amplify, qualify or object to what they believe to have been meant by what was said. As Shotter puts it,

The expression of a thought or an intention, the saying of a sentence or the doing of a deed, does not issue from already well-formed and orderly cognitions at the center of our being, but originates in a person’s vague, diffuse and unordered *feelings*—their sense of how, semiotically, they are ‘positioned’ in relation to the others around them. (1993. p. 63)

Voloshinov prefigured this understanding of positioning and being positioned when he described the word as “a bridge thrown between myself and another. If one end of the bridge depends on me, then the other depends on my addressee” (1973, p. 86). In the early stages of language learning, this is exactly how the word functions for the child. In interacting with a child, the adult provides a bridge that the child is invited to cross in order to understand how particular signs are used in the larger community to enable people to achieve a joint focus on some aspect of their shared situation. In this way the adult utterance positions the child in relation to the sign and the relevant aspect of the situation and to the child’s affective state to what is referred to. In like manner, using the signs that she has constructed with the auras of sense that they have accumulated, the child, in turn, can attempt to communicate her own position and the position that she wants the adult to take up in response. This two-way ‘boundary crossing’ (Shotter, 1993) is not always straightforward, but as adult and child strive to understand and be understood, intersubjective agreement, when it is achieved, both strengthens their interpersonal relationship and enhances the semiotic resources that enable the child to act on the social and material world and to reflect on the relationship between her intentions and her

actions.

This is the second sense of ‘entering into dialogue’, in which the two-way bridge of sign-based semiosis makes it possible for the child to enter into the system of shared meanings that enables a group of people to function as a society. At the same time, it also makes it possible for the child, in appropriating these signs, to construct a ‘meaning potential’ (Halliday, 1975), which, in the medium of dialogue with self as well as with others, makes possible the development of a personal sense of self as a being with feelings, intentions and understandings of her relationship to the social and material world. It is for this reason that I have referred to the conversations through which children learn to talk and talk to learn as necessarily involving dialogue and the negotiation of meaning (Wells, 1981).

There is, however, a third sense of ‘entering into dialogue,’ which is best represented by the later work of Bakhtin.

Two Functions of Discourse: Dialogic and Monologic

For Bakhtin, an utterance is always and necessarily part of an ongoing dialogue in some sphere of activity. No one ever has the last word and equally, as he so memorably put it, nobody “breaks the silence of the universe” (1986, p. 69). Thus, whenever we speak, we necessarily enter into an ongoing dialogue, since we are always repeating or reacting to positions that others have already expressed, and our utterances are also shaped in expectation of the response of the person(s) to whom they are addressed. As Bakhtin puts it:

the speaker himself is oriented precisely toward such an actively responsive understanding. He does not expect passive understanding that, so to speak, only duplicates his own idea in someone else’s mind. Rather he expects response, agreement, sympathy, objection, execution, and so forth (Bakhtin, 1986, p. 69).

Seen in this way, all communication is dialogic. Nevertheless, differences are clearly apparent in the ways in which speakers position their addressees and in the nature of the responses they intend to elicit.

One particularly important dimension on which speakers’ utterances vary is that of responsivity, that is, their openness to counter positions. On this score, writing somewhat later in

the Bakhtinian tradition, Lotman (1988) proposed that texts (utterances, in Bakhtin's usage) can potentially be read or heard in two modes, which differ on this dimension of responsivity.² In the first mode, which might be called 'monologic', the speaker's or writer's text assumes no expectation of a rejoinder; all that is required is comprehension and acceptance. Texts that are expected to be heard or read in this way are often statements about matters that are considered (by the speaker) to be already accepted; they set out what is or should be the case. As Lotman explains, the monologic function is particularly important for passing on cultural meanings, "providing a common memory for the group" (p. 35), thus preserving continuity and stability of beliefs and values within a culture. However, by the same token, a text treated in this way is by nature authoritative, not open to question or alternative perspectives. A further drawback is that, in this missionary mode of communication, although intersubjectivity is assumed, it cannot be guaranteed, since there is no opportunity for misunderstandings or misinterpretations by the receiver(s) -- which inevitably arise -- to be corrected.

In the second mode, on the other hand, a text invites a response from the addressee's position, which may refine, extend or counter that of the speaker. In this way, as Lotman makes clear, it serves

to generate new meanings. In this respect a text ceases to be a passive link in conveying some constant information between input (sender) and output (receiver). Whereas in the first case a difference between the message at the input and that at the output of an information circuit can occur only as a result of a defect in the communication channel, and is to be attributed to the technical imperfections of this system, in the second case such a difference is the very essence of the text's function as 'a thinking device' (1988, pp. 36-37).

A text treated in this mode is truly dialogic, in Bakhtin's sense. And because it assumes that thinking is thinking together, it is ideally suited to a commitment to taking different positions into account in the attempt to determine what is the case or what course of action should be followed. Moreover, for those who have learned to take part in such constructive consideration of different perspectives, this social form of thinking can be taken over as a model

for private thinking, as each move in inner dialogue serves as a thinking device that elicits a further rejoinder.

Interestingly, Tomasello (1999) makes a somewhat similar distinction in his account of the cultural development of human cognition, in which he proposes what he calls ‘the ratchet effect’ to account for the cumulative nature of cultural evolution. As he points out, while ‘progress’ depends on the creativeness of particular individuals or groups in inventing and improving cultural tools,

[T]he process of cumulative cultural evolution requires not only creative invention but also, and just as importantly, faithful social transmission that can work as a ratchet to prevent slippage backward -- so that the newly invented artifact or practice preserves its new and improved form at least somewhat faithfully until a further modification or improvement comes along. (p. 5)

Similarly, while Lotman clearly follows Bakhtin in valuing the creative function that dialogic texts/utterances perform, he does not discount the value of the monologic function. Like Tomasello, he recognizes that continuity as well as innovation are necessary for a healthy society and, for this purpose, the texts of cultural knowledge need to be engaged with both monologically and dialogically.

Class-Related Differences in Language Use

A somewhat related distinction with respect to communicating and thinking through speech was proposed by Bernstein, a sociologist and one-time colleague of Halliday. In the late 1960s, when claims were being made that the low educational achievement of many working class children was attributable to inherited low intelligence, Bernstein (1975, 1996) counter-argued that the problem was not one of intelligence but of class-related differences in the ways in which language was used. Simply put, he theorized that, although all had access to the same language, adults of different social classes tended to adopt characteristically different ways of using language – different orientations to meaning -- according to their involvement in material and symbolic production, either as laborers, as directors or as creators; these differences would then carry over to the ways in which they talked with their children, thereby differentially preparing

the children for the ways in which they would be expected to use language in the context of formal education.

This theory was finally tested empirically by Hasan, who, in the 1980s, compared the ways in which Australian middle and working class mothers talked with their pre-school aged children in the course of their everyday activities. As Bernstein had predicted, she found systematic differences which, she suggested, would be consequential in the context of the children's subsequent formal education. To theorize the connection, she proposed a distinction between two modes of semiotic mediation that she observed in her data. The first and most pervasive she termed "invisible". This mode of mediation typically occurred on the fly, in the course of some other activity, and the sequences of talk were so brief and apparently insignificant that they hardly merited being called discussions. Yet, as she explained, because of their frequency and the different semiotic orientations they may enact, they are critical in establishing what she calls children's "mental dispositions".

The following brief extracts are representative of the different underlying orientations that, broadly speaking, were characteristic of the ways in which the mothers in the two social class groups dealt with exchanges that fell into the category of invisible mediation. In the first extract, Karen is helping her mother to wash and dry the dishes they have been using and is uncertain where to put the pot she has dried.

Mother: put it up on the stove and leave it there

Karen: why?

Mother: cause

Karen: that's where it goes?

Mother: yeah

(Hasan, 2002, p. 113)

Clearly, this is a routine situation in which nothing of importance is at issue. Nevertheless, as Hasan points out, it is significant that the mother does not hear Karen's "why?" as needing any explanation by way of response. As a result, neither participant overtly recognizes that another form of behaviour is possible and, therefore, that an explanation would enable Karen to understand the reason for the action that the mother insisted on. Instead, her

laconic answer, “cause”, indirectly tells Karen that ‘things are the way they are’ and so there is no point in asking for explanations.

Commenting on these and other similar extracts, Hasan underlines the “invisibility” of what is being “taught”:

The appropriation of a certain set of mental habits is not so much the result of explicit injunctions, therefore; rather, it is nourished by sayings which scarcely seem to say anything significant -- for example sayings of the kind presented in [this] extract. Everyday activities are the most hospitable environment for such sayings, because in the nature of things, everyday activities neither require nor allow the opportunity for deliberation. Their near automatisations, their unquestioned, almost unquestionable rationality for social subjects already initiated into the culture leads to an absence of reflection, to the certainty that what one is saying and/or doing is the most rational, the most normal thing to say and do. (2002, p.117)

The second, contrasting, extract also occurred in a fairly mundane situation, but here it was the mother who asked the first question. In quoting this example, Hasan draws attention to what she calls the “prefaced” format of the mother’s opening question. By using this format she is not asking Kristy about their friends’ impending relocation but seeking to know what Kristy understands about this event.

Mother: did you know that they are going to leave?

Kristy: no

Mother: they've been building a house

Kristy: mm

Mother: oh they haven't been building it, somebody else has been building it for them, and it's nearly finished, and they're going to move to their house in May

Kristy: why in May?

Mother: they're going to wait until the end of the school term

Kristy: mm

Mother: because Cathy goes to school now, and then she will change to her new school after ** the holidays

Kristy: **mm

Mother: if they'd moved earlier she'd only go to the new school for a week or two, and then they'd have holidays, you see, it would mess it up a bit for her

(2002, p. 118)

In this extract, as Hasan points out, a very different semiotic orientation is enacted. What is indirectly conveyed is that people do not know what others know or feel unless they talk about it. In addition, the mother is careful to give explicit answers to Kristy's questions and even takes her monosyllabic acknowledgements as signaling that more information would better enable her to understand the reasons for their friends' plans.

What Hasan calls "visible" mediation is somewhat similar in its semiotic orientation to that seen in the preceding extract. What distinguishes this mode is its more deliberate and sustained nature. In the example Hasan quotes (which unfortunately is too long to include here), the mother picks up on her daughter's concern at the death of a moth, and over the course of more than 40 turns, they discuss how every living creature has to die at some time. The point that Hasan makes is that dialogue of this kind involves specialized knowledge and in this respect is quite close to what may transpire in a lesson at school. Unlike exchanges in the invisible mode, the topic and purpose of talk in the visible mode are apparent to the participants and involve knowledge which, in its explicitness, is what might be called 'schooled knowledge'.

What is significant about the characteristics identified in the extracts quoted above is that they are symptomatic of consistent clusters of semantic features that recur across many conversations in many different everyday settings in the early years. And since these different ways in which mothers talk with their children realize different orientations to meaning, they have the effect of encouraging different mental dispositions. Summing up her argument with its supporting evidence of social class differences, Hasan concludes as follows:

[C]hildren have a massive experience of certain specific ways of saying and meaning, which are characterised by a particular semantic direction. Participation in this discourse

shapes the children ' s consciousness, orients them to taking certain ways of being, doing and saying as legitimate and reasonable; in short, it defines the contours of reality and provides a map for navigating that reality.

There is consistent and strong evidence that, at this early stage of three and half to four years, the children belonging to these two groups have established different ways of learning, different ways of solving problems, different forms of consciousness, or mental disposition. ... Through this mediation, the mother ' s culture becomes the growing child ' s map of reality, thus ensuring its own continuance. (2002, p. 120)

However, as Hasan makes clear, these dispositions are not immutable, since they are developed in specific, and typically class-related, interactional contexts. As children later participate in contexts beyond the home – in school or in out-of-school activities – they may encounter different ways of saying and meaning, from which they may appropriate different orientations to meaning. Thus, there is nothing deterministic about early language socialization, as is demonstrated by the significant number of young adults of working class origin who master the genres of “visible” mediation, becoming, in the process, bidialectal.³

Two further qualifications need to be made. First, it must be recognized that what is at issue here is two contrasting styles of parent-child interaction that happen to be significantly correlated with social class. However, as other studies have shown, such differences are not determined by class membership, since there is considerable within-class variation. In the Bristol study, for example, several of the mothers who engaged most frequently in “visible” mediation were working class and, conversely, by no means all the middle class mothers adopted this style of talk. In the United States, Hart and Risley (1999) also found variability within the class-based groups they studied, attributing it to overall family talkativeness.

Another way of interpreting Hasan’s findings is to see them as dependent on families’ beliefs about the value of encouraging children to adopt an inquiring attitude to the world around them rather than accepting it as they find it. Families who hold the former beliefs are also more likely to read stories to their children and to take time to talk about the characters and the motives for their actions as a way of extending their children’s experience beyond the events of daily life in which they are directly involved. Whether or not these practices are also seen as preparation for school, there is strong evidence that such exploratory talk (Barnes, 1976) does

indeed lead to success in the early school years, particularly in the development of literacy (Wells, 1986).

On the other hand, in some traditional subsistence cultures, where simply surviving is every family's priority and schooling is virtually non-existent, parents have no time for 'unnecessary' talk. Children are expected to learn by observation and it is their older siblings who are their caretakers and principal conversational partners. The Mayan community observed over many years by Gaskins (1999) illustrates this mode of enculturation very clearly. Arguing for the importance of understanding the cultural principles that underlie child-rearing practices, she draws attention to the part played by adult beliefs about the nature of child development. For the Maya, she explains, "the source of development is internal and preprogrammed" (p. 35) and so there is no reason to make special provision for children's intellectual development. Instead, "life in the compound as experienced by children is structured around adult work activities. In particular, it is not structured around young children's interests or desires, nor around adult goals for children" (p.33).

Seen in the light of such cross-cultural variability, it is clear that Hasan's interpretation of her data in terms of Bernstein's theory of class-related differences in orientation to meaning, transmitted in the everyday talk between parents and children, is culture specific. It is certainly helpful in understanding the role of different forms of preschool parent-child conversation in differentially preparing children to participate in the activities of schooling in technologically advanced Western societies. But it is much less relevant in societies whose way of life is shaped by different ways of engaging with the physical environment and different beliefs and values about the goals and means of child rearing. Nevertheless, Bernstein's more general theory about the relationship between adults' involvement in the means of production and the orientations to meaning that they enact in the interactional practices of family life is an important contribution to the theory of semiotic mediation in the historical development of particular cultures and in the ontogenetic development of their individual members.⁴

Monologic and Dialogic Discourse Revisited

Having made these important qualifications to the universalist scope of the argument I have been developing, I want to return to the distinction between monologic and dialogic discourse, as this is found in Western, highly literate, societies. I suggest that, when viewed from a Bakhtinian

perspective, the two pairs of contrasting modes of language use that I have described -- Lotman's and Hasan's -- have more in common than might at first sight appear. In both cases, one (monologic) mode makes the assumption that there is only one valid perspective, which is put forward with no expectation that there is more to be said, while the other (dialogic) mode embodies the assumption that there is frequently more than one perspective on a topic and that it is worthwhile to present and discuss them.

However, there is also an intriguing mismatch between the two pairs with respect to the positions in the social hierarchy of those who are more likely to adopt one or other mode. In the case of the linguistic socialization of young children, it is lower class mothers who are more likely to adopt the closed, monologic orientation to meaning, while the more open and dialogically exploratory orientation is more often found in the conversations of middle class mothers. In his early theorizing, Bernstein (1971) used the terms 'positional' and 'personal', respectively, to describe these orientations, arguing that it was the middle class who, unregimented in their occupational roles, would be more likely to be 'personal' in their responses to the different perspectives of the people with whom they personally associated.

On the other hand, in the realm of public discourse, it is those who have the authority of expertise in their respective spheres who are more likely to adopt the monologic mode of speaking and writing. And, for the most part, these people tend to be solidly middle class, at least in terms of their achieved social status.

Perhaps, then, it is not so much social class, as such, that predisposes some sections of society to adopt a monologic stance. Rather it may be the relationship in which they perceive themselves to stand with respect to their addressees. That is to say, those who are assumed to have greater expertise and knowledge and who hold a position of institutional power are more likely to make monologic pronouncements when addressing those who are assumed to be less knowledgeable and of lower status in the relevant institution. Because lower class adults are treated in this 'positional' way in the world of work it seems likely that they tend to adopt the same stance in their interactions with family members whom they see as being of lower status.

But perhaps just as fundamental in determining which mode is habitually adopted is the distinction that Tomasello (1999) makes between "creative invention" and "faithful social transmission that can work as a ratchet to prevent slippage backward." As Lotman pointed out, the monologic mode has value in preserving continuity and stability of beliefs and values within

a culture, and this may be what predisposes lower class parents and middle class experts and managers to enunciate the way things are or should be and why they are unwilling to countenance what they perceive as disruptive rejoinders offering innovative alternatives.⁵

Whether these speculations are accurate or not, the general distinction that Lotman and Hasan make between different modes of making meaning in interaction is clearly very relevant, not only to children's early experiences in the home, but also to their experience of interaction at school. In the remainder of this paper I shall focus on the latter.

Language Use in Education

Before proceeding, it may be useful to recapitulate the argument so far. The key points may be summarized as follows.

- At birth, human infants already have certain predispositions that are essential for their entry into the cultural ways of making sense of experience practiced by their family and immediate community. These include an orientation to other humans and a readiness to engage in dyadic interactions with them, in which they first share emotions and then interest in their shared environment and their joint actions within it; they are also predisposed to read the intentions of others and to develop means of sharing their own intentions.⁶
- While direct action on objects is important for the infant's sensorimotor development, as described by (Piaget, 1970), equally important is enculturation into the sensemaking practices of his or her particular community and this necessarily involves the use of signs, which, as Voloshinov put it, act as "a bridge thrown between myself and another." It is in the context of the interaction that accompanies joint actions that the infant encounters and learns the sign system of the community's language and, in the process, takes over the community's ways of being in, and making sense of, everyday actions and events in terms of the culture's knowledge and values, as these are represented in the linguistic signs that mediate their interaction.
- At the same time, as Hasan explains, the nature of these interactions and the different ways of co-constructing meaning that they foreground inculcate different mental dispositions, that is to say, different assumptions about what is worth attending to and what actions, both material and linguistic, are considered to be important. Also, as noted

earlier, individuals' life experiences lead to differences among them in the sense that particular words and other signs have for them.

Whatever their families' social positioning and their own experience-based interests, however, if we accept Tomasello's argument about the "ratchet effect", it is clear that all children need to be enculturated into the knowledge and practices that are valued in the society in which they are growing up. And there is ample evidence that a great deal of parent-child interaction serves this purpose. This is not surprising, for it is clearly important for children's present and future participation in their families and in the larger community that, with their greater expertise, adults should provide the necessary opportunities for children to appropriate their community's ways of acting, thinking and valuing and of the accepted ways of communicating their thoughts and feelings about their experiences. Together, these constitute the cultural resources that they need to master in order to become full members of their community.⁷ At school, too, there is much in the way of knowledge and skills that students need to take over from previous generations, and monologic direct instruction is sometimes the best way of providing the necessary opportunity for such learning (Wells, 1998).

However, following Tomasello's argument, it is equally clear that monologic instruction alone is not sufficient. Not only do children not always understand what they are told and so need to engage in clarifying dialogue to reach the desired intersubjectivity but, individually, they frequently have alternative perspectives on a topic that need to be brought into the arena of discussion for further exploration. Moreover, in the longer term, it is important for society as a whole that each new generation is encouraged to question the existing norms, to explore alternatives and to propose new ideas with a view to 'improving' received knowledge and practices in order to make them more appropriate and effective for the present and the foreseeable future. Viewed in this light, the task of education, both in the family and community and also in schools and colleges, is to provide opportunities and support for both these aspects of development. Or to put it differently, education requires both monologic and dialogic interaction between and among the members of successive generations.

Unfortunately, however, as several large-scale studies have shown, such a balance is rarely found in contemporary classrooms. In the Bristol Study of Language Development, for example, in which a representative sample of 32 children was followed from home to first school, we found that not only did children almost cease to ask 'real' questions at school, but

teachers also rarely invited them to express and explain their beliefs and opinions – at least with respect to the official curriculum (Wells, 1986). And in the later years of middle and high school, the situation is not very different. The vast majority of lessons consist of teacher lecture, followed by episodes of what Tharp & Gallimore (1988) call the “recitation script”, or by individual seatwork; rarely is there negotiated group work or open-ended discussion of ideas put forward by students (Galton et al., 1999). In other words, while there is a great deal of monologic discourse, intended to ensure the handing on of basic skills and approved knowledge, there is very little discourse that is truly dialogic in either form or intent.

In large part, this state of affairs can be explained in terms of the perpetuation of schools’ original function. As Cole (1996) points out, the first schools were created several thousand years ago to train scribes and accountants to administer the emerging kingdoms in the Fertile Crescent and, while the content of the curriculum has been greatly expanded, the basic goals and organization of schools have changed very little. In contemporary terms, this means training young people to be adaptable workers to fill the requirements of the market economy for the benefit of employers and their shareholders. Evidence for this argument can be seen in the ‘No Child Left Behind’ legislation and its emphasis on the basic skills of reading and mathematics together with the use of high stakes testing to ensure conformity and accountability. From this follows the justification offered by many teachers that, with so much curricular material to cover, they cannot afford to spend time on unscheduled discussion and, furthermore, such discussions run the risk of loss of control.

However, if the arguments put forward above for a balance between monologic and dialogic interaction are accepted, the question we should be asking is: How can we create the conditions that would make ‘true dialogue’ more likely to emerge?

Knowing Together: Co-Constructing Knowledge Through Dialogue

The idea that knowledge is constructed through dialogue goes back at least to the time of Socrates and has been reiterated by many others since then. However what Vygotsky, Bakhtin and their followers have done is to provide a rationale within the framework of cultural historical activity theory for the importance of dialogue as the essential means by which knowledge is advanced within any society. As Bakhtin pointed out, “After all, our thought itself – philosophical, scientific, and artistic – is born in the process of interaction and struggle with

others' thought" (1986, p. 92).

One of the problems that stand in the way of schools' acceptance of the dialogic principle is the typically unrecognized ambiguity of the noun 'knowledge'. In public debates about what should be learned in schools, the term knowledge is understood as 'what is known', that is to say, as what is taken to be true. More formally, in this sense, knowledge is the accumulated outcome of the formal procedures whereby what particular individuals claim to know as a result of their research is critically evaluated and formally approved. As a result of these procedures, knowledge becomes independent of individual knowers, and is to be found in books and other forms of monologic representation. For those who heed Bakhtin, on the other hand, knowledge is intrinsically bound up with 'knowing together', which can only be undertaken by individuals in specific situations with particular ends in view. From this perspective, books do not contain knowledge, as if packed between their covers, but are artifacts that mediate particular individuals' actions of knowing with others for some purpose.

This distinction has already been encountered in a different form in Lotman's discussion of the two functions of text. Knowledge, construed as 'what is known', is clearly authoritative and so is naturally communicated in a monologic mode, whether presented by the teacher or the textbook. If it is construed as an active process of 'knowing together', by contrast, knowledge is most fully achieved in the dialogue between people who are together trying to solve a problem, construct an explanation, or decide on a course of action. However, in such knowing together it is not just the knowledge of the group that is advanced, but also each participant's understanding of the topic at issue, as they compare the contributions of others with their own perspective and formulate their own so that it adds something or relevance to the discussion (Wells, 1999). As Vygotsky emphasized in a similar context, "Speech does not merely serve as the expression of developed thought. Thought is restructured as it is transformed into speech. *It is not expressed but completed in the word*" (1987, p. 251, emphasis added).

This is not to suggest that the decision to adopt a dialogic mode of interaction in the classroom is easy, either for the teacher or for the students. For the teacher, it means partially relinquishing control of the flow of discussion, giving up the habit of evaluating each student contribution, and allowing students to initiate when they have something that they consider relevant to contribute. And for students, it means treating their peers' contributions as worthy of careful consideration and making their own as clear and to the point as possible. To a

considerable degree, these are skills that improve with practice, but certain broader conditions need to be in place if the attempt is to be productive, as will be discussed below. However, it is worth pointing out that the importance of learning to dialogue extends beyond the improvement of learning in the classroom for, as Dewey (1916) emphasized in *Democracy and Education*:

In directing the activities of the young, society determines its own future in determining that of the young. Since the young at a given time will at some later date compose the society of that period, the latter's nature will largely turn upon the direction children's activities were given at an earlier period.

In other words, for a society to function effectively as a democracy, in which decisions about matters of importance are made on the basis of informed dialogue among its members, the disposition and skills to act in this way need to be acquired through the enactment of such practices in the formative years of schooling.

Developing a Dialogic Stance

I have brought Dewey into the discussion because, although starting from the discipline of philosophy rather than psychology, his thinking was quite similar to Vygotsky's on the issue of semiotic mediation and human development (Glassman, 2001; Miettinen, 2001). Equally to the point, he himself gave considerable thought to the conditions that need to be met for dialogue to flourish, as he and the teachers at the school he founded wrestled with this issue. Of one thing he was quite sure: in order for students to engage with a topic, it must be of interest to them. But it must also be one that poses problems or raises doubts that will motivate the student to explore further. This led Dewey to place great emphasis on inquiry, both as the motivation for engaging in, and as the organizing principle for the selection of, learning activities. These, he believed, should grow out of first-hand experience and be largely determined by the students themselves, with the teacher acting more as facilitator than as director. While more recent writers in this tradition have placed less emphasis on individual choice of topic for inquiry, they agree with Dewey in emphasizing that the key characteristic of investigatory activities should be that they take as their object significant and often problematic features of the students' experience and environment and have as their intended outcome a growth in the students' understanding, where

this is taken to mean, not simply factual knowledge, but knowledge growing out of, and oriented to, socially relevant and productive action (Cohen, McLaughlin, & Talbert, 1993).

Vygotsky, on the other hand, while agreeing on the importance of interest and the motivational value of inquiry, placed much greater emphasis on collaborative group investigation. This was in part because he saw the social group, in this case the classroom community, as the source from which the individual appropriated the sign-mediated practices that are the foundation of higher mental functions. As he argued, “all higher mental functions are internalized social relationships ... [Even] in their own private sphere, human beings retain the functions of social interaction” (1981, p. 164). But equally important was the much more active role he attributed to the teacher in selecting the topics for students’ inquiries and in providing guidance as they engaged in the problem solving to which these inquiries were intended to give rise. It was in such situations that the teacher was able to work most effectively with students in their ‘zones of proximal development (1987).

However, for both Dewey and Vygotsky, despite their different emphases, one of the most important functions of inquiry was to generate occasions for purposeful dialogue. When students pursue investigations, they develop ideas and acquire information that they want to share and debate; at the same time, the problems they encounter call for the joint consideration of alternative possible solutions. In these circumstances, students have reason to learn the skills necessary for engaging in productive dialogue and, over time, they also develop the disposition to approach problem solving of all kinds in this way, which will be of value both to them in the future and to the larger society of which they are becoming members.

In recent years, there have been, internationally, a number of university-led attempts to put these ideas into practice, particularly during the elementary and middle school years, where, because of the practice of teachers being responsible for several curriculum subjects, there is greater possibility of cross-disciplinary investigations and more latitude in the arrangements about how time is allocated. Space does not allow an exhaustive account of all these projects, but particularly worthy of mention are: the Knowledge Building Communities developed by Marlene Scardamalia and Carl Bereiter in Canada (Scardamalia, 2001; Scardamalia, Bereiter, & Lamon, 1994); in the United States, the Communities of Learners project pioneered by Ann Brown and Joe Campione (Brown & Campione, 1994) and Guided Inquiry Supporting Multiple Literacies led by Annemarie Palincsar and Shirley Magnusson (Palincsar et al., 1998); The Talk, Reasoning

and Computers Project led by Neil Mercer (Mercer, 2002; Wegerif & Scrimshaw, 1997) in the United Kingdom; the work of Davydov (1988) in Russia and that of Mariane Hedegaard (1990) and Seth Chaiklin (1999) in Denmark; and, not least, the Reggio Emilia Approach to early education in Italy (Rinaldi, 2005). Naturally, these projects differ in their emphases and in the age-range for which they are intended, but all give central importance to harnessing and building on students' interests, encouraging inquiry through practical investigation and the critical use of textual material, and the adoption of a dialogic stance to the co-construction of knowledge.

My own efforts in this respect have taken a rather different form. Having worked with teachers for many years, I am very much aware of the ever-increasing pressures on them to meet curriculum standards imposed from above and to ensure that their students perform well on the ever-more-frequent standardized tests of basic skills and 'valued knowledge'. I am also very aware of the tension that this creates for those teachers who have a very different vision of the ideal classroom, in which a constructivist view of learning is matched by a Vygotskian interpretation of the dual roles of the teacher as planner of appropriately challenging activities and provider of assistance in students' zones of proximal development. What could be achieved, I wondered, if some of these teachers were invited to come together in an attempt to put their visions into practice in their respective classrooms and to collaborate in solving the problems they encountered? This was the beginning of an ongoing endeavor, which we named the Developing Inquiring Communities in Education Project (DICEP).⁸

What has enabled this project to sustain its members' enthusiastic involvement over many years is the parallelism between the functioning of the group and our collective vision of what we want to achieve in our classrooms: at both levels, learning is understood to be most effectively carried out through inquiry and mediated by dialogue. As a result, what we have discovered through reflecting together on our own work as teacher researchers has yielded insights that have been translated into classroom practices, and what has been learned through research in our classrooms has contributed to the development of our theory of education (Wells, 2001a, 2002). Furthermore, the teacher members have also found their voices as conference speakers and as writers (for example in *Networks*, 6(2) 2003), and several have become involved, in various capacities, in the education of pre-service and serving teachers.

As the title of the project suggests, the focal question has been how to create a community of inquiry in the classroom, and much of value has been learned about this (Wells,

2001b). But we have also been very interested in the relationship between inquiry and dialogue. Would creating an ethos of inquiry in the classroom lead to a burgeoning of dialogue? The answer to this question was positive but initially puzzling. By comparing observations made in the teachers' classrooms early and late in their participation in the project, we found that the quality of interaction changed significantly: teachers asked more open-ended questions that invited a range of alternative opinions and conjectures; conversely, they asked fewer known-answer questions; they also evaluated student contributions less frequently. Furthermore, students initiated sequences of discussion much more frequently and teachers showed uptake of their contributions, either by building on them in their responses or by inviting further contributions on the topic raised by the student initiation. In all these ways, whole-class discussion became much more dialogic. Nevertheless, the teachers still retained overall control of the discussion and its general organizational pattern continued to be that of triadic dialogue (Lemke, 1990), with its familiar I-R-F structure. With respect to this latter finding, it seemed that the data showed little evidence of a change in the pattern of interaction; however, actually viewing and listening to the recorded discussions led to the opposite impression (Wells & Mejía Arauz, 2006)

In attempting to solve this conundrum, we came to several important realizations. First, there is a significant difference between a teacher acting as organizer of the talk and acting as the "primary knower" (Berry, 1981), who feels the need to be the validator of all student contributions. What we discovered was that, in those later episodes that 'felt' more dialogic, the teachers' follow-up moves frequently merely acknowledged (rather than evaluated) students' contributions, or they summarized one or more preceding contributions in order to provide focus for the ensuing discussion. And when they initiated a new sequence it was frequently not by asking a question but by inviting a contribution from someone else who wanted to speak or from a student who tended to remain silent in the whole-class setting but who participated constructively in small group discussion. In other words, the teacher's control was exercised in the interest of maximizing the value of the discussion for all participants.

Second, as we set the recorded episodes in the larger context of the curriculum units in which they occurred, it became apparent that the use of the I-R-F structure can have very different ends in view, including that of promoting dialogue. Some time is necessarily spent in organizing the social and material arrangements for different types of activity and in describing

the purpose and necessary procedures for those that are not already familiar. These events, not surprisingly, are frequently dealt with monologically. Various forms of direct instruction are also valuable for certain purposes, such as exposition, checking on or extending comprehension of information in texts, and reviewing previous lessons to ensure that key points are understood and remembered. While such episodes do not have the surface form of dialogue, it does not follow that the curriculum unit as a whole is not dialogic in its overall orientation. And with this clearer understanding of the overall dynamics of classroom discourse, we came to see that it was not the proportional frequency of talk that was dialogic in form that was the best indicator of a teacher's overall approach, but rather his or her adoption of a *dialogic stance*.

By dialogic stance, I mean an orientation to knowledge construction that recognizes that knowledge is “created in the discourse between people doing things together” (Franklin, 1996) and that ‘what is known’ can only come alive when it is put to the test, either in action or in discussion of its implications. This is one of the principal arguments for adopting inquiry as an overall approach to the curriculum. For, when students are engaged in thematic investigations around the officially prescribed topics, there are multiple occasions for the posing of real questions and for the consideration of alternative possible answers to them. Equally important as the hallmark of a dialogic inquiry approach is that all such student contributions are taken seriously and are explored as rigorously as the circumstances permit. Thus, when a teacher adopts a dialogic stance, it does not find realization only in preplanned discussions that are overtly dialogic in form. Just as valuable are those that arise spontaneously from a student question or conjecture, or even from an ‘error’ or ‘misconception’ that leads to all participating in a discussion of basic principles in the discipline. Being alert to the potential of such ‘teachable moments’ is clearly an equally important aspect of teaching that seeks to promote dialogue as the means to increasing understanding through collaborative knowing together.

Viewed from this perspective, the recorded episodes of interaction in their classrooms provide strong evidence that, after some period of involvement in the project, the DICEP teachers were adopting a dialogic stance, even when the curriculum unit was not overtly inquiry-oriented. Indeed, in their most recent work they have extended this stance by including their students as co-researchers. Together, teacher and students engage in reflective dialogue about what they are doing and why, and negotiate how curriculum units should be organized so that

students' interests and questions are given equal standing with the topics prescribed in the curriculum guidelines (Donoahue, 2003; Hume, 2001a, 2001b).

Conclusion

With the aid of Vygotsky's concept of semiotic mediation, I have tried to show how and why the sign-system of language is at the heart of all forms of education, whether in the informal learning and teaching that occurs in everyday activities in the home and local community or in the more formally organized activities through which the curriculum is enacted in the classroom. I have also put forward evidence that, whether they are aware of it or not, adults' different ways of talking with children enculturate them into particular modes of meaning making and, thereby, predispose them to construe differently the social and material world in which they live and their own potential for acting to improve it. Against this background, I have drawn on Bakhtin's work to advance the argument that, while all discoursing is potentially dialogic, it is in the dialogue that arises from inquiry and is realized in 'knowing together' that individual understanding is most powerfully enhanced. Finally, echoing Dewey, I have argued that, if one of the defining criteria of democracy is that differences of interest and opinion in matters that affect the common good are resolved, to the extent possible, through dialogue, it is important that the education of the citizens of tomorrow should be similarly conducted today through activities that promote inquiry and a dialogic stance.

However, since such an approach to education is unfamiliar to the majority of practitioners and curriculum designers, much further research is needed to discover how it can be achieved in the diverse settings of today's schools and classrooms. In my view, it is teachers themselves who are in the best position to conduct this research and to share their findings with their colleagues and the wider community. In other words, to improve the quality of the education that our children experience, it is essential that the dialogue be broadened to include all those who have a stake in the world that we are, consciously or unconsciously, bringing into being.

Notes

¹ As Rogoff (2003) points out, what children learn depends crucially on the activities in which they participate, as observers as well as through active participation, and these vary very considerably across cultures. Furthermore, in some cultures, it is older siblings rather than the mother who has the primary responsibility for supervising the infant's activity.

¹ An idea of Vygotsky's views may be gleaned from a chapter entitled 'The child and his behavior' written in 1930 by Luria (Luria & Vygotsky, 1992). He states: "Between the ages of 3 and 4, the child has his own primitive logic, and his own primitive thinking devices – all of which are shaped by the fact that this thinking takes place in the primitive medium of a type of behavior that has yet to engage in serious contact with reality." Since then there has been a substantial amount of research that yields a very different picture of cognitive development (compare

¹ In spirit, this is very similar to Halliday's claim that "language is the essential condition of knowing. the process by which experience becomes knowledge" (1993, p. 94).

¹ Like Halliday, Lotman uses "text" to refer not only to written texts, but also any instance of language being used on a particular occasion.

¹ A number of prominent academics have described this process, drawing attention to the alienation from their family and home community that they experienced as a result of their choice of a career that demanded the adoption of a way of speaking and meaning that was very different from that of their working class origin (Rosen, 1984). Interestingly, Bernstein himself made this choice.

¹ It may also contribute to explaining the attitude to child-rearing in many traditional societies. The findings of Luria in his study of the different groups of

¹ In this context, “intention” should be understood as what is being attended to as well as what action is envisaged (J.S. Bruner, 1999).

¹ This is particularly true of traditional, preliterate societies, in which the passing on of traditional values and practices is seen as essential for the continuation of the culture (Rogoff, 2003).

¹⁰ The project started in 1991, with a grant in support from the Spencer Foundation. In the intervening years, the group has received several more grants from the Spencer Foundation and is now continuing without external funding.

References

- Bakhtin, M. M. (1986). *Speech genres and other late essays* (Y. McGee, Trans.). Austin: University of Texas Press.
- Barnes, D. (1976). *From communication to curriculum*. (2nd edition 1992, Portsmouth, NH: Boynton/Cook Heinemann ed.). Harmondsworth, UK: Penguin.
- Bernstein, B. (1971). *Class, codes and control Vol.I: Theoretical studies towards a sociology of language*. London: Routledge & Kegan Paul.
- Bernstein, B. (1975). *Class, codes and control, Vol. 3: Towards a theory of educational transmissions*. London: Routledge & Kegan Paul.
- Bernstein, B. (1996). *Pedagogy, symbolic control and identity: Theory, research, practice*. London: Taylor and Francis.
- Berry, M. (1981). Systemic linguistics and discourse analysis: a multi-layered approach to exchange structure. In M. Coulthard & M. Montgomery (Eds.), *Studies in discourse analysis* (pp. 120-145). London: Routledge and Kegan Paul.
- Bloom, L. (1993). *The transition from infancy to language*. Cambridge: Cambridge University Press.

- Brown, A. L., & Campione, J. C. (1994). Guided discovery in a community of learners. In K. McGilly (Ed.), *Integrating cognitive theory and classroom practice: Classroom lessons* (pp. 229-270). Cambridge, MA: MIT Press/Bradford Books.
- Bruner, J. S. (1983). *Child's Talk*. New York: Norton.
- Bruner, J. S. (1999). The intentionality of referring. In P. D. Zelazo, J. W. Astington & D. R. Olson (Eds.), *Developing theories of intention* (pp. 329-340). Mahwah, NJ: Lawrence Erlbaum Associates.
- Chaiklin, S. (1999). Developmental teaching in the upper-secondary school. In M. H. J. Lompscher (Ed.), *Learning activity and development* (pp. 187-210). Aarhus, Denmark: Aarhus University Press.
- Chomsky, N. A. (1965). *Aspects of the theory of syntax*. Cambridge, MA: MIT Press.
- Cohen, D. K., McLaughlin, M. W., & Talbert, J. E. (Eds.). (1993). *Teaching for understanding: Challenges for policy and practice*. San Francisco: Jossey-Bass.
- Cole, M. (1996). *Cultural psychology: A once and future discipline*. Cambridge, MA: The Bellknap Press of Harvard University Press.
- Davydov, V. V. (1988). The concept of theoretical generalization and problems of educational psychology. *Studies in Soviet Thought*, 36(3), 169-202.
- Dewey, J. (1916). *Democracy and education*. New York: The Free Press.
- Donald, M. (1991). *Origins of the Modern Mind: Three Stages in the Evolution of Culture and Cognition*. Cambridge, MA: Harvard University Press.
- Donoahue, Z. (2003). Science teaching and learning: Teachers and children plan together. [http://education.ucsc.edu/faculty/gwells/networks/journal/Vol%206\(1\).2003feb/Donoahue.html](http://education.ucsc.edu/faculty/gwells/networks/journal/Vol%206(1).2003feb/Donoahue.html)
- Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research*. Helsinki: Orienta-Konsultit.
- Franklin, U. (1996). Introduction, *Towards an Ecology of Knowledge*. University of Toronto.
- Galton, M., Hargreaves, L., Comber, C., Pell, T., & Wall, D. (1999). *Inside the primary classroom: 20 years on*. London: Routledge.
- Gaskins, S. (1999). Children's daily lives in a Mayan village: A case study of culturally constructed roles and activities. In A. Göncü (Ed.), *Children's engagement in the world: Sociocultural perspectives* (pp. 25-61). Cambridge: Cambridge university press.

- Glassman, M. (2001). Dewey and Vygotsky: Society, experience, and inquiry in educational practice. *Educational Researcher*, 30(4), 3-14.
- Halliday, M. A. K. (1975). *Learning how to mean*. London: Arnold.
- Halliday, M. A. K. (1993). Towards a language-based theory of learning. *Linguistics and Education*, 5, 93-116.
- Hart, B., & Risley, T. R. (1999). *The social world of children learning to talk*. Baltimore: Paul H. Brookes.
- Hasan, R. (2002). Semiotic mediation and mental development in pluralistic societies: Some implications for tomorrow's schooling. In G. Wells & G. Claxton (Eds.), *Learning for life in the 21st century: Sociocultural perspectives on the future of education* (pp. 112-126). Oxford: Blackwell.
- Hedegaard, M. (1990). How instruction influences children's concepts of evolution. *Mind, Culture, and Activity*, 3, 11-24.
- Hume, K. (2001a). Co-researching with students: Exploring the value of class discussions. In G. Wells (Ed.), *Talk, text, and inquiry* (pp. 150-170). New York: Teachers College Press.
- Hume, K. (2001b). Seeing shades of grey: Developing a knowledge building community through science. In G. Wells (Ed.), *Talk, text, and inquiry* (pp. 99-117). New York: Teachers College Press.
- John-Steiner, V., & Tatter, P. (1983). An interactionist model of language development. In B. Bain (Ed.), *The sociogenesis of language and human conduct*. New York: Plenum Press.
- Kress, G. (1997). *Before writing: Rethinking the paths to literacy*. London: Routledge.
- Lemke, J. L. (1990). *Talking science: Language, learning, and values*. Norwood, NJ: Ablex.
- Lotman, Y. M. (1988). Text within a text. *Soviet Psychology*, 26(3), 32-51.
- Mercer, N. (2002). Developing dialogues. In G. Wells & G. Claxton (Eds.), *Learning for life in the 21st century: Sociocultural perspectives on the future of education* (pp. 141-153). Oxford: Blackwell.
- Miettinen, R. (2001). Artifact mediation in Dewey and in cultural-historical activity theory. *Mind, Culture, and Activity*, 8(4), 297-308.
- Networks: An online journal for teacher research*.
<http://education.ucsc.edu/faculty/gwells/networks/>

- Palincsar, A. S., Magnusson, S. J., Marano, N., Ford, D., & Brown, N. (1998). Designing a community of practice: Principles and practices of the GIsML Community. *Teaching and Teacher Education, 14*(1), 5-20.
- Piaget, J. (1970). Piaget's theory. In P.H.Mussen (Ed.), *Carmichael's handbook of child development* (pp. 703-732). New York: Wiley.
- Pinker, S. (1994). *The language instinct: How the mind creates language*. New York: HarperCollins.
- Rinaldi, C. (2005). *In dialogue with Reggio Emilia: Listening, researching and learning*. London: RoutledgeFalmer.
- Rogoff, B. (2003). *The cultural nature of human development*. New York: Oxford University Press.
- Rommetveit, R. (1985). Language acquisition as increasing linguistic structuring of experience and symbolic behavior control. In J. V. Wertsch (Ed.), *Culture, communication, and cognition: Vygotskian perspectives* (pp. 183-204). Cambridge: Cambridge University Press.
- Rosen, H. (1984). *Stories and meanings*. Sheffield, UK: National Association for the Teaching of English.
- Scardamalia, M. (2001). Getting real about 21st century education. *The Journal of Educational Change, 2*, 171-176.
- Scardamalia, M., Bereiter, C., & Lamon, M. (1994). The CSILE project: Trying to bring the classroom into World 3. In K. McGilley (Ed.), *Classroom lessons: Integrating cognitive theory and classroom practice* (pp. 201-228). Cambridge, MA: MIT Press.
- Schieffelin, B. B., & Ochs, E. (Eds.). (1986). *Language socialization across cultures*. Cambridge: Cambridge University Press.
- Shotter, J. (1993). Bakhtin and Vygotsky: Internalization as a boundary phenomenon. *New Ideas in Psychology, 11*(3), 379-390.
- Shotter, J. (1993). Vygotsky: The social negotiation of semiotic mediation. *New Ideas in Psychology, 11*(1), 61-75.
- Tharp, R., & Gallimore, R. (1988). *Rousing minds to life*. New York: Cambridge University Press.

- Tomasello, M. (1999). *The cultural origins of human cognition*. Cambridge, MA: Harvard University Press.
- Tomasello, M., Carpenter, M., Call, J., Behne, T., & Moll, H. (2005). Understanding and sharing intentions: The origins of cultural cognition. *Behavioral and Brain Sciences*.
- Trevarthen, C. (1979). Communication and cooperation in early infancy: a description of primary intersubjectivity. In M. Bullowa (Ed.), *Before speech: The beginning of interpersonal communication*. Cambridge: Cambridge University Press.
- Trevarthen, C., & Hubley, P. (1978). Secondary intersubjectivity: Confidence, confiding and acts of meaning in the first year. In A. Lock (Ed.), *Action, gesture and symbol: the emergence of language*. New York: Academic Press. (pp. 183-230).
- Voloshinov, V. N. (1973). *Marxism and the philosophy of language* (L. Mtejka & I. R. Titunik, Trans.). Cambridge, MA: Harvard University Press.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Vygotsky, L. S. (1981). The genesis of higher mental functions. In J. V. Wertsch (Ed.), *The concept of activity in Soviet Psychology* (pp. 144-188). Armonk, NY: Sharpe.
- Vygotsky, L. S. (1987). Thinking and speech. (N. Minick, Trans.). In R. W. Rieber & A. S. Carton (Eds.), *The collected works of L.S. Vygotsky, Volume 1: Problems of general psychology* (pp. 39-285). New York: Plenum.
- Vygotsky, L. S. (1999). Tool and sign in the development of the child. In R. W. Rieber (Ed.), *The collected works of L. S. Vygotsky, Volume 6: Scientific Legacy* (pp. 3-68). New York: Kluwer Academic/Plenum.
- Wegerif, R., & Scrimshaw, P. (Eds.). (1997). *Computers and talk in the primary classroom*. Clevedon, U.K.: Multilingual Matters.
- Wells, G. (1981). *Learning through interaction: The study of language development*. Cambridge: Cambridge University Press.
- Wells, G. (1986). *The meaning makers: Children learning language and using language to learn*. Portsmouth, NH: Heinemann.
- Wells, G. (1998). Some questions about direct instruction: Why? To whom? How? and When? *Language Arts*, 76(1), 27-35.

- Wells, G. (1999). *Dialogic inquiry: Towards a sociocultural practice and theory of education*. Cambridge: Cambridge University Press.
- Wells, G. (2001a). The case for dialogic inquiry. In G. Wells (Ed.), *Action, talk, and text: Learning and teaching through inquiry* (pp. 171-194). New York: Teachers College Press.
- Wells, G. (Ed.). (2001b). *Action, talk, and text: Learning and teaching through inquiry*. New York: Teachers College Press.
- Wells, G. (2002). Learning and teaching for understanding: The key role of collaborative knowledge building. In J. Brophy (Ed.), *Social constructivist teaching: Affordances and constraints* (pp. 1-41). Oxford: Elsevier/JAI.
- Wells, G., & Mejía Arauz, R. (2006). Dialogue in the classroom. *Journal of the Learning Sciences*.
- Wertsch, J.V. (1998). *Mind as action*. Oxford: Oxford University Press.

¹ As Rogoff (2003) points out, what children learn depends crucially on the activities in which they participate, as observers as well as through active participation, and these vary very considerably across cultures. Furthermore, in some cultures, it is older siblings rather than the mother who has the primary responsibility for supervising the infant's activity.

² Like Halliday, Lotman uses "text" to refer not only to written texts, but also to any instance of language being used on a particular occasion.

³ A number of prominent academics have described this process, drawing attention to the alienation from their family and home community that they experienced as a result of their choice of a career that demanded the adoption of a way of speaking and meaning that was very

different from that of their working class origin (Rosen, 1984). Interestingly, Bernstein himself made this choice.

⁴ Luria's (1978, 2005) report of his investigations in Uzbekistan draws similar conclusions related to adults' participation in the means of production.

⁵ It may also contribute to explaining the attitude to child-rearing in many traditional societies.

⁶ In this context, "intention" should be understood as what is being attended to as well as what action is envisaged (J.S. Bruner, 1999).

⁷ This is particularly true of traditional, preliterate societies, in which the passing on of traditional values and practices is seen as essential for the continuation of the culture (Rogoff, 2003).

⁸ The project started in 1991, with a grant in support from the Spencer Foundation. In the intervening years, the group has received several more grants from the Spencer Foundation and is now continuing without external funding.