“Toto, I Don’t Think We’re in Kansas Anymore”:
Entering the Land of Public Disagreement in Learning to Teach

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Kathy: Another thing I wanted to ask you about was memorizing the multiplication tables...Do you think students should memorize them?
Sheryl: ...It affects so many things if you don’t know them. They can’t even estimate if they don’t know them....
Marian: ...I think what Steve is saying is that it is not that it isn’t important [to know them] but that it’s important to know them in meaningful ways. That person [in Lisa’s example] is going to learn four dozen cookies real fast because—for example, for me, anything that is around my running time [7s and 8s], I know my 8s real well up to 30 miles. I use my eights a lot. So this kid in the bakery is going to know his 12s real well if he doesn’t know them when he starts.
Sheryl: I have spent nine weeks putting students in meaningful situations with multiplication facts and they still don’t know them. So if I give a student: There are 96 students and they each have 25 bucks. That’s great that they know that’s 96 x 25 but if they can’t solve it without a calculator...that’s OK?
Steve: Can they not solve it without a calculator?
Marian: You expect them to know their 25’s?
Sheryl: I expect them to do that problem: 96 x 25.
Kathy: When would you ever do 96 x 25 that you couldn’t go to your calculator?
Sheryl: See, I don’t carry one and don’t use one.
Kathy: ...I have a calculator when I’m going to work with those kind of numbers. When I’m paying my bills.
Sheryl: ...I feel strongly about this. I really disagree that kids shouldn’t know their facts.

As this conversation continued, the teachers and the researchers around the table offered additional opinions, sketched more examples from their classrooms or their home lives, weighed and reweighed each other’s statements and raised new questions: “I think that people will learn them if they use them”...“I’m not so sure”...“I think Lisa is saying something different”...“How far should they memorize facts?”...“to 9?”...“to 12?”...“Why draw the line at 9?”...“I think it is more developmental than anything”...“I am inclined to believe with Steve”...“So how do I help them memorize their tables?”

It is still rare for teachers to engage in conversations that include extended investigations of what they think and how they understand what their colleagues think about practices—often, presumably familiar and understood practices—in the classroom (Little, 1990). It is still rare for teachers to engage in conversations about their work where the direction and the depth of the conversation grows from using their actual practices as sites for collective inquiries about the complexities of teaching and learning in schools. More typical are teachers’ conversations where the topic of multiplication tables, for example, is centered on swapping ideas about how to get their students to do the hard work of memorizing them. It is still rare for teachers to disclose what they do and how they think about it—in company with other teachers—for the purposes of constructing shared knowledge and supporting ongoing changes in their work with students.
Noting that the current reform agendas (see, for example, NCTM, 1989, 1991) will require enormous and complex learning on the part of teachers, some reformers are calling for new forms of professional development (Ball and Cohen, 1996; Lord, 1994). We see (and participate in) responses to these calls in the form of teachers’ professional study groups. Whether the function of the teachers’ group is to engage teachers as writers in and out of the classroom, to support teachers’ development of alternative approaches to assessment, or to assist teachers’ investigations of the psychology and pedagogy of teaching mathematics for conceptual understanding, the burgeoning reports of teachers meeting and talking together in groups suggest a shared view that conversations about teaching and learning can support teachers’ efforts to teach in the context of reform. (see for example, Schram, et al., 1995; Florio-Ruane & deTar, 1995; Harris, 1995; Cavazos, 1995; Nathan, 1991).

Researchers argue that talking together in groups is a powerful medium for learning (Moll, 1990; Tharp and Gallimore, 1988; Bruner, 1986; Vygotsky, 1978). Teacher educators organize and facilitate these groups, in part, as alternatives to traditional inservice programming. Teachers join teachers’ groups—and in some places, organize them on their own—in pursuit of resources and support for their work in classrooms (Featherstone, 1996; Cochran-Smith and Lytle, 1993; Featherstone, Pfeiffer, & Smith, 1993, 1995a; Schifter, 1993a).

Educators interested in making the reforms happen in classrooms and in sustaining changes over time claim that teachers’ groups can help teachers to begin to make the complex changes needed for real improvement in student learning. Little (1993) argues that teachers’ professional development must shift from a dominant model of teacher training to teacher learning, where teachers’ intellectual curiosity is acknowledged and their contributions to knowledge and practice are credited. She points out:

Compared with the complexity, subtlety, and uncertainties of classrooms, professional development is often a remarkably low-intensity enterprise. It requires little in the way of intellectual struggle or emotional engagement and takes only superficial account of the teachers’ histories or circumstances (p.148).

Reformers are calling for new norms of professional work where teachers talk about teaching, observe and critique each other’s practices in the classroom, work together to design and prepare curriculum, and actively pursue together real instructional improvement (Little, 1990; Lord, 1994; Ball & Cohen, 1996; Johnson, 1990; Lieberman & Miller 1992; Little & McLaughlin, 1993). These “critical practices” (Little, 1982) are features of settings where the intellectual and professional growth of teachers is as much an expected condition of school life as the intellectual development of children.
Brian Lord (1994) claims what is needed is the development of *critical collegueship*, an alternative professional stance held and acted upon by teachers. In action, teachers reflect this stance of critical collegueship when they move beyond sharing ideas and supporting one another through the change process “to confronting traditional practice—the teachers’ own and that of his or her colleagues—with an eye toward wholesale revision.” Lord outlines six elements included in his concept of critical collegueship:

1. Creating and sustaining productive disequilibrium through self-reflection, collegial dialogue, and on-going critique.
2. Embracing fundamental intellectual virtues. Among these are openness to new ideas, willingness to reject weak practices or flimsy reasoning when faced with countervailing evidence and sound arguments, accepting responsibility for acquiring and using relevant information in the construction of technical arguments, willingness to seek out the best ideas or the best knowledge from within the subject-matter communities, greater reliance on organized and deliberate investigations rather than learning by accident, and assuming collective responsibility for creating a professional record of teachers research and experimentation.
3. Increasing the capacity for empathetic understanding (placing oneself in a colleague’s shoes). That is, understanding a colleague’s dilemma in the terms he or she understands it.
4. Developing and honing the skills and attributes associated with negotiation, improved communication, and the resolution of competing interests.
5. Increasing teachers’ comfort with high levels of ambiguity and uncertainty, which will be regular features of teaching for understanding.
6. Achieving collective generativity—“knowing how to go on” (Wittgenstein 1958) as a goal of successful inquiry and practice (p.193).

Lord is talking about changing the way the teachers talk to one another about their work. He is talking about creating intellectual communities with the best features of a good college philosophy class. In particular, Lord’s suggestion that critical collegueship includes “willingness to reject weak practices or flimsy reasoning when faced with countervailing evidence and sound arguments....” suggests that teachers must be willing to argue vigorously about both the ideas undergirding their pedagogy and about the practices themselves. In order for this to happen teachers must describe what they do and think to one another, avoiding generalities that mask differences and getting deep into particulars, and they must ask and answer questions about their ideas and practices. They must follow inquiries where they go which means they must be prepared to openly and publicly disagree with and about practice.

Research both on the culture of teaching and on the psychology of women suggests that the collegial relations that Lord envisions differ significantly from those that occur naturally in teachers’ lounges (Feiman-Nemser & Floden, 1986; Lortie, 1975; Belenky, et al., 1986). Generally, teachers’ interactions follow a fine dance of attention and helpfulness that aims to support a friendly atmosphere (Johnson, 1990). But the dance, as it is constructed, for good and
bad, sustains a sense of privacy and individualism around teachers' own practices (Little, 1990; Hargreaves, 1993). Through their early socialization into the culture of teaching, teachers acquire and refine supportive, but "hands-off", norms that gain them successful membership in a faculty. They become skilled in knowing how to help without being pushy (Lortie, 1975). When teachers do talk about their work, most are quite facile in talking about teaching without revealing the struggles and uncertainties inherent to the practice. And collectively, they master ways of exchanging information on teaching without linking it to an assessment of a teacher's actual practice (Newberry, 1977). As Feiman-Nemser & Floden (1986) report, teachers' conversations address "politics, gripes, home life, and the personalities and family background of individual students, rather than curriculum, instructional content, or teaching methods" (p.509).

Research on women's ways of knowing and learning suggests that avoidance of open disagreement about practice is not simply the result of professional socialization but has roots in the socialization of women. Belenky, et al. (1986), in their study of 135 women of diverse age, circumstance and outlook, found that women commonly describe their intellectual and ethical development using a "voice" metaphor. Represented in terms of voice and silence (e.g. "speaking up," "being silenced," "really talking," "having no words," "words as weapons"), these interviewees' epistemological grounding stands in stark contrast to that of traditional scientists and philosophers who use visual metaphors to speak of mind (e.g. "mind’s eye," "blind justice," "veil of ignorance," "blind and double blind studies"). The researchers use the contrast of these metaphors to construct a different conception of mind. In their words:

> Visual metaphors encourage standing at a distance to get a proper view, removing—it is believed—subject and object from a sphere of possible intercourse. Unlike the eye, the ear operates by registering nearby subtle change. Unlike the eye, the ear requires closeness between subject and object. Unlike seeing, speaking and listening suggest dialogue and interaction (p.18).

Belenky et al. contribute to other developmental research (Gilligan, 1982; Lyon, 1983; Chorodow, 1978; Miller, 1976) on the moral perspectives and identity development, by articulating conceptions of self that are rooted in responsibility, connection and relatedness. Women, most of whom define themselves in terms of their responsibility, relationships and connections to others, often have to engage in a conscious struggle against a society that historically and culturally devalues intuitive, subjective, relational ways of knowing if they are to "to claim the power of their own minds" and engage in intellectual discussions and disagreements.

This research suggests that teachers and teacher educators intent on creating intellectual communities in which teachers will examine practice—their own and that of their
colleagues—critically will have to swim upstream against the powerful force of personal and professional socialization. What we know about gender and mathematics would lead us to conclude that attempting to create such conversations in the context of discussions of mathematics and mathematics teaching will be even more difficult. In study after study elementary teachers describe mathematics as frightening, paralyzing, and even humiliating (Schifter, & Fosnot, 1993; Featherstone, et al., 1995a, Smith & Featherstone, 1995; Ball, 1988; Ball and McDiarmid, 1989). Asking teachers to engage discussions of mathematics in ways that provoke and value open disagreement means asking them to articulate their understandings about a subject matter that looms as a foreign and intimidating territory to be avoided. It means asking them to break with familiar and supportive norms while trying to create a new practice in an area where their intellectual self-confidence is likely to be fragile. It is asking a great deal. Is it asking more than is possible? How does this fit with what real teachers do when they come together to talk about mathematics teaching?

In this paper we look closely at what happened when a group of teachers began to talk about their efforts to teach mathematics in new ways. We sketch a portrait of a teachers’ group where the capacity to make practice public and to agree and disagree with the decisions and actions of a colleague developed over time. We pursue this inquiry for what it can tell us about what it is helpful and what is hard when we look to teachers’ groups as sites for professional development. In what follows, we look at the discourse that occurred early in the second year in the life of our teachers’ group and at the ways in which this discourse represents both a change and an achievement. Since 1992 we have been trying to describe and make sense of the development of conversation in a teachers’ group whose focus was the teaching of elementary and middle school mathematics. We have not found this effort to be straight-forward—anymore than we believe that the task of creating conversation in which teachers challenge one another is straight-forward. In order to help the reader to interpret the significance of our conclusions, we will begin by describing the path of inquiry we have travelled.

The Investigating Mathematics Teaching Group

Since 1991, Investigating Mathematics Teaching (IMT), a group of seven elementary and middle school teachers and three university based researchers, has centered investigations of mathematics teaching in two different classroom contexts. The first of these contexts—the one that engaged the group for the first months of its existence—was a third grade classroom where the teaching and learning of mathematics over one year had been documented with extraordinary care using a variety of media. The second context was actually a family of contexts: the classrooms of the teachers in the group.
In October, 1991, Helen Featherstone, a senior researcher with the National Center for Research on Teacher Learning (NCRTL), and Lauren Pfeiffer and Stephen Smith, graduate assistants with the Center, recruited seven teachers for a pilot study of the use of this multimedia collection of materials. The materials in question, which included videotapes of virtually all mathematics lessons taught during the first and last months of the school year, copies of the teacher’s daily mathematics journal and of all of the students’ written work, and interviews with the students throughout the school year, documented a year of mathematics teaching in the classroom of Deborah Ball, a university professor who taught third grade math every day in a way that emphasized problem solving and included considerable discussion of the children’s mathematical ideas. Most of the teachers who came to the group’s first meeting had heard of or met Ball and wanted to learn more about her mathematics teaching. Several of the teachers who joined the group signed up for graduate credit in a group independent study; whether they enrolled for credit or not, all of the teachers agreed to meet regularly on Thursday evenings.

During October, November, and December, the IMT group met every Thursday evening for three hours; we watched videotape of Ball’s teaching and explored other materials in the collection, and discussed what we saw. All the videotapes the group watched were of lessons conducted during the first month of the school year; most were a part of a unit on integers. Thus, although the context was familiar (an elementary mathematics class), the mathematics was unlike any that the teachers had taught—or expected to teach. It was in fact, just as unfamiliar as Ball’s pedagogy.

At the group’s ninth meeting the researchers asked whether any of the teachers would like to continue to meet after the end of the fall term, and if so, how they might like to reshape the agenda of the Thursday night meetings. Overall, the teachers spoke with enthusiasm about the opportunities they had had to talk with other teachers about teaching mathematics and expressed a wish to talk more about the practices of those present. A couple of teachers mentioned their interest in talking more about the NCTM Standards (1989, 1991). Several said that they did not want to continue with studying Ball’s unit on integers; they said that they would like to center future investigations in mathematics that they themselves might teach. These teachers have said subsequently that they did not understand operations involving negative numbers well enough to understand the conversations of the third graders, and that watching these videotapes made them feel stupid. They were, however, attracted by Ball’s emphasis on students’ ideas; they wanted to learn more, but they did not want to continue to feel dumb. In addition, some hoped that if they watched Ball teach a topic that they themselves were planning to teach, they might be able to make direct use, in their classrooms, of the problems and strategies they saw her using.
In response to the teachers’ feedback about what was helpful to them, Featherstone, Pfeiffer, and Smith made three important changes in the agenda (see Featherstone, Pfeiffer, & Smith, 1993): (1) Beginning in January, 1992, Thursday night meetings began with stories, questions, and concerns that the teachers brought from their own classrooms; (2) Each week we selected one of the teaching standards (NCTM, 1991) to focus on and teachers tried to bring in some story from their classroom that would help us to think about what the Standards really meant; (3) For the rest of the year we watched videotapes from a unit on fractions that Ball taught in the spring. In addition, a month later, at the request of one of the teachers, Featherstone undertook to help that teacher to plan and teach a unit on integers. The researcher and the teacher brought vignettes, issues, and, once, videotape from this work to the group for discussion. In different ways, all four of these changes moved the work of the group closer to the teachers’ own classrooms.

At the end of the winter term the group decided, almost without discussion, to continue meeting through the spring term. By this time all of the teachers were raising issues from their own classrooms for group discussion. However, the teachers varied greatly in their eagerness to expose and explore difficulties in their practices. Discussions rooted in the teachers’ own teaching occupied most of each evening; often, although teachers and researchers were staying well beyond the formal end of the meeting, they did not get to looking at videotape at all. The teacher with whom Featherstone had taught the unit on integers was now using some of Ball’s problems to teach her own third graders about fractions; she often brought questions about this subject matter to the group.

At the end of the 1991-1992 school year the teachers decided that they would like to continue meeting and that they would like to start before the beginning of the school year so that they could get help from one another in planning how to introduce a new class to new ways of “doing math” and to the expectation that they would reason together about mathematics problems, and learn from examining one another’s ideas rather than simply listening to the teacher. All of those who were teaching regularly felt that they were now teaching math quite differently than they had in the past and that they needed help from the group in thinking about how to start the school year. The teachers brought a new sense of urgency to these fall meetings.

**Studying our Talk**

Near the end of the group’s first year, one of the teachers commented to the researchers that the group’s conversation had changed. We agreed and when the group began to meet again in the fall we felt that the changes in the discourse were even more pronounced. We, therefore, made plans to look carefully at the discourse of the group, using audiotapes of some of the
meetings and also our own journal notes. We decided to select four meetings for examination and then to invite the teachers to join us in thinking more specifically about how they thought the discourse had changed and what we might expect to see if we looked at meetings from points in the group’s life.

We selected four meetings at intervals in the first year of the group’s life. Recognizing that the first and last meetings of the year would be atypical—the first as an orienting meeting and the last as a wrapping up session—we decided to study the second meeting, October 10, 1991 and the next to last meeting, May 14, 1992. We selected a third session for this preliminary analysis of the teacher’s talk on the basis of the same guidelines. September 10, 1992, was the second meeting of the group when it reconvened after summer break and the teachers were heading into a new school year. The fourth selection, February 6, 1992, was based on two guiding notions. First, we were interested in looking at a meeting that occurred after we responded to the group’s reflections on the activities and the strong suggestion to “keep talking.” We wanted to look at the discourse soon after we made this structural adjustment to the sessions. A second reason we chose to look at this meeting was our observation, made at the time and recorded in our teaching journals, that it was different from previous meetings: This was the first time the group sustained a series of discussions for the full three hours, never watching videotapes or pursuing other planned activities.

In January, 1993, after selecting this set of meetings we began a series of conversations in which the entire IMT group reflected on its changes over time. First through free writing and then in conversation, the teachers explored the ways they thought about the group, its activities, and their participation, individually and collectively, during the first year. At the first of these meetings, where the group reflected on their reflective explorations, the teachers generated the following list of conjectures about the changes in the work of the group:

- We push each other more.
- We are more analytical.
- We are more reflective.
- This is a place to get advice and to share.
- We have a shared vision.
- We have moved from talking about videotapes to talking about our practices.
- There is criteria for group participation (e.g. willingness to lay out problems).
- A lot of our time is spent on teachers’ presentations of problems of practice.
- We have moved from quick suggestions to delayed, pondering, possible suggestions.
- We ask more questions.
- We ask different kinds of questions (e.g. why? What did you want them to learn?).

In subsequent conversations, the teachers continued to emphasize the ways in which the discourse was intellectually stimulating, challenging, and fulfilling. They connected the
intellectual pursuit in the meetings to the trust they had developed within the group. Several talked of how the trust developed, in part, through the discourse in which they engaged.

As a next step in our efforts to understand how the group changed during the first year, we gave audio tapes of the four selected meetings to the teachers who said they'd be interested in listening. We asked them to make notes about what caught their attention, what they found interesting about the meetings, what surprised them. When we talked as a group about what they heard, the teachers again underscored the intellectual work they heard in their discourse. They described a feature of this work as "pushing each other." Other IMT members picked up the term "pushing" and repeated it often in the on-going conversations about the conversations. Several teachers used it to describe how the conversation in the IMT was unique in their experience with groups and gave it as a key reason for their continued participation. We were interested in the words individual teachers used to talk about this intellectual work, "questioning" and "challenging."

The researchers continued to study the four meetings, listening to tapes, reviewing journals and field notes, and reflecting collectively in the group meetings. We turned to sociolinguistics (Goffman, 1959, 1967; Gumperz, 1982; Brown and Levinson, 1983; Tannen, 1989) for tools to explore, in the actual talk, the ways in which the group members participate in a collective study of the teaching and learning of mathematics and, in addition, support one another's social, emotional and intellectual efforts to make changes. We decided to explore the teacher's concept of pushing: What is it? and What does it look like in the IMT meetings?

The IMT teachers guided our inquiry into changes in the conversation by pointing to a set of meetings that had taken place in the fall of 1992, the beginning of our second year together. Several of the teachers commented that these meetings were different from what they remembered from the previous spring, that the conversations were somehow "harder." One teacher captured the difference by saying, "Whew, we are playing hard ball, now." At another time, she recalled, that she had said to herself on the way home from the second meeting in the second year, "Toto, I don't think we're in Kansas anymore."

We turned our attention to these meetings as possible sites for looking at the group's development. Our own journals flagged these fall meetings as standing out:

...my impression is that people asked good, hard questions, pressing [each other] to think about their objectives... Another neat thing this year: Carole and Kathy are pushing one another, deepening one another's thinking, challenging one another with 'what are your goals?' and other questions.
(Featherstone's journal, 9-11-92).

...they seem to be seeking this support more and more.
(Smith's journal, 9-11-92).
I don’t think the teachers had any expectation of waiting for Helen to lay out an agenda. It struck me that they had come with agendas and they knew they could get them addressed. I have the sense the teachers trust in the way the meetings tend to go: that their “agenda” will come up and/or they have the authority and skill now to get it on the table. I got this sense from watching the way they “set up” the table: Kathy came in with tiles; Lisa pulled out 2 or 3 sets of notes; Sheryl initiated a discussion as soon as possible.

(Pfeiffer’s journal, 9-11-92).

In this paper, we move beyond our preliminary analysis of the teachers’ conversations to focus on this early September meeting and the one that followed it. Additionally, we look at a meeting in late October of the same fall. We have selected them for further study because they have stood out as important in the group’s collective memory: they have been referred to often enough to be titled by the group members—the first two are described as The Discourse is in the Task meetings and the last is called The Assessment Conversation. In addition, our journals suggest that they stood out for us at the time as having considerable momentum and intellectual energy.

Together, the two September meetings (Sept. 10, Sept. 17) represent a collective experiment that emerged from the group’s conversation about one member’s problem of practice. Kathy’s story of her struggle to foster mathematical discourse in her classroom provided the others with vivid, detailed images of what was happening in her practice, information they could draw on to think about their own classrooms. Together, the teachers created and sustained a kind of conversational participation that was more complex, more personal, and more difficult than the conversations they were having the previous spring. Later, on October 29, 1992, Lisa sought the group’s collective perspective and insight on the difficult issue of student assessment. The group’s query about how to communicate student progress in ways that fit this new approach to teaching mathematics highlights how changing practice depends heavily on a willingness and a capacity to make public one’s beliefs, actions, decisions, and uncertainties and how such public work runs counter to the norms of privacy (Little, 1990) that shape most teachers’ professional development work.

Changes In The Teachers’ Conversational Involvement

When the group reflected on these fall meetings, in winter, 1993, they used the notion of ‘pushing harder’ to articulate how these meetings stood out as different. Opening up what the teachers meant by “pushing” in ways that might be helpful to others engaged in teachers’ conversations about reform-oriented teaching led us down several tangled pathways. When talking about this notion of pushing some teachers tried to distinguish it from “challenging” and tease apart what both implied:
Kathy: Challenging is almost
Helen: Confrontational?
Kathy: Yeah. Like saying
Steve: It's a way of disagreeing?
Kathy: But it's a strong way of disagreeing. I think you have to have a strong
sense that people are going to stay with you and not take offense and
get angry before you go to challenge.
Lisa: Are you sort of thinking of challenging as pushing an idea...?
Kathy: I think it is gentler.

(transcript, 3-21-93)

We pursued a close examination of the questions the teachers asked in the group
meetings; we studied how they presented a problem of practice or asked for help. We looked at
the transcripts for the groups' development and use of shared language. While these inquiries
provoked interesting analytical discussions, they did not seem to move us forward in
understanding what it was in these conversations that prompted the teachers to describe them
as "different" or "harder," and how the impact of these conversations seems supportive and
educative in their efforts to make changes in their practices, that is, how these conversations
might be understood as occasions for meaningful professional development.

The IMT teachers told us that their participation in the conversations had changed
and that the changes involve an increased sense of trust, an increase in the questions they asked
of one another, an increased sense of "pushing," and even though it seemed "harder," they felt
an increased sense of intellectual stimulation about the work of the meetings. Their
involvement in the meetings had changed. For this reason we turned for help to the research
literature on discourse analysis. The various approaches we initiated in our study of the
group's conversations have common footing in conversational involvement, a central topic in

Deborah Tannen (1989) writes that "coherence and involvement are the goal--and, in
frequent happy occurrences, the result--when discourse succeeds in creating meaning through
familiar strategies" (p.13). In her research on the strategies conversational participants
employ to achieve coherence and involvement, Tannen draws on the works of John Gumperz and
Wallace Chafe:

For Gumperz, involvement describes an observable, active participation in
conversation. It is comparable to what Goodwin (1982) calls "conversational
engagement" and Merritt (1982) calls "mutual engagement" an observable state
of being in coordinated interaction, as distinguished from mere co-presence. For
Chafe, it describes a more psychological, internal state which shows itself in
observable linguist phenomena. These orientations are in keeping with the
general epistomological orientations of these two scholars (p.11).
Like Tannen, we take “involvement” to mean both active participation in conversation and a psychological, internal state made visible through conversation. Using this sense, we have come to see in the conversations we have analyzed from September and October, 1992 that the teachers engaged in sustained, passionate, disclosing conversations about the actual practices of the teachers’ who were present.

In the following sections, we introduce and describe these conversational characteristics of the group’s meetings. We draw first on the September meetings and the story of: “The Discourse is in the Task.”

**Sustained Conversations About One’s Problems Of Practice**

Over time, the IMT teachers engaged in sustained conversations about their own problems of practice. We can describe these sustained conversations in two ways: 1) The teachers engaged in temporally longer discussions; and 2) their conversations over the course of a meeting had more thematic coherence.

The transition to sustained conversations began in early January, 1992. In response to the teachers’ interest in talking more about one another’s actual practices, Helen began launching the meetings by asking, “What’s happening in the schools”? This question may have helped to increase the amount of time devoted to a single topic. But most influential in this change was the teachers’ strong interest in creating and sustaining such conversation.

Lauren’s journal, February 6, 1992, describes both the group’s move away from a planned agenda (not an easy move) and the teachers’ deep interest in opportunities to talk and to listen— at length—to other teachers who are also struggling to make changes.

We had planned a rather comprehensive agenda—the kind we had last term—with many pieces. But in addition to the agenda to revisit April 24th, watch DB’s conversation with TE students, discuss Standards #2 and #3, explore the issue of working with “Resource” kids, and begin watching April 30th, we were also wanting to honor the new format of opening the evening with a discussion that grows out of the teachers’ work in their classrooms and issues or concerns they have been thinking, writing, and talking about. Well, this piece of the “lesson plan” set the pace for an entire evening of teacher talk. On this particular night, we did not watch any tape, look at any notebooks or study any text. We talked and talked talked...Two specific cues have assured me that the discussion was valuable to the teachers and appropriate in terms of time, focus, and depth.

First, I noticed that Sheryl wrote in her notes, about an hour into the storytelling, “I am fascinated by the stories Kathy and others tell...this kind of work is so fragile; I have to keep trying.” Sheryl had opened the meeting by asking the others (Kathy, Debi, and Marian), “How do you get your faculty to buy into this stuff? Are all of your teachers involved?”

...A second source of feedback came at the end of the session when I commented to the group that we didn’t watch any tape but that I thought the discussions were very interesting. Jan’s comment was, “I think we needed this.”
It tells me she knew the evening was different but that at least for her, it was timely and valuable.

Several times during the evening I tried to redirect the group to the planned agenda with either a statement referring to the last session or to the standards we had posted on the wall. Two different times the teachers seemed to "take back" the agenda. In general it moved from Sheryl to Kathy to Marian to Lisa, each initiating a topic from their own work and study.

(Pfeiffer’s journal 2-6-92)

The researchers' expectations for completing a round-robin update—moving from teacher to teacher, topic to topic—on all the teachers present gradually faded. By the fall of 1992, the group no longer made it around the table to hear "what is happening" within the first half of the meeting. Our meeting generally started at 5:30 p.m. and continued well past 8:00 p.m. Using 7 o'clock as a halfway point in the meeting 7 we see in both September meetings that nearly the entire first half of the meeting is focused on a discussion that originates in one teachers' problem of practice.

Another way to look at the sustained nature of the teachers' conversation is a study of what the group talked about. In contrast to the fall meetings of Year One, the 1992 meetings began to have a more thematic structure. In other words, the teachers would, as a group, define a topic of discussion originating in a members' practice, and then sustain their exploration of that topic over the course of a meeting (see Figure 1). Sometimes the topic appeared to change but there was a strong thread of thematic coherence woven into the questions, comments, and inferences made during the meeting. An indicator of this thematic coherence is the way members of the group began to title certain meetings (e.g. "the discourse is in the task night", "the assessment conversation"). Compared to the three meetings from 1991-1992 that we selected for preliminary analysis, we see fewer topic changes in the fall 1992 meetings.

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<th>Date of IMT Meeting</th>
<th>Number of Topic Changes</th>
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<tbody>
<tr>
<td>October 10, 1991</td>
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<tr>
<td>February 6, 1992</td>
<td>8</td>
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<tr>
<td>May 14, 1992</td>
<td>9</td>
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<td>September 10, 1992</td>
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<td>September 17, 1992</td>
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Figure 1. Number of topic changes for a selected set of IMT meetings.
On September 17th, the number of topics jumps to twelve. However, when we looked again at the six topics/questions discussed in the second half of the meeting—uncertainty in teaching, developing learning communities and empowering students, next steps in teachers’ plans?, power and powerlessness, getting at kids’ thinking, what are the big ideas you consider in the 3rd grade?—we saw that each one tied back to the first half of the meeting in which the teachers worked extensively with Kathy’s pedagogical experiment and the articulation of the idea that “the discourse is in the task.” In this meeting, we saw an example of the thematic coherence that characterizes a sustained conversation.

An Example of Sustained Conversation

On September 10th, the group’s second meeting in 1992-1993, Kathy described at length her efforts to create a mathematical discussion among her students, to “get the kids to talk.” In response to a question, she provided particulars on what she had been doing with the second graders:

...I’ve been doing macaroni necklaces. We started out with different colors of macaroni and fishing line. Just little macaroni and dyed them, blue, red, yellow, green and orange. There are different jars of them. Using nylon fishing line they string these to make patterned necklaces. First we made one plain and one red; one plain and two red; one plain and three red; etc. I really did it very slowly. I wrote it. I made one for them. Then they got their macaroni. Part of the lesson was talking about two jars...plain jar and red jar...they’re the same...which jar would have the most gone and least gone. This was very hard for them. We ended up drawing jars on the board and kids coming up and drawing where they felt the plain would be and where the red would be. And they were all over the place. They really...and no one could really convince anybody else one way or the other. Then we went ahead and we made the necklaces.

Kathy then explained that on the next day, the children chose the color of macaroni they wanted to make a new patterned necklace. Part of Kathy’s plan was to have the students graph the number of classmates who chose red, blue, or green macaroni. But, to Kathy’s surprise all the children in the class rejected the red macaroni—yesterday’s color; twelve students chose blue macaroni and twelve students chose green macaroni. This blocked Kathy’s plan to talk about most and least. In the second part of the lesson, everyone made the same patterned necklace: one plain, one blue, one plain, two blue, one plain, three blue.

Kathy commented that by requiring all students to make the same necklace she was being, “very traditional; I recognize that. And it is bothering me. It’s like...I’m a different person [from last year].” When Lauren pressed Kathy to reflect on why she thought she was being more traditional she added:
I have this feeling like they're really scared. They don't know what to do. They don't know how to act. I need to make it real safe and sure about what to do next and how to do it. That's why I'm doing it.

In the third lesson, Kathy initiated a full-class discussion of one of the necklace patterns:

Part of the lesson—I wanted them to tell me how many reds they would need and how many plains. That's when we got all the different answers and they couldn't figure it out. They had no strategies...I said “Gee, this is really strange we have all these different ideas. Which one is right?” They didn't care. Until Dawn came up and said 21 was right and everyone agreed. They put me out of my misery.

Drawing on Gumperz's (1982) notion of involvement, we observed that during this part of the conversation, the IMT members listened closely, asked questions, and supported Kathy in holding the conversational floor for an extended description of her teaching. During the first half of the meeting the group spent approximately forty-five minutes talking with Kathy about her struggle to engage the students in a mathematical discussion. In Figure 2 below we have used 5:30 p.m. as the group’s starting time to show the duration of the full group’s discussion around Kathy’s struggle and the transitions that mark changes in the conversational involvement.

![Timeline](image)

**Figure 2.** Timeline for first-half of IMT meeting, September 10, 1992.

Kathy began describing her troubles at 6:15 p.m. This launched the group into an exchange of brief descriptions about how difficult it is to begin a new year with a new group of
children. During this fifteen minute segment several of the group members empathized with Kathy. And Sheryl, in particular, assured her, "I feel the same way. You're not alone. They won't talk or they'll say, just because." Through these exchanges the group began to get a clearer sense of Kathy's problem, but they needed more information. Steve shifted the pattern of talk (6:31 p.m.) when he suggested to Kathy, "So, why don't you tell us what you have been doing with them" and for the next fifteen minutes Kathy spoke and the group gathered particulars about her problem.

This segment of the discussion had two parts. In the first part the group "interviewed" Kathy, asking her question after question about the series of lessons she was currently teaching. When we noted that in these ten minutes the group asked Kathy 14 information questions (e.g. "What happened next?" "Did you draw it and say this is the way I thought about it?") and 3 interpretation questions (e.g. "Did they think that was puzzling or did it make sense?" "Do you know why you are being traditional?"), we saw a clear sketch of the group situating their discussion in the specifics of Kathy's actual practice. The involvement in the second part of the segment looked different: Kathy and Debi co-constructed description of the childrens' work with the patterns. Debi had worked with Kathy and the second graders on one of the mornings Kathy was describing. Her descriptions helped to keep the discussion anchored in Kathy's lessons and seemed to extend and deepen the group's exploration of the problem. Debi and Kathy also described to the group their own lunchtime discussion of the difference between repeating patterns (e.g. 1-2-1-2-1) and growing patterns (e.g. 1-2-1-3-1-4). Another feature in this segment that seemed to contribute to sustaining the group's involvement was Kathy's use of the tiles she had brought with her to the meeting and her writing on the board the different patterns she was describing. These moves helped push the group members to consider aloud their own definitions of a pattern and different ways to make a pattern expand or "grow."

The involvement shifted again when Jane asked, "What is your purpose in teaching patterns?" In the last fifteen minutes of this discussion the group posed for Kathy variations of the questions, "What is your purpose?" and "What is there to learn?" These questions differed from the information questions asked earlier; they engaged group in an analytical discussion, extending further the members' involvement with the complexity of one colleague's uncertain "messy" problem.

The discussion was interrupted at about 7:00 when Marian announced that she and Lisa and Debi needed to leave for a graduate class that was meeting in another part of the building. As the rest of the group moved across the hall to a new meeting room, Kathy continued talking with Lauren and Carole, shifting the talk yet again to help her figure out her next steps.

In this example we see the group members focused on one teacher's practice for a longer period of time than in previous meetings. We see how the group members' questions, comments,
and references to personal experience are “observable, active participation” (Tannen, 1989) that sustains the conversation.

**Passionate Talk About The Problems Of Practice**

A second quality of the talk in these sustained conversations was its remarkable intensity; it was *passionate talk*. The teachers sounded emotional and animated as they described their experiences and the realities they confront daily. Their stories included strong expressions of uncertainty and frustration about how to enact the vision to which they were now personally and professionally committed. They described their concerns as pressing: They must figure out what to do differently or how to manage the underlying dilemma of a problem, often the very next day. Lauren and Helen noted in their journals that on the night of September 10, 1992, the substance of the meeting took off with a start as one of the teachers launched a discussion of her efforts to teach triangles to 4th and 5th graders:

[Sheryl] jumped at the chance to take the floor and present an issue as soon as she could. I think this is quite different from last year when she would wait----sometimes needing an invitation to tell a story or offer her perspective.  
*(Pfeiffer’s journal, 9-11-92)*

When Kathy said she had lots of problems, I suggested she start and she said, “I don’t have to start.” After a short pause Sheryl jumped in (YEA!) saying that she and Connie had started the year with geometry and that they were having lots of trouble. *(Featherstone’s journal, 9-11-92)*

This meeting began in the structurally familiar way, with conversation about “what’s happening in the schools,” but the intensity of the teachers’ talk marks it as different. As Lisa said to Lauren in a follow up conversation the next week, “There is no small talk, it gets hard right away.”

Kathy had announced as she arrived that she was, “filled with problems,” but declined the invitation to launch the discussion. Sheryl stepped in, focusing the group’s attention on her fourth graders’ struggles in talking about geometry. She described what the students were doing, what she was doing, and quite intensely, what it felt like to be in her shoes:

...[I] started out trying to get them to talk about different shapes and try to classify them...They were putting hexagons and circles together. They weren’t calling anything sides or corners. Things were “round and skinny”. Not even saying “square.” I was panicking. Not sure where to go. It’s taken us three weeks to call them sides, corners, etc. That’s all we’ve been doing.
When Sheryl conjectured that “part of the problem with her class is that they’re not used to talking, they just sit there”, Kathy added her story to the conversation. Like Sheryl, Kathy’s descriptions of her students were vivid and her concerns about her next steps were passionately conveyed:

I’m having trouble on every level. I can’t get them to talk. I keep thinking they can do a lot more than they can. I haven’t taught a math lesson that was decent yet. I’m just having a horrible time.

Kathy was beginning a new two-year cycle of working with the same group of students for their second and third grade years. At the time of this meeting, Kathy had been with her new second graders for about two weeks of school. She was feeling tremendously challenged to create the kind of mathematical discourse she had had in the spring with her third grade group:

These kids just...we had five different answers up on the board and I said, “we have five different answers -- what are we going to do about it?” They did not care. They could have cared less. It meant nothing to them.

Debi, who teaches Kathy’s students part of the day, added to Kathy’s description, “They didn’t know what to say though either. I think it’s more than they didn’t care; they didn’t know...” Her point, made with more distance than the front-line frustration Kathy was feeling, began to frame the discussion that evolved among the IMT members. Kathy and Sheryl were not the only ones having difficulty and the teachers began to talk about how hard it is to “get the discourse” going. Their talk reflected their images of what this discourse looks and sounds like.

Drawing on their reading of the NCTM Standards (1989, 1991) and their observations of several teacher educators’ teaching, especially that of Deborah Ball, the teachers seemed to have developed images of reformed mathematics classrooms in which students:

engage in making conjectures, proposing approaches and solutions to problems, and arguing about the validity of particular claims. They should learn to verify, revise, and discard claims on the basis of mathematical evidence and use a variety of mathematical tools. Whether working in small or large groups, they should be the audience for one another’s comments—that is, they should speak to one another, aiming to convince or to questions their peers. Above all, the discourse should be focused on making sense of mathematical ideas, on using mathematical ideas sensibly in setting up and solving problems (NCTM Standards, 1991, p. 45).

The teachers were trying to understand why engaging their students felt so hard. They had closed out the previous school year with some sense of accomplishment: They knew they had made important changes in their teaching. But now they were starting over with children
who had never been asked to talk or write about math. And given the kinds of classrooms they were envisioning—the conversations and modes of learning they were imagining—starting over was difficult. Kathy and Carole analyzed the difficulty together:

**Kathy:** It is hard to remember. I wasn't as into discourse when I started 2nd grade two years ago so I don't think it was as jarring to me and as frustrating to me. I rely on it from them. I rely on them to help with the lessons and there's no help there.

**Carole:** When you started this discourse in your math you were also doing discourse in problem solving. You brought them along with you. You taught them strategies for problem solving...

**Kathy:** They learned it *with* me. You're right.

**Carole:** That's right. They learned it right along with you and now you're coming in and you *know* what you want but *they* don't know what you want.

**Kathy:** I think it's real basic. Part of me is worried about the curriculum. Maybe it's too structured, it's not open enough, maybe I'm teaching the old way like I use to teach and that's what's wrong. I'm filled with anxiety.

This part of the conversation is an example of what Helen meant when she wrote in her journal:

Another neat thing this year: Carole and Kathy are pushing one another, deepening one another's thinking, challenging one another with 'what are your goals' and other questions.

*(Featherstone's journal 9-11-92)*

**A Sense of Trust in Passionate Talk about Teaching**

Hand in hand with the “deepening of one another’s thinking” came a passionate kind of talk about the way in which the teachers were experiencing the struggle to teach differently. When one teacher opens up her practice to reveal the complicated emotional tangle of partial understandings, contrary perspectives, and conflicting commitments, she creates a zone of possibility (personal communication, Zellermayer, 1994) for a colleague to work with stuff of the tangle—to raise questions, to make contradictions as well as connections explicit, and to offer insights that can assist the teacher in constructing new understanding and in moving toward new action. This intellectual work, prompted by passionate talk about one’s practice, can contribute to the development of “critical colleagueship” that Lord calls for in the reform of teachers’ professional interactions.
But making these tangles public can leave a teacher vulnerable to judgement. It is risky business. In helping us to explore how they thought about the group, the teachers talked about a sense of trust that made a difference in the kinds of conversations they were having:

Marian: It seems to me that all of this talking has a lot to do with what our group is. That no matter what the support is out there we can bring it in here and it's OK and find support. When [a student's] mother attacked Kathy we all came to the rescue—emotionally and with ideas: "Let's do this and that...."

Kathy: It was like I could come and tell you that story and I knew how you would react. I knew you wouldn't say, "well...what were you teaching that day?" I knew you weren't going to say those kinds of things.

Marian: That's part of the trust that we've never said...where we talked about a shared goal...with that comes the assumption that we all think that we all and each other are doing the right thing.

Jan: But we still question or challenge.

Marian: In a supportive way.

Jan: Right. In a way that will clarify...help us think more about it.

(IMT meeting, 3-21-93)

Drawing on the work of Patricia White (1990), Nicholas Burbules (1993) highlights several aspects of trust in dialogic relations. One is the notion that participants make a conscious effort to create a context in which other participants feel safe to offer up their beliefs, and the experiences or feelings that accompany them, even if they may provoke disagreement. A second aspect of developing trust is the importance of demonstrating it, initiating our own personal disclosures before we ask others to trust us. According to White, the significance of the relation should engage the participants in such a way that, over time, conscious attention to establishing trust can move to the background, only to be nurtured and maintained occasionally.

Additionally, Burbules highlights the risks that conversational partners take when they say anything that matters—risks that make trust fundamental to achieving a meaningful dialogic relation:

We trust our partners to keep certain things we say in confidence; we trust our partners to withhold judgement upon some of our comments, at least initially; yet we also trust them to tell us honestly what they think and feel about a topic, even if it disagrees with us. In many ways the fundamental risk in dialogue, especially perhaps in educational contexts, is the risk of extending ourselves outward conversationally, endeavoring to express as well as we can a
point of view, belief, feeling, or experience in the expectation that our partner will respond thoughtfully and sympathetically, but not knowing if they will. The dialogical relation needs to be developed over time so that we can establish and sustain this confidence in the reliability of our partners, and they in us (p. 38).

**Public Disclosure About One's Problems Of Practice**

A third characteristic of the talk in these meetings is the increased amount of **public disclosure**. In addition to being passionate, the conversations we study are marked with potentially risky statements by which the teachers lay open their beliefs in some cases, their struggles in others, and their failures in still others. Sheryl's description of her work in geometry ("It has taken three weeks...") put her at risk of looking incompetent. Kathy's presentation of her struggles to involve her second graders in a new kind of mathematical discourse is another example of this disclosure: When she announced, "I haven't taught a math lesson that was decent yet," she made herself vulnerable to multiple judgments by her colleagues.

Kathy's public disclosure of her struggle to create discourse became the center of the teachers' involvement in the September 10th meeting. Kathy was frustrated; she wanted help; and she believed she could get help from the group. She opened up her practice in order to get that help on defining and clarifying what the problem is, how she thinks about it, and what she might do to address it.

Kathy made clear she was focused on trying to engage her students in mathematical conversations where they explain their own thinking and care about what others have to say. In response, Lisa described how she began the school year. Her comments laid the groundwork for Kathy to craft an inquiry around her questions about how to create the mathematical discourse she wanted with her students. Lisa said:

...I started out with logic puzzles because it seemed to be such a safe way to say I agree with that or I disagree with that. They could look at some else's model (made of unifix cubes) and say, 'I agree that their model meets the criteria.' 'Why?' 'Because, it's less than ten blocks and this and that. It meets the criteria.' While I was doing this the first few days of school this year, I thought, 'Oh, this is so superficial. It makes me feel jittery...I don't like it.' But today we moved away from that. Without prompting the kids are saying, 'I agree with how he wrote that because he said this or that..." And I'm saying Hallelujah! Four days into this superficial norm building-- it was with logic puzzles and just there's a clue and they have to make a model with that clue and that model fits that clue. And then you talk about it: Do you agree or disagree and share a couple of your ideas. Finally, they narrow it down and talk about why it meets the criteria.

(transcript, 9-10-92)
This public talk, disclosure of the parts of their practices in which they felt most vulnerable was not a notable feature of the teachers’ talk during the first year. What we saw instead was the teachers’ careful presentation of selves (Goffman, 1959) at the edges of disclosure. Lisa, in a series of conversations about a videotaped lesson the IMT group watched at its second meeting, in October, 1991, provided us with a vivid example of the change we saw across the group’s first year and a half. We describe this example here because it gives us a chance to look at the way disclosure developed over time.

The Emergence of Public Disclosure About One’s Teaching

On October 10, 1991, Steve began to introduce a segment of videotape the researchers had selected for the group to watch and discuss. Lisa interrupted him to express how she was feeling in the moment. She was thinking about Steve’s comments about the different days and about the math problems that the class worked (200 - 190 one day; 100 - 90 another day; 300 - 190 another day) and she was overwhelmed to think that her principal would not understand or support spending three days on only three problems:

This is wonderful, I mean, spending three days. One day talking about 200 - 190, the next day spending the whole class period talking about 200 - 100 and then 100 - 90. And then the next day, 300 - 190. When my principal came in to observe me—I try to be very proactive: I’m always giving her information; I gave her the Teaching Standards and asked her if she would read the part that talks about the teacher’s role in discourse, the student role in discourse. She asked me how many, how often am I going to teach like this? Because she wanted to make sure that I moved on to teaching in a conventional way.

On three subsequent occasions, Lisa restoried her response to the “one problem a day” issue. Her restoryings suggested that she had used her principal as a proxy for her own uncertainty about the merits of working on variations of one problem for several days. On February 4, 1992, in an interview with Lauren, Lisa began to disclose the personal importance of the problem in her thinking:

I think it would be helpful for teachers to see a tape of the communication—the discourse that goes on in Deborah Ball’s classroom. That 300 - 190 problem—forcing me to sit through that the very first time was awful! I didn’t like it the very first you [showed] that. I just kept thinking “This is crazy...” But then as I saw more and more of the tapes, it made more sense to spend a lot of time going in depth through a problem. And so then, trying to find a single problem for the day—that was something new for me.

(transcript, 2-4-92)
On May 28, 1992, The IMT group met with the team of graduate students to discuss the uses we had made of the videotape across the year. As the IMT teachers talked about what was powerful for them in watching Deborah's tapes and connecting what they saw to their own teaching, Lisa commented:

...that she let those kids struggle; that made such an impact on me to see that--all the thinking they were doing. When I think about where I was at the beginning of this year, I really think even the idea of one problem a day...[I thought] "One problem a day, that's not enough."

(transcript, 5-28-92)

And on October 20, 1992, in another interview with Lauren, Lisa talked about how she thought she had changed as a teacher over the previous year:

...letting go...meaning letting go of being in charge of everything the kids would do and say and think. The things that have prompted me to think about this include seeing Deborah spend so much time on three hundred subtract one hundred ninety (300 - 190). Working through my own reaction of, "How could you do that?" Thinking, "I could never do that!" And thinking about this constraint and that constraint and then slowly thinking about, "well, I don't feel comfortable with it" ...really hashing that out for myself....

(transcript, 10-20-92)

The Emergence of Public Disagreement in Investigating Practice

The fourth characteristic of IMT discourse in Fall, 1992, the one we will examine closely in the remainder of this paper, sits in special relationship to the first three. A key feature of the teachers' conversations in the fall of 1992 is the emergence of public disagreement about the practice of a teacher who is present. When teachers sustain a conversation over time and explore a topic thematically, from multiple perspectives and with multiple examples, they increase the likelihood of making visible differing perspectives (Elbow, 1986). When their involvement in a conversation is shaped by passionate commitments to ideas, beliefs, and actions, they are likely to bump up against ideas, beliefs, and actions of others that don't fit in ways that matter to them. When they express their views passionately others will sometimes disagree (at least inwardly).

As the IMT teachers began to talk in detail about their own practices, more passionately, and more revealingly, they set the stage for disagreements to surface. As Burbules (1993) observes, one aspect of trust is that conversational partners came to count on one another to reveal any disagreements or reservations they feel about what other participants in the conversation say. In essence, as the IMT teachers' conversations became more lengthy, more coherent, more passionate, and more disclosing, public disagreements about their existing practices emerged naturally--perhaps inevitably.
The inquiry Kathy pursued between Sept. 10 and Sept. 17, 1992, began as a problem of practice within her own classroom. She wanted her students to make conjectures about the mathematics they were doing, to agree and disagree but this was not happening and, as she reflected on the difficulty, she suspected that part of the problem was with her; She felt she was approaching the new year as "a traditional teacher." She agreed with what she heard as the IMT teachers grappled with ways to engage a new group of students in the mathematical discussions many of them had achieved by the end of the last school year. She agreed strongly enough with Lisa’s thinking about explicitly teaching the skills needed for mathematical discussions to try something similar in her own classroom.

In the second half of the September 10th meeting, the group members spontaneously organized themselves into two small groups. When Marian, Lisa, and Debi left the meeting at 7:00 p.m., the remaining six group members had to move to another room when another course claimed the room in which we had been meeting. As we reconvened across the hallway, we fell into two small group discussions; in one of these Carole, Lauren, and Kathy worked together to craft a task that would engage Kathy’s students in agreeing and disagreeing with one another’s solutions. Drawing on the unifix cube puzzles that Lisa had described earlier and Lauren’s additional conversations with Lisa about her use of them, the three worked for about forty-five minutes, crafting a version of the task that seemed appropriate for Kathy’s second graders. Heartened by the approach she was taking, at the close of the meeting, Kathy announced:

I am going to try what Lisa said because I think that is what Deborah Ball is doing. Lisa said that she started her year out with a really contrived lesson but that her goal was to teach them discourse: “I agree... “I disagree” ...and giving reasons. She said she went home at night feeling really uncomfortable but now that she’s into her lessons she’s really glad she did it.

Although she did not say so explicitly, Kathy appeared to believe that she had in hand a plan for resolving the problem she had laid out before the group earlier in the evening. However, by the time she arrived at the next IMT meeting, she was no longer convinced of the merit of focusing mathematics lessons primarily on the skills and etiquette of mathematical discussion. Her exploration of this problem during the week between the two meetings suggested to Kathy that she ought to be able to teach math and to teach the children how to talk about their ideas at the same time.

When Kathy returned to the group on September 17, 1992, the teachers were eager to know what happened with her “experiment.” As she described, analyzed, and evaluated the lesson she had taught that morning, she clarified for herself the disagreement she was having in her head. Her describing, questioning, and puzzling aloud led her to disagree publicly with
Lisa’s strategy for developing classroom discourse. When Kathy voiced her disagreement, creating awkward interactions in the moment, she provoked other teachers to reexamine and articulate their ideas. In the transcript of this conversation, we see Lisa struggle to defend her stance, to herself and to the group, and we also see her reconsider it, in light of the group’s exploration of Kathy’s “experiment”.

The Discourse Is In The Task

Sheryl initiated the meeting on September 17th, asking Kathy, “What did you end up doing with patterns?” Kathy explained that she had actually given her students the problem that Lauren and Carole had helped her to craft during the previous IMT meeting. She described in detail what happened as the children put together sets of unifix cubes and agreed and disagreed with each other about which models met the criteria Kathy presented. Kathy spoke with animation, conveying satisfaction and excitement that “they were talking to each other!”

Kathy then conveyed her concerns about the next day: “I know it’s the task, but—and I knew the other tasks weren’t right—but I couldn’t move it. I still don’t know how to—what I am going to do tomorrow.” Lisa, Carole, and Jane respond to her uncertainty with suggestions:

Lisa: You could milk a lot out of this. There are a lot of concepts here. You could start with other puzzles and get into the ideas of addition and subtraction...

In suggesting that Kathy “get into ideas in addition and subtraction,” Lisa appears almost to be contradicting the very idea Kathy borrowed from her: to focus a series of lessons on the skills of presenting ideas, agreeing and disagreeing, and giving reasons, and to put the teaching of content on hold temporarily. Jane and Carole, however, continued to support the idea of teaching discussion skills explicitly.

Kathy responded to them saying, “That makes sense to me at one level, but it worked—they did so well that I don’t think the problem is that they have to be taught how to do it so much as they have to have the task—the curricular—the task.

Several members joined Kathy in soft chorus, “It’s the task.”

With Helen’s prompting, Lisa revisited aloud her reasons for using puzzles to support the students’ learning to “talk this way.”

Helen: What were you thinking about Lisa? You were saying?

Lisa: I was thinking about that we spent 3-4 days on the same sort of puzzle solving and then we extended it to they worked together to come up with their own puzzle. They created a solution and then gave clues
for it. They shared it with each other. Evaluated each other. Did your solution fit all the clues you gave? Was it too easy? Was it too hard? Even though it was the same context of the puzzles it seemed easier and easier and they felt more comfortable talking that way. Maybe at 6th grade, I feel like it’s so ingrained in them to sit and wait for me to tell them what the answer is.

Lisa articulated her reasons for teaching the language of mathematical discussion explicitly. Carole pushed Lisa’s points farther, arguing that students needed explicit instruction because the changes we were asking them to make were significant and hard. Kathy then made explicit the disagreement she was having with herself:

**Carole:** But these second graders are the very same way. They’re coming from a very structured situation. I don’t think one [lesson] is going to do it. I think it’s very successful but I think you need to come up with more...

**Kathy:** Because I’m trying to teach them discourse? Or am I trying to teach them something else?

**Carole:** Because I think you’re trying to teach them discourse.

**Kathy:** Why can’t I teach them something else and discourse? That’s what I want to do. Cause when I thought about doing this tomorrow, I thought OK...it didn’t seem like it was a rich enough thing to do to do the same thing again. It felt like--

**Carole:** a very structured lesson.

?: uh hum.

**Kathy:** sort of.

**Carole:** Unless you could come up with a way for them to do their own patterns. I don’t know how to do that with that level.

**Kathy:** I thought about it but what is that teaching them? **Carole:** And I don’t know how to do that at that level.

**Kathy:** For them to do that I’d have to do a lot of them ... what are they learning? I guess they’re learning to read.

In the next part of the conversation, Lisa changes her mind. Tangled in her comments is a powerful example of the co-construction of knowledge by the group. It seems the construction was possible, in part, because the teachers worked openly with Kathy’s disagreement. The disagreement was about pedagogy and the group’s working example was situated in Kathy’s classroom, which Kathy offered as a workspace for the group’s collective inquiry.
Kathy: So I'd have to give them with a lot of experiences... and what I'm wondering is...is it worth all the time?

Lisa: You're right... you could do other problems that would encourage--I mean, all the work you did last year. All of those kinds of problems would encourage the discourse. And your question is a good one that--IT'S--IT'S IN THE TASK--not in--that's an interesting way to put it.

Helen: You could go to numbers, I mean, you could bring numbers into the patterns.

Long pause.

Helen: What were you saying Sheryl?

Sheryl: I just thought--that was great--when you said that--I was like yeah--I don't think that's what exactly you said--'the task creates the discourse?' Is that what you said? However you worded it--it was like, YEAH.

Lisa: The discourse is in the task.

Sheryl: yeah-the discourse--yeah--the

Lisa: and that makes a lot of sense.

Sheryl: right.

Helen: Hmm. The discourse is in the--

Kathy: That's just so blatantly obvious to me.

Carole: But then the discourse often creates the task.

Kathy: I know. That's right, Carole.

Carole: Or recreates it and leads the direction for where you're going to go. Because it's their solutions that lead you to the next task.

This is the memorable moment for which the teachers dubbed the meeting "The discourse is in the task" night. Lisa wrote in her journal about this meeting, the power of the conversation and the sense of collective work, for several weeks. Six months later, in the IMT meeting on March 21, 1993, the group tried to reconstruct their co-construction of the statement, deliberating inconclusively about which individual actually formulated the sentences: Lisa's journal credited Kathy, while Kathy credited Lisa. The power of this conversation lies in the teachers' sense of a collective achievement in the group's work and their collective crafting of an intellectual tool for the group's future work. We can hear in this example of teachers' overlapping repetitive dialogue the complex work of using their individual experiences and their theories of good instruction to jointly articulate a shared understanding about the reform of mathematics pedagogy. In subsequent conversations, we continued to
hear the teachers'--and ourselves--use this statement to summarize or title a point someone was making or to suggest another frame for looking at the topic under discussion. The phrase has come to serve two key functions for the group members: (1) It is a shorthand way of invoking the group's common history and commitment to involving children with significant mathematics; (2) The statement is an intellectual tool for bringing past discussions about the relationship between task and discourse to bear on a current puzzle or dilemma.

Kathy's disagreement with Lisa's strategy of teaching discussion skills created a space in which together, the IMT teachers accomplished three things. First, they engaged and sustained a generative conversation about an aspect of this approach to teach that is underdetermined in the reform documents (Ball, 1995): although the NCTM documents (1989; 1991) describe classroom discourse in which children explain their ideas to one another, agree and disagree, justify their thinking and make conjectures, they do not explain what a teacher might do in order to encourage this sort of conversation. Second, this disagreement and the conversation it launched acted as "humus" (Clark, cited in Florio-Ruane and deTar, 1995) and nurtured the visible growth of an idea. Looking back at the bolded text in the transcript above allows us to trace the co-construction of the idea that the mathematical task will have a major and defining effect on the classroom discourse and that children will learn to explain their own thinking and to care about what others have to say if the mathematical task is one that generates divergent ideas. And third, by engaging in a deeply situated discussion of what is involved in creating a good mathematical conversation with students, the teachers experienced a kind of intellectual study and analysis of teaching and learning (Ball & Cohen, 1995) that energized and sustained them in their efforts to change their practices.

Learning to Publicly Disagree About The Actual Practice Of A Teacher Present

In this collective experiment, over the course of two IMT meetings and in the context of Kathy's problem of practice, the teachers explored in a disagreement around the actual decisions and moves they were making in their daily practices. Kathy, in essence, said to Lisa that she had reservations about Lisa's decision to focus exclusively on teaching the skills and routines of discussion for a few lessons, letting concerns about subject matter take a back seat. Our fieldnotes and transcripts indicate that this was the first time a teacher in the group explicitly and publicly disagreed with the practice of another group member and engaged in a sustained conversation with the colleague about that practice.

Steps toward Disagreement about Practice

This is not to say that there had not been disagreement in the IMT group until this time. Prior to these September, 1992, meetings the teachers had disagreements that took a variety of forms. One form of disagreement occurred when they watched videotapes of Deborah Ball's
teaching during the first year of meetings. On several occasions members of the group disagreed with the decisions or moves that Deborah made in her interactions with students. At other times they disagreed with one another about moves they saw Deborah making. In Deborah’s absence the teachers could disagree with her without the complications of the rights and duties of interpersonal communication, without having to attend to what Erving Goffman (1967) calls “face work”; they did not have to worry about threatening or imposing on Deborah in ways that might close down the interaction with her. Because Deborah was not present, the teachers could begin to make explicit the conflict in their heads about what they were seeing in Deborah’s teaching and what they were thinking about in their work. In an example taken from a meeting during the group’s first month together, we see both forms of disagreement: We see a teacher disagree with a decision Deborah makes during a lesson and we see disagreement among group members about their interpretations of Deborah’s reasoning. Inside these disagreements we find opportunities where the teachers engage in analysis of Deborah’s practice that we conjecture would not have occurred in her presence.

On October 17, 1991, the group watched a videotape of a math lesson in which Deborah had a paper representation of a building with 12 floors above and 12 floors below ground, to engage her students in discussions about number sentences involving negative numbers. The students moved a cut out figure of a little man to show their moves (e.g. \(6 - 8 = -2\)) in the building. In this meeting, Kathy had raised the issue of Deborah’s directiveness in telling the children “the rules” for moving the little man up and down in the building in order to accurately represent a given number sentence. Carole, in particular, had joined Kathy in exploring the mismatch that surfaced between Kathy’s “theory about how Deborah makes decisions—that she thinks kids have to construct their own knowledge” and their observations, that on the videotape Deborah appeared to be “constructing it for them.” Two weeks later (October 30, 1991), after viewing on her own a lesson in which Deborah’s third graders continued to work with the building, Marian voiced her disagreement with Deborah’s direct instruction to the children about how to move around in the building. Helen responded to Marian concern with a question aimed to probe more of Marian’s thinking about the role of the teacher—in this instance Deborah’s role—in the class discussion:

Helen: So what are the issues there that you would have to think about? What would she—what do you think she thinking that lead her to do what she did? What are the--

Marian: Well--

Helen: --complexities of the situation?

Marian: ...the only thing, when I thought about it, that I could come up with was some kind of time constraint thing. Or, either that or she didn’t see it as a big problem or she knows Ofala better, and she can see it was only Ofala. Whereas, looking at the tape, I see Ofala as a
representative of others in the class. I don’t know that because I don’t know the class.

**Kathy:** Or she could have been thinking, well, you know, some are getting it, some aren’t getting it, I don’t really expect everybody to get it yet. We’re going to keep doing this, give the kids more experiences with it. And I’ll be able to tell if they’re getting it or not.

**Marian:** Right. I would’ve gotten, I would’ve taken the time right there to give them some more experiences as a group, instead of just going into the operations of it.

**Kathy:** But you know, one of the things that I’ve been thinking about watching Deborah’s tapes is that there isn’t—that teachers can really make the wrong decision. I used to think that if you made the wrong decision when you were teaching, then everything was lost. There was this performance thing in my head, I guess. That, there was this teachable moment; if you lost it, your really lost something crucial. But I have a sense of Deborah Ball doesn’t think like that, that she goes back and says, you know, I’m going to go back now, and talk about this even though, at the time, she didn’t pursue it the way she might have wanted to. So that even if she didn’t pick up on Ofala that day, not all is lost.

**Marian:** Oh no. I never suggested it was all lost, but I’m seeing the same problems coming up days later...maybe, if there’d been a little bit more planning on the first—

**Kathy:** But, see that does sound like your saying that it is lost. If she would have spent more time on the first day, it wouldn’t have come up in a few days.

**Marian:** No, not lost. I’m just talking about time and use of time, cause all I could think of as a reason why she wouldn’t do it more that day was a time factor. I’m saying in the long run, I think it probably would have been a--more valuable to have...(inaudible)...not that it was lost than use of time.

**Janine:** You don’t think she also may have wanted to to see what sense made kids of it with a brief introduction or brief, sort of directive instruction?

**Marian:** Well, I don’t know because she kept having to go back there to tell the kids. “Remember, plus means up, minus means down. Remember, plus means up, minus means down.” So, it was something she had to just keep repeating. Don’t you think?

**Janine:** What you’re making me think about, is when you choose representations to get kids--If you think about a representation as a tool for a, for playing around with ideas. One of the questions that you need to ask is how cumbersome is that tool for kids to use and is getting them to use the tool in a useful way so cumbersome that the representation becomes not helpful?

In this part of the group’s discussion we observed an exchange between Marian and Kathy that serves of an example of the teachers’ early work on disagreements about practice. Marian disagreed with Deborah’s decision to tell her third graders the rules for moving up and down in the building and she announced confidently that she would have handled the lesson differently. While exploring possible reasons for Deborah’s moves, Marian held firm to her disagreement, arguing that by pushing ahead to the operations with integers Deborah was
shortcircuiting the students' exploration of the representation and consequently their understanding of it. We also see a second form of disagreement that is supported by the distancing effect of observing the practice of a teacher who is not present. When Marian disagreed publicly with Deborah, she created a space for another teacher to disagree with her about Deborah’s practice. And Kathy stepped in. In the excerpt above we saw Kathy disagree with Marian about the price paid for Deborah’s decision. Kathy took the position that it isn’t as critical as she once thought to miss “a teachable moment” and that the children’s understanding develops over time; she was arguing for the merits of giving the students the tool so that they could begin working with it. It is important to underscore again that in these instances of disagreement at a distance—*with the decisions or moves that Deborah made* and *with one another* about moves they saw Deborah making—the teachers do not engage directly or publicly with Deborah on their points of disagreement and their disagreements do not focus on the actual practices of the conversational participants. Rather, they focus on Deborah’s practice. For this reason the disagreement stays at some distance from the actual practice of those present in the room.

Even in her absence, disagreeing with Deborah was not easy for some of the IMT teachers. Remember that during one of those early meetings of the group Lisa used her principal as a proxy for her own reaction to Deborah’s spending three days on one problem (see p. 23). And on several occasions Sheryl argued that, given Deborah’s reputation and her long-term commitment to the difficult endeavor of reforming mathematics education, members of the group did not have the experience or the authority to disagree with the glimpses of her practice that we saw on videotape. Disagreement was also present in the group work during their first year together in a third, less visible, form: Teachers had disagreements with others in the group that they simply did not voice in the public forum. On several occasions teachers confided in one the researchers, during one-on-one conversations, their reservations about or opposition to something another teacher said at an IMT meeting. We think about the teachers’ conversations on a continuum of disagreement (see Figure 3) where, at one end, they come together as a group around representations of practice quite distant from their own. They are supported by the group’s dialogic relations (Burbules, 1993) in articulating and/or documenting the disagreement that arises in their thinking as they observe and discuss this practice. At points, their disagreement may be public, among members of the group. At other times the disagreement may be with the another teacher or conversational partner, about an aspect of the distant practice. This disagreement may blend easily into a disagreement with the conversational partner as one draws on her own practice, making abstract statement of beliefs. At the other end of the continuum, the disagreement is public and focused on the actual practice of a teacher who is a participant in the conversation. Opportunities to experience these various
forms of disagreement may contribute to teachers' capacities for entering into disagreements with themselves and with others in a public forum, and their learning to use such interactions as a resource in learning to teach.

Figure 3. A continuum of disagreement in the IMT group during year 1 to year 2.

What was different about the conversations in the fall of 1992 is the teachers' engagement in conversations that we characterize as sustained, passionate, disclosing conversations that include public disagreement about the actual practice of a teacher present. In the September meetings we have just examined, the IMT teachers achieve a thematic coherence that sustains their involvement over two meetings. The carryover of attention to one teacher's problem of practice is markedly different from past polite follow-ups, meeting to meeting. We conjecture that the other IMT teachers have a heightened interest in finding out "what happened" with Kathy's experiment for two reasons. First, because the group has helped her to craft the task, they have a vested interest in its success. Second, several teachers are themselves facing a similar problem and they hope her experience can serve as a resource to them as they struggle to establish a new kind of mathematical discourse in their own classrooms.

We turn now to a third meeting in which we find a vivid example of the teachers' engagement in sustained, passionate and public disagreement about the issues of student assessment.
The Assessment Conversation

On October 29, 1992, Lisa arrived a few minutes after the meeting began while members were responding to Sheryl's request for help in thinking about an upcoming visit to her school district by some Washington dignitaries. When an opening presented itself a few mintues later, Lisa posed a question from her own practice. Her question led swiftly into a conversation about assessment which lasted until three of the teachers had to leave at 7:00 p.m.

Lisa told the group that because a student in her class was moving to a new school, she needed to fill out a report card to send along with him. She was not sure what to say on his report card or to the child’s parents. Helen suggested that writing a letter to the new teacher about the way they have been doing math in Lisa’s class and what she thought the boy was learning would probably be helpful and impressive. Lisa responded, “I think not,” making clear her concern about what she could expect the teacher and the parents to understand and accept in place of a standard report of grades and check marks:

He can use numbers. He can’t say what number is in the 10,000 place. He can [read] what the number is and use the numbers but he gets really confused. He’s a tentative thinker and not always sure of his ideas and so he gets in a situation and...I know a lot about how he thinks but, I don’t know how to justify it.

Lisa added, “I don’t know what everyone is doing about report cards, but=” She was interrupted by a collective gasp of anxiety around the table and one teacher murmured, “I don’t want to think about it.” Still, it didn’t take long for the topic of assessment to become firmly fixed as the topic of conversation. Later Lauren wrote in her journal:

The discussion seemed to take off at a very high level, intellectually and emotionally. Everyone had something to say--which is not to say that everyone spoke. But I had the sense everyone was deeply engaged and on the edge of their seats trying to work on the issue of grades. What do they mean? Who are they for? How do I think about them? How do I use them? What messages do I send? How do I know what they know? What is my job? Who is accountable and for what?

(Pfeiffer's journal 10-29-92)

We have selected two excerpts from this conversation to show how the teachers' engaged in public disagreement with each others' actual practices. Noticeable in the dialogue are examples of passionate talk and public disclosure of what the teachers have done and plan to do concerning report cards.

The teachers began to describe how they organize and rationalize their grading procedures, and how they communicate what they do to their students' parents. Marian explained to the group that she tells her students' parents at the beginning of the year that the
majority of her grading is based on effort. She asserted that because she lets parents know ahead of time and gives them reasons for what she was doing they accept this approach.

Sheryl posed a hypothetical question to Marian, “Say they don’t do very well but they tried super hard: they can still get an A?” Marian continued to describe her practice for the group:

Marian: I, I do my grades on a computer so I do all of that too, so. I mean, I can show the parents what the group work grade was, and what the, um, homework grade was, and what the test grade was, and what the quiz grade was, and the percentage that each counts for. I give the parents this handout before they get the kids’ grades so they know where it comes from. And they can see, “Oh my kid got an F on all the quizzes, but the tests only count for 5%.” So I’m not telling—I mean, it’s not— I’m not even hiding that the kid doesn’t do well on tests.

Lisa: But, so, if--
Sheryl: No parents ever...
Marian: No.
Sheryl: ... all on effort?
Marian: Exactly the opposite. Well, it’s not all, I mean, I have usually five different categories.
Sheryl: But tests count for 5%?
Marian: 5 or 10. Sometimes I’ve gone as high as 15%, never more.
Sheryl: Wow. And parents don’t balk at that.
Kathy: So, why do you give tests?
Sheryl: Wow.
Marian: Just as a way—partially because these kids are going to have to take tests after they leave me. And I work real hard on essay tests. My tests are real, real, hard. I mean, they’re always essay tests. We talk about how to take a test and do test-taking and what to look for in essay questions, and how to write it, and using examples and stuff. So, I use those as learning how to get along in the rest of you life, too. You know, um, and also, to see how they can do on it. And there are kids that because its—I mean, a lot of kids will well on that because they get the chance to write—not at first because they are just scared of the fact that they are essays. But in the spring, I find that kids who don’t normally test well in test situations do well because they can write about how they are thinking.

Kathy: I have a lot of parents that say to me, “You know, I think it’s really nice the way you teach but they’re not going to have this kind of teaching in the rest of school so, I’m really worried about this ‘because they’re not going to be able to get along in the world.” And see, that argument doesn’t hold water with me. I don’t think my job is to help kids to get along in the world. I think my job is to teach kids—to teach kids. So I guess I’m still pushing your thinking or questioning that is a valid reason for giving a test. Because I don’t believe it is

Marian: What—learning how to take tests?
Kathy: and I get a lot of flack on it.

Marian: Learning how to take tests? Is that what you mean? You don’t think--
Drawing an analogy with what she hears from parents, Kathy restates what Marian is saying. She seems to be putting some distance—protecting against a possible “face-threatening act” (Goffman, 1967; Brown and Levinson, 1978)—between herself and Marian. Then Kathy makes her comments more directly (“So, I guess I’m still pushing your thinking or questioning...”), seeming to disagree with Marian’s reason for giving a test. When Marian takes up with Kathy’s “invitation” to explore this disagreement, Kathy situates explicitly the disagreement between the two of them. (“I asked...you said”).

**Kathy:** Well, you-- I asked you why you even give those tests? You said so they could get along in the world.

**Marian:** No. I don’t mean in the same sense as teaching for a MEAP would be. I mean in the sense--like learning how to communicate in writing. Writing an essay question is a lot like writing a paper or--

**Jan:** Why do you call it a “test”

, rather than--

**Marian:** ‘Cause it also does, I think, show what they know.

**Jan:** --another form of assessment?

**Sheryl:** But isn’t that what you should be assessing, what they know?

**Kathy:** But if it’s only 5% of your grade you don’t really believe it does show what they know.

Kathy pushes Marian to confront a contradiction she hears between Marian belief about what essay writing shows and the grade “weight” she assigns to it. Marian’s response is passionately charged with the complexity of the dilemma she manages: needing to use school testing and grading procedures to communicate with parents and wanting to think broadly about assessing what her students know.

In explain her thinking further, Marian discloses more about her practice and the reasoning that guides it. In laying these out to the group (e.g. I mean...I believe...) she gives others in the group more of the “stuff” of her practice—materials they can use to examine their own thinking on the issue. Marian’s disclosure about her practice of grading provokes Sheryl to examine the fit between this view and her own understanding of the role of the teacher. She meets with a troubling mismatch. Lisa interjects yet another complicating factor in the dilemma-laden responsibility of assessing learning; the tension between what one can do with the help of others and what one can do on his/her own.
Marian: I don't believe it is the only thing that shows me what they know. I also tell them up front that I'd rather not give a grade period. That I'm only giving a grade because I have to.

Sheryl: Yeah, but, isn't part of your job to assess what they know, too? I mean, aren't y--I mean, besides effort,

Marian: Yes.

Sheryl: do you still have to let them know what they know? Or--I don't know, I just--

Lisa: Yeah--because what you can produce with the help of a group is

Marian: But--

Sheryl: (aside, in a whisper) I am really uncomfortable with [inaudible]...(soft laughter, passing of food).

Lisa: much different than what you

Marian: But--

Lisa: could do on your own.

Marian: But--especially in middle school when it is unheard of to flunk someone even if they get a F. If they get an F in 6th grade language arts, they still go on to 7th grade language arts. What's the point of giving them an F? Unless they don't do any work. See, kids have to earn an F in my class.

Sheryl: They have to earn an F?

Marian: By not doing anything. I mean, I can't see if someone doesn't do any work, doesn't turn anything in or turns in less than 50% of the homework, but does well on tests, why that person should get a better grade than that person who is working hard every day, does all the homework, but still just somehow can't get it all together on the test.

Long silence.

Sociolinguistic Moves in Public Disagreement

We see inside this segment of conversation examples of disclosure, questioning, and pointing out contradiction. These sociolinguistic moves characterize the interaction as public disagreement about the actual practice of a teacher present. Marian disclosed, in detail, grading routines she uses and the way she currently thinks about her reasons for using these routines. She disclosed her beliefs, not in a generalized statement, but in a highly contextualized description of her existing practice. Other members of the group juxtapose Marian's actions and decisions to their own. This juxtaposition prompts questions that elicit
more description and more public disclosure of Marian's practice and reasoning. More
description brings with it more possible places where her colleagues may not understand
Marian's thinking, or begin to see a puzzle or a mismatch in their own thinking, or to identify a
clear point of disagreement.

Like Kathy's collective "experiment", Marian's assessment practice served as a
collective workspace for the other IMT members. In this space they launched an examination of
their individual beliefs about grades. This examination included close scrutiny of the words
used to talk about assessment practices and the meanings attached to them: Kathy inquired
what Marian means by "getting along in the world." Marian's clarification prompted Jan to ask
about the use of the word "test." Both queries appeared to fuel a collective examination of the
purpose of testing in school.

It seems difficult to point directly to what this disagreement was about; it was not so
clean as a point/counter point argument. Rather, part of the hard work in this conversation was
uncovering and naming where the disagreement lay. Kathy and Sheryl each pointed out
contradictions they heard in or because of Marian's talk about her practice. Kathy spoke
directly as she pointed out to Marian what she saw as a mismatch between a belief that
writing an essay test does show what students know and the use of test scores as only 5% of a
their grade. Marian's response to Jan's question about the word "test" and then Kathy's
observation about a contradiction about grade weight clears an opening for Sheryl to address a
different, though equally pressing, form of contradiction. What Sheryl heard in Marian's
description was in conflict with how she herself thinks about her responsibility as a teacher:
"But, isn't it part of your job to assess what they know, too?"

Learning To Articulate The Disagreement--Making it Public

Engaging in public disagreement around a topic so close to one's experience--especially
if one has had little or no practice in talking about the issue publicly--can make a person feel
intensely vulnerable. In a second segment of the conversation, we focus on Lisa's involvement
strategies and her struggle to reconnect the conversation to her own problem of practice. Lisa
disclosed her uncertainty about her own thinking, keeping her comments grounded in her own
practice and what she thinks she understands. She also struggled to disagree actively and
publicly with Marian's practice. The moves she made highlight the sociolinguistic complexity
of the group's talk and of Lisa's own involvement:

Lisa: It's just frustrating. The homework grades that the kids in my class get-
-most of them-- [are] "Did you do it? Then it's an A." When the kids
don't do it ... well how does that show up? If they come in during last
recess to make it up, then it's a B. If they still don't make it up, then
it's a E. That's what I've been doing. But I just...effort combined...I still
think there’s got to be an element...I don’t know...maybe I just have to
talk about it some more. I feel like they know how they’re doing.
They know if they don’t understand.

Marian: So there again is the assumption that a grade has a relationship to
understanding? I’m asking.

Lisa: I don’t know what you mean by that?

Lisa’s statement has a different tone than the group’s familiar question, “What do you
mean by that?” It reflects her growing frustration, reported later to Lauren, her passionate
response to the complexity of trying to assess her learners. Sheryl appears to believe that
Marian is saying, ‘I don’t think grades should be related to understanding’; She doesn’t hear
her contribution as a question.

Sheryl: I must have like a really warped--It doesn’t? Grades have no
relationship

Marian: No, I asking.

Sheryl: to understanding? That’s what I thought a grade was?
I must have a really warped sense of evaluation and assessment
(laughter). That’s what I thought a grade was, a measure of
understanding. But, I’ve never looked at it the way you guys are
talking about looking at it. That’s what a grade was to me.

Jan: Is mastery or understanding ... are you saying?

Sheryl: Understanding.

As we read and reread this segment, the tangled, non-linear messiness comes through.
No one talks in terms of “I agree” or “I disagree with...” It is not altogether clear who stands
with whom. Rather, each teacher seems to stand on her own thinking, struggling to articulate
what she thinks and how this fits or doesn’t fit with what has been said. Here, Sheryl sets
herself apart from the whole group (“you guys”) in wrestling with her understanding of a
“grade.”

Lisa: Well, it’s like on traditional report cards the grade is the assessment of
what they know and there’s all the little checkmarks underneath
Kathy: Oh, I hate that (soft laughter).

Lisa: that refer
to participation, effort, study skills.
Kathy: Right.
Lisa: And those are all considered to be factors of why or why not they may be understanding. I mean, that's what I'm thinking about when you look at the report card. Where is there a spot to put on how hard they try? Well, it's these little checkmarks underneath. So then, I guess what Marion is doing--

Kathy: She is rewriting the report card--
?: She is reversing--
?: She's making--
Marian: reversing figure and ground.

Without addressing Marian, Lisa's comments refer to Marian's stance on effort grades. Lisa seems to struggle to engage with the directness and candor of the conversation. Determined to be a participant, she talks about Marian in her presence rather than to Marian. Three members follow her example of third person referencing. Their repetitions ("she is") contribute to the group's sustained focus in trying to understand Marian's practice. Helen then moves to scaffold the talk to more directly address Marian about what it appears her practice involves.

Helen: ...she is orally rewriting [the report card], because you don't say that on your report card, you say it to the parents.

Marian: I put it in printing. Well, I say it orally. I, I give the parents and the students, the first week of class, my syllabus of where the grade will come from, um, and at parents' night, I tell them, I out-and-out say, "If your child does all the book reports, all the homework assignments or all of the group work things, all the projects in Social Studies, he or she will get an A even if they do poorly on tests because tests count for a small percentage of the grade." And the parents go "Oh, how nice."

Sheryl: So what do you do if you have a kid that doesn't try?

Marian: Then they don't do well.

Kathy: What if you have a kid that never turns in a homework assignment but can read all the books, can answer all the questions you'd ever give them? He gets 5%?

Marian: Probably, yes, he's-

Kathy: So, I mean, Is that a true assessment of that kid?

Marian: Um, well, I give the expectations at the beginning of the class and yeah, that's a true--I mean, I am consistent to my expectations of them. My expectations is that they'll participate and do the work and read, not that they'll know all the answers, but that they'll--and especially in my class, there's not a--with language especially--
with a lot of writing and everything it isn't a matter of knowing the answers.

Throughout the transcript of this meeting, we see in Lisa's talk that she interjected many of her comments into the conversation by using a generalized “you”--a form of constructed dialogue (Tannen, 1989)--rather than “I” in talking about practice (e.g. “what you can produce...If you assess them...if you see them...”). These statements stand out as different from other times in the conversation when Lisa does use “I” and “me”. The variation suggests that Lisa was using the generalized “you” as a way of maintaining interpersonal distance in potentially confrontational comments. Similar to Kathy's use of an analogy with parents, Lisa uses this more distant referent to keep her comment from being situated explicitly between Marian and herself. This distancing strategy of Lisa’s contrasts with Marian’s and Sheryl’s use of “I” and “me” (“I can’t see...; For me...; It matters to me...; I can’t imagine...; I think...”).

Lisa seemed to use a second distancing strategy to buffer her discomfort with the disagreement at hand: she talked about Marian rather than to Marian. At one point, Marian too, draws on this distancing move: she asks about an assumption she hears in Lisa’s comment, but she refers to as “the assumption” as if it were out there to look at, detached from the person who holds it. It is hard to know whether and how these two teachers sense the other's vulnerability in the conversation. When are distancing strategies employed to protect one's own vulnerability and when are they employed to protect the other? And when are they used in an effort to sustain the conversation?10

We know something of Lisa’s moves from talking with her over time about this meeting and about her reported discomfort with the discourse. Ironically, it was Lisa who launched this conversation, talking openly and specifically about her problem of communication about a child’s learning to a new teacher. Her eagerness to engage in sustained and passionate talk was clear. Her willingness to disclose her practices was visible. But, as such talk lead to disagreement—public disagreement about the practices of the teachers at the table--Lisa drew back and sought more distance from the confrontation than others.

When Lauren revisited the assessment conversation with Lisa months later, Lisa reported how hard it was for her—how she felt like she had to “retreat to a safer place.” In fact, she can be heard on the audio tape of the meeting whispering to Helen, “I have a pain in the pit of my stomach.” Lisa worked hard to engage in the conversation, a kind of conversation with which she was not familiar nor comfortable. Though the transcript shows that she continually tried to participate, Lisa’s perception of the discussion is that she “bailed out.”

Like the discussions about the relationship between tasks and discourse, this “assessment meeting” opens a window on the teachers’ work at articulating what they think
and how they act in their respective teaching practices. We heard Sheryl push on the definition of "grades" and how to talk about them in relationship to understanding. Her assertion that there is a relationship between grades and understanding provoked Jan to suggest a distinction between "mastery" and "understanding" as a way to think about what a grade represents. And when Marian reiterated her argument for tests comprising a small percentage of the student's grade, Kathy questioned whether she can call that "a true assessment."

Learning how to articulate what they know about what they think and do in a fundamental aspect of their work seems key to being able to construct new understandings of their role and their work in the reform-oriented classroom.

**Entering the Land of Public Disagreement in Learning to Teach**

In this paper, we have attempted to illuminate two points. First, in the fall of 1992, the members of the IMT group achieved a kind of collegial discourse that included sustained, passionate, disclosing discussions of the members' practices and the problems they were having and open disagreement about matters that related to those practices. This collegial discourse represents a change in the work of the group and it felt like an impressive, positive achievement to those involved. Second, the group's more open and specific talk approximated what is called for in the reform of teachers' professional development and it made visible some of the challenges embedded in learning to create and sustain new kinds of conversation about teaching and learning.

The teachers' direct involvement in reflecting/analyzing their sense that the group's work had changed during the first two years helped us to understand what it was about the meetings that was helpful to them and why they remained committed to continuing the group. Additionally, the fact that we (Featherstone, Pfeiffer, and Smith) were able to continue thinking about these meetings over a long period of time (off and on for nearly three years) has helped us to see more by allowing us to gain some distance from the uncomfortable moments in learning to engage in this new work. The IMT group first met for collective analysis work in the early spring of 1993, during the second half of our second year together. We discussed the group's work and how it had changed during the past year and a half. Three of the teachers had done some writing about the group before this meeting. We focused our conversation around this writing. During this meeting, Lisa commented on a connection which Marian made in what she wrote between the IMT teachers' interactions in the group meetings and the discourse they are trying to create in their classrooms:

...when I pulled out the piece that Marian wrote on the development—her description of the discourse—she is describing the kind of discourse we were looking at in the classrooms:
The discourse requires an environment where students don’t look to the teacher for answers, but look to each other and within themselves. They don’t just accept answers blindly, either, they ask for and offer logical solutions.

And I crossed out ‘students’, and put, ‘teachers’. Because that begins to describe the discourse within our group. And then the paragraph [Marian wrote] on the third page, “Perhaps we were better able to teach and model the discourse only after we experience it ourselves.” I felt very strongly about that and thought a lot about comments that we’ve made about the support that we’ve felt, the support we feel supports the development in our classrooms. There are a lot of other things I felt strongly about, but that was something different I had never seen before. I was struck with what a good definition this is of our group.

(transcript, 3-21-93)

This was the first time the teachers articulated this connection between their learning and that of their students. The insight became a new lens for looking at their experiences, their struggles, and their sense-making and it helped to open up further possibilities for the teachers to move beyond conversations that simply share existing practices (Little, 1990) toward a “critical colleagueship” (Lord, 1994) comprised of elements that parallel educational reforms for pupils. This shift has seemed important to the IMT teachers’ efforts to learn practice situated in practice (Ball and Cohen, 1996). Along with a number of other reform-minded teachers (Lester and Onore, 1990; Nathan, 1991; Schifter, 1993a.), the IMT members have experienced some of what it means to enact the reformed visions of teaching and learning by addressing their own learning in similar ways. When teachers see their students learning from articulating and exploring differences, perhaps some begin to feel differently about uncomfortable discussions, about disagreeing publicly, and about examining one another’s practice closely. But, there are still many teachers who do not see a connection between their work with children and their own learning to teach.

Learning to teach in response to the reform agendas means learning to participate in new kinds of conversations about teaching and learning. One of the marked features that sets these conversations apart from what most teachers know as “talk about teaching” is the expectation and valuing of disagreement within them. As the teachers in the IMT group grappled with ideas about what it means to change their role in the classroom, what is involved in creating meaningful tasks for their students to explore big ideas in mathematics, what is hard about turning the learning over to their students, they bumped up against questions and dilemmas for which, despite their common history, they had no common answers. In “the discourse is in the task” meetings we saw the teachers’ conversation develop into the “joint work” Little (1990) has found to be rare. Kathy, for one, had found that crafting the practice she wanted was necessarily joint work. In February, 1992, she had worked with Helen
in her own classroom, developing her vision and the skill of listening closely to students’ thinking (Featherstone and Smith, 1996; Beasley and Featherstone, 1995). In September, she worked with Lauren and Carole to design an experimental task for explicitly teaching her second graders how to engage in a mathematical discussion. She planned her math teaching for the week in such a way that she taught the jointly crafted lesson on the day of the next IMT meeting. This way she was able to debrief with the group about what happened and to seek help in taking the next step. This marshalling of her resources is a powerful example of the way these conversations had moved beyond storytelling or sharing and into the swamp of inquiry (Schon, 1987).

Clearly different individuals within any group will respond differently to disagreement generally and to particular disputes and discussions. Lisa, for example, wrote in her journal (after a meeting in March, 1993, in which members had discussed the assessment meeting), about how hard it was for her to stay with confrontation and about the ways her role as a colleague was pushed by her participation in the IMT group:

...I’m again feeling a little frustrated, but EXTREMELY INTRIGUED at the discussion we had today, revisiting the assessment conversation. There are so many layers to think about...Very interesting that among the teachers, I seemed to be the only one who viewed the assessment discussion as confrontational—just amazing because it seems so clearly that way to me....

I guess people who thrive on confrontation can separate more their feelings from the "fight." I'm a person who sees someone on T.V. get cut in half with a chainsaw and I can "feel" a line cutting down my forehead and get nauseous. People tell me they stepped on a nail and I begin to limp, just imagining the pain! I am too empathetic for my own good and I cannot separate my feelings and emotions from charged discussions. I cry easily and enjoy savoring the emotion of each moment. Oversensitive, perhaps, I take people's comments and stories to heart. I consider this to be probably my best and my worst quality.

I think it is an important piece of our story to say that we don't always come away from IMT feeling warm and fuzzy—"charged up" or "recharged"—yes. Even in uncomfortable discussions like the assessment discussion or even today (in parts) there is a compelling charge that pushes you—although it's kind of like the prize fighter: are you being pushed into the ring, encouraged by shouts from your supporters to give it your best shot and to stay in the game? Or are you being pushed back into your own corner? I guess when you're pushed back into your own corner, you're forced to reexamine your strategy and confront your own ideas, but maybe you'll just get mad and come out swinging....

It is just amazing though that others didn't feel the confrontational edge. Maybe I am a little paranoid or defensive. It's valuable to hear others' perspectives who engage in such charged discussions without becoming emotionally charged. It seems "a more professional way" to handle it—but I'm still not convince that [assessment] discussion was professional or productive. The slogan "we can disagree without being disagreeable" seems Pollyanna in this case.
People do not, however, stand still. In 1995, when a new principal began to insist that Lisa push her students through the new math curriculum at a speed that precluded classroom discussion of children's ideas and strategies and the development of their mathematical ideas, Lisa initiated and sustained countless heated conversations, challenging his curriculum and his ideas about teaching and learning. These confrontations were not easy for her, but she works on developing the skills to keep important disagreements on the table—in order to sustain and develop her teaching.

Kathy travels a different pathway to developing disagreement as an intellectual tool. Seeing multiple sides to many questions, Kathy often disagrees with herself; she is quite comfortable laying the disagreements in her head on the table in the IMT group—something she did in the September 17th meeting and has done at many other IMT meetings. In addition, she told the IMT group when they discussed the assessment meeting in March, she is more comfortable than most people with open disagreement, even confrontational disagreements:

I come from a family where people are pretty confrontational and do a lot of attacking. But we've always kind of enjoyed that. But a lot of people don't. I'm always surprised, well, not surprised anymore but I forget. They are hurt by it. Frightened by it. But I think women... in general... are conditioned to be...to let people off the hook. If anything I feel bad that I didn't notice Lisa had bailed out.

(IMT meeting 3-21-93)

Kathy seeks out others who will engage with her in the difficult work of communicating what she thinks and how she understands the degree of fit between her thinking and that of other people. The complexity of the group's conversation seems to lie, in part, in the tension created by individual teachers being on different pathways to public disagreement about the existing practice of a teacher who is part of the conversation. In order to cohere and sustain a sense of groupness, the teachers must establish and enforce norms which endure. Without stable norms, the group will cease to seem functional and productive to its members. If meetings disintegrate into un-productive disagreement and the group is reduced to a collective of varied perspectives and opinions in which people listen to one another without fully engaging or expecting to learn, disagreement is no longer an intellectual tool.

Speculations on what helps in learning to publicly disagree
We believe that learning to disagree publicly about the actual practice of colleagues can contribute in important ways to a teacher’s capacity for self-directed professional development. We know from various bodies of research that developing a stance and the skills for engaging in this intellectual work presents significant challenges to women teachers of mathematics. We are learning through the work of the IMT group that it is possible for women teachers to engage in this sort of conversation. We cannot with confidence say why this group developed norms enabling this kind of conversation, but we can offer some conjectures growing out of our study. In order to do this we will identify several features of the group history which have seemed important to the the content of the group’s conversation.

(1) Every teacher in the group had had bad experiences as a student with traditional math teaching;
(2) The group began its work together by watching videotapes of a teacher who was not a member of the group and who taught math non-traditionally;
(3) All of the original IMT teachers (those who joined the group in 1991) worked to create in their classrooms conversations in which students disagreements about mathematics were fully examined and explored—and in which explorations nourished students’ learning.
(4) The group had moved from being a course to being a voluntary association of teachers met regularly at their own initiative—without the incentive of course credit or payment.
(5) All teachers had certain things in common: they taught in public schools; they were working in schools where traditional math teaching predominated.
(6) Several members of the group were facing the same challenge in the fall, 1992: They were attempting to create with a new class the kind of mathematical discourse they had the previous May.

We conjecture that several of these features of the group’s history helped the teachers to engage in the passionate, sustained and, self-revelatory conversations about their own practice that we have described here and to push these discussions into areas which included disagreement about this practice. Specifically, the teachers’ common commitment to a reform vision of mathematics teaching that was unusual in their districts may have created a frame in which individuals felt more confident that their questions and disagreements would not be interpreted as attacks. We conjecture further, that, in addition to the formation of a committed, trusting group of colleagues, the kind of work the teachers engaged in—the tasks—contributed in important ways to the emergence of public disagreement about the practices of those present. Two key tasks that created the discourse for the teachers were: (1) watching
videotapes of the kind of teaching envisioned in the *Standards*. and (2) describing instances of teaching and learning in the classrooms of the teachers present. Watching and discussing videotape week after week created opportunities for teachers to develop shared images and a shared vocabulary for talking about reform-oriented math teaching. These activities also created opportunities for teachers to inch slowly into disagreements about practice. Our field notes and transcripts show teachers disagreeing with Ball’s practice and with one another about Ball’s practice well before any teacher publicly questioned an aspect of the practice of another teacher in the group.

Videotape provides a distant, external site for disagreement. How might this be helpful? First, it may provide a stimulus and a context for a teacher to make public a conflict she is beginning to see in her own work while keeping it at a safe distance for examining the problem. The IMT teachers had several reasons to believe that their hard questions and their disagreements would not be misunderstood or seen as personal. They shared a lot (see #3-6 above). Second, the discussion and disagreement about the videotape representation serves as a rehearsal of a disagreement that the teachers might have with another educator. The videotape viewing offered the IMT teachers an opportunity to disagree with each other about what they disagreed with Deborah about. In this way, Deborah herself moved to the background and her work became the vehicle for studying teaching. By externalizing conflict and creating a context where teachers can rehearse disagreement and focus on the practice rather than the practitioner, videotape can create stepping stones into a kind of reflective professional development work that is situated in the swamp of daily practice.

Through our work with the IMT teachers we have come to value open disagreement in a new way; in the group we have learned that we cannot move deeply into the messy work of situating teacher learning in practice without it. If teachers and prospective teachers need to develop new skills and dispositions in order to sustain conversations that lead into this territory, perhaps teachers and teacher educators might actively create opportunities for disagreement to arise. If so, we need to ask questions about the tasks, the tools, and the interpersonal *roles and relationships* that shape the work in a teachers’ group. How do they influence the educative potential of sustained, passionate, disclosing conversations about teaching. If “the discourse is in the task”, what tasks are most likely to engage teachers in open discussion and public disagreement about practice? How do different kinds of disagreement serve different educative ends in learning to teach? In relation to tasks, what representations or tools might help to create and sustain open discussion of disagreement about the actual practices of colleagues? For example, if teachers and teacher educators are interested in investigating one another’s pedagogy, what stimuli (videotape, written cases, teacher narratives, shared journal writing) offer rich potential for creating disagreements that
open up investigations? We will need to explore host of questions about the interpersonal management of public disagreement as it emerges and takes hold in a teachers’ conversation. How active a role should teacher educators, for example, take in drawing attention to a underlying disagreement in a group’s discussion? When some teachers are more comfortable than others in exploring disagreement publicly, who plays what role in deciding whether and when to put disagreement on the table?

It seems clear that we are heading into a new domain of professional development work among teachers. As our understanding of advanced technologies for representing teaching practices and our study of conversation as a medium for learning continues to grow, we must try to figure out how to help teachers both to explore their disagreements about practice openly and to see these explorations as intellectual tools that support the development of their professional knowledge.
References


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1 Sheryl is a pseudonym for one of the original IMT teachers who left the group at the end of the second year. Connie is a pseudonym for a fifth grade teacher and colleague in Shari's school district. Connie came with
Sheryl to several IMT meetings in the fall of 1992. Her attendance was sporadic and then ended because of a difficult pregnancy. All other names used in this text are the actual names of the IMT group members.

The inquiry described in this paper has been part of our ongoing work over the five year project. The work of the group, the preliminary analyses, and the ideas that emerged to shape this paper are the collaborative effort of the project researchers: Featherstone, Pfeiffer, and Smith. The authors use of “we” in describing the activities of the group and the path of our study refers to this long term collaborative investigation and includes the helpful contributions of Stephen P. Smith.

These materials were generated by Mathematics and Teaching Through Hypermedia (M.A.T.H.). In the summer of 1989 The National Science Foundation funded the M.A.T.H. project permitting Deborah Ball Magdalen Lampert, and colleagues to document the teaching and learning in their classrooms over the course of the next academic year.

For many of the lessons we are drawing from this study we have borrowed a term from the classrooms of our teacher colleagues in the IMT group. When children in several of these classrooms observe a pattern in results they have been getting as they work alone or as a group on a problem, they often raise their hands to say, “I want to make a conjecture.” They then describe the pattern they see in the examples they have worked on and suggest how they think it may extend to other situations. Teacher and children then work together to frame the conjecture in words that members of the class understand. This done, children may spend time evaluating the conjecture, either by looking for examples and/or counter examples, or by trying to figure out why it might or might not be true. If the conjecture withstands this sort of examination—if children find many examples supporting the generalization and exceptions, for instance, or if some find arguments for its validity that make sense to their classmates—the conjecture becomes, over time, an accepted tenet of this community of mathematicians.

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The IMT group met on 3-21-93, a Sunday afternoon, to read and respond to three IMT teachers’ written reflections on the groups’ first year together. The researchers compiled and edited the written excerpts and the group’s conversations about them into a paper the group presented and discussed at the annual meeting of the American Educational Research Association in Atlanta, GA. See Featherstone, et al., “Could You Say More About That?” A conversation about the development of a teachers’ group.

7:00 p.m. became a natural “midpoint” in the meetings because this was the time when one or two teachers would leave the IMT meeting to attend graduate courses that also met in the building on Thursday evenings.

In the professional development school where Debi and Kathy teach, Debi was hired as a coteacher, providing continuity and coordinated support to Kathy’s instructional program while Kathy was involved in professional development work: conferring with interns and meeting with other teachers and university based educators, for example.

In the IMT group, teachers use the word “discourse” to describe the sorts of sustained, focused, full-class discussions of mathematics that they had seen in Ball’s videotapes and were trying to create in their own classrooms, whereas the NCTM uses it to refer to all communication, written and oral, in the mathematics class.

See Florio-Ruane and deTar (1995) for a close study of the complexity of sustaining conversation in and through argument among a small group of elementary teacher candidates that met to read, write about, and discuss ethnic autobiography.