

Women's Collaborative Interactions

Vera John-Steiner

University of New Mexico

Creative and intellectual partnerships are motivated and sustained along a variety of dimensions. One of these is the need for affirmation. The hard effort involved in sustained, productive work requires a sense of trust in oneself. The ability to develop such a sense is nourished and sustained in certain effective collaborative partnerships.

Another important dimension of collaborative work is linked to developments in one's domain of endeavor. When scientists or artists are engaged in re-examining theories which are in conflict with new discoveries, insights, or perspectives, they find "thinking together" particularly productive. I have suggested that thinking collaboratively is particularly prevalent in the construction of a new framework. "In this way, researchers can overcome the grip of a dominant perspective" (John-Steiner, 1992, p. 103). The new jointly constructed framework can become the foundation of each individual's own novel directions of thought. Such a process is effectively described by Vygotsky's frequently quoted notion of the shift from the interpersonal to the intrapersonal level of functioning. In developing Vygotsky's sociogenetic notions further, Van der Veer and Valsiner (1991) suggest:

If we were to try to understand the processes of scientific discovery from a purely sociogenetic perspective then we would have to accept that no innovative scientist can create any new ideas independently from the collective cultural processes that surround him, the cultural history in which his life-course is embedded, and the particular interpersonal relationships of his life course. Or in other terms, it is the intellectual interdependency of the scientist or artist that sets up conditions under which novel ideas or expressions can come into being [emphasis added]. (p. 393)

Jointly constructed thinking is particularly important when a governing perspective within a domain of thinking is changing. Conversations which provide thoughtful articulation of new insights become more intense and frequent. This process has been particularly interesting to writers documenting the changes in physics during the 1920s, (cf. Heisenberg, 1971). Less is known of the establishment of discourse communities during periods of paradigmatic changes in the social sciences and of the role of women in these communities.

In thinking about communities of thinkers, I have relied to a great extent on Ludwik Fleck's (1979) ideas. He wrote about thought collectives and collaboration as central facts in creative scientific work. His claim that cognition is "the most socially conditioned activity of man" has recently been echoed by Levine, Resnick, and Higgins (1993):

At work and in civic and personal life, each person's ability to function successfully depends upon coordinated cognitive interactions with others, and the cognitive "products" that emerge from these interactions cannot be attributed to single individuals. (pp. 599-600)

Our work on collaboration is based on similar assumptions. (My partners in this project include Kathryn Miller and Michele Minnis.) We have been particularly interested in studying dyads and small working groups engaged in developing novel approaches in their disciplines. In studying how they interact to overcome their own disciplinary socialization, we have relied upon sociocultural theory (including the works of Bakhtin, Holguist, & Emerson, 1986; Rogoff, 1990; Vygotsky, 1989; and Wertsch, 1991), on Fleck's thinking, and on the work of feminists and discourse theorists.

Collaboration has been of interest to the sociologists of science (Knorr-Cetina & Mulkay, 1983; Latour & Woolgar, 1979; Zuckerman, 1977) and to anthropologists. Among the latter, Traweek (1988) examined the world of high energy physics, of which she wrote that it is "a culture of no culture, which longs passionately for a world without loose ends, without temperament, gender, nationalism, or other sources of discord -for a world outside human space and time" (p. 162). In describing the high-energy physics community, she brings to it a feminist perspective when she comments that "the denial of human agency in the construction of science coexists with the imaging of scientists as male and nature as female" (p. 158). The issues raised by Traweek are of interest to feminist scholars, many of whom are engaged in studies of "career patterns of women attempting to do science, studies of the history of exclusion of women, studies of the content of particular sciences both in their formative periods and in their

contemporary manifestations" (Longino & Hammond, 1990, p. 164). The discussions themselves carry with them seeds of conflict based, in part, on the disciplinary position of the women who are exploring issues confronting women in science. (The different perspectives of philosophers of science versus practicing scientists is one such issue.)

While much of the work has focused on large, competitive laboratories, including Traweek's research, our interest is in the ways in which social scientists and mathematicians think together. Our focus is on "high conceptual collaboration," a term used by Michael Schrage (1990) who defines it as "when people work together to devise concepts, ideas, themes, metaphors, analogies." (p. 61). Our interest is the role women in these kinds of collaborations.

Some of our questions include: How do collaborators create their communities discourse? What are their patterns of thinking and working together? Are these based upon complementarity of skills and knowledge? How is a division of labor achieved? Do the collaborators share a commitment to construct a community with shared beliefs? Are there different phases in collaborative endeavors?

At the start of this project we conducted interviews based on twelve broad, ended questions. A number of recurrent themes were identified in these including: various motives for collaboration; identification of complementary working and cognitive styles of the collaborators; and a specification of settings they construct for their work. From these interviews, we have constructed a Q-sort for collaboration (Block, 1961).

In our most recent work, we combined the Q-sort with interviews: the statements from the sort provide the participants with a quick view of some of the relevant aspects of collaborations. Usually, collaborators meet with the researcher individually, and they comment on their partnership during and after completing the Q-sort. Once the similarities and differences of the sorts are identified, a joint meeting is arranged. There, the partners' perceptions of their common work is discussed. Partners have differed in their ranking of statements concerning the importance of creating a shared community; they frequently differ in their use of visual and / or verbal representation and communication of their ideas. They may have different expectations about deadlines and different commitments to a single, encompassing endeavor versus concurrent engagement in a number of projects.

This work on intellectual collaboration is in process. In this chapter, I present some examples of different collaborative partnerships, primarily among women. (In our on-going work, the Q-sorts are analyzed statistically. We are also examining the discourse features of the interviews. These include functional analyses, patterns of turn taking, interruptions, and elaborations; the use of conceptual "short hands" and other indices of communicative efficacy; and patterns of pronoun use.)

In examining dyads and small groups, we have looked at the ways in which female participants envisage collaboration. To date, women have placed Q-sort items at the high end of their distributions more consistently than men, such as: "By the time we have finished a projects, we do not know from whom the ideas came"; or, "Among my collaborators there is a sense of mission to establish a community in which we can participate"; and "In good collaborative environment, one's ideas can be made explicit through questioning and dialogue."

Valuing these items as descriptive of why and how women collaborate is further elaborated upon in their interviews. The reliance upon verbally negotiated ideas is a comfortable mode for women as conversations play a crucial role in female socialization. Girls tend to rely upon "best friends" as their resource for self-understanding and the development of identity (Rubin & Shenker, 1978). As writers on women's language have shown (Lakoff, 1975; Penfield, 1987; Tannen, 1990), women's interactional styles support the tentative exchange of ideas which become more clearly shaped in a course of dialogue. In collaborations involving same-sex dyads and small groups, women report their pleasure in sustained, free flowing, mutually trusting explorations of ideas. Some women writers who have deeply influenced each others' work, also benefit from sustained, caring interaction. In a chapter on Virginia Woolf and Vita Sackville-West, Louise De Salvo writes:

In conversations, letters, and in their novels, they explored their own and each other's pasts and came to far more realistic assessments of their family histories. Woolf wrote *To the Lighthouse*, *The Waves*, and *The Years*, novels that examined her childhood in the Stephen family, a childhood riddled with violence, sexual abuse, and emotional neglect. She wrote *Orlando*, which examined Vita's. Sackville-West wrote *The Edwardians*, based upon her childhood, and *Family History*, which to some extent examined Virginia's. (1993, p. 91)

Jill Tarule, a coauthor of *Women's ways of knowing: The development of self; voice and mind* (Belenky, Clinchy, Goldberger, & Tarule, et al., 1986), ranked the item about dialogue very

highly in interview. She wrote in a recent paper (Parule, 1992) that conversation for adults is a way of knowing:

The returning or re-entry students' experience usually includes having lived in dialogue-rich environments: work, church, community, home, and friendships. (p. 12).

She further wrote:

Students define the ability to feel "safe" as they speak, to be voiced, to listen and to be heard, and "to explore ideas" not as **part** of their learning, but **as** their learning. (p. 14)

Some of the women of whom she writes are "Connected Knowers." "Authority" for these women "rests not on power or status or certification but on commonality of experience" (Belenky et al., 1986, p. 118). The women collaborators with whom we have worked integrated connected knowledge -which is contextually and relationally oriented -with constructed knowledge. Belenky et al. wrote of "weaving together the strands of rational and emotive thought and of integrating objective and subjective knowing" (1986, p. 134). The participants in this study spoke of voicing and shaping their thoughts through dialogue, through a multiplicity of voices and "ways of knowing." They deepen, criticize, elaborate and join their ideas through solo or joint writing.

Tarule makes a powerful case for the role of dialogue in knowledge construction, and our research seems to indicate that it plays a particularly significant role for women. But there are many situations where women still find it difficult to articulate ideas while they are in a formative stage, to have full equality in discussion settings, or to have their ideas considered as precise as those of men.

In a study of computer discussion groups using e-mail exchanges, Selfe and Meyer (1991) analyzed discourse for gender and status differences. They found that while there was fairly equal access to participation by men and women and by high and low status participants in the groups, nevertheless the discussion tended to be dominated by the high-status males:

This paradox may be partly explained by differences in linguistic style and behavior. These behaviors included contributing more messages, introducing more new topics, and disagreeing more frequently with others. (p. 187)

Criticism, disagreement, and attribution of styles of thought were interesting. that emerged from our own interviews. During a thoughtful and very a French mathematical physicist, Cecile DeWitt-Morette, whose honors, describes her way of talking about her ideas as different from that of her physicist husband:

When he says, "I understand," we don't mean the same thing at all. When I say, "I understand," I speak of an idea that I like, that seems promising, and I like it enough to make that decision. When he says, "I understand," it means that he has looked at it this way and that way, looked at it in all the little corners. (personal communication, 15, March, 1992).

Professor DeWitt-Morette spoke further about the broad range of her attention, which is linked in part to her role as a mother. It was interesting that a scientist as successful as DeWitt-Morette saw an important connection between her maternal! role and her working style. She provided an excellent example of a recurrent theme in these interviews, namely the need of many women and some men to overcome long-standing dichotomies between work and family responsibilities.

Comfort with interdependency emerged as another important feature of women's talk about collaboration. The ability to articulate ideas abhorring, to participate in an intensely experienced co-construction of thoughts, and the willingness to speak of them to others is richly illustrated in my joint interview with the social psychologist Michelle Fine and her co-author, the writer, Pat MacPherson. They described their interactions as intensely dialogic. They both placed the card "With my collaborator I can talk at the speed of thinking" as characteristic of their exchanges. When I interviewed them recently they were drafting a new, joint publication.

The day before MacPherson was to join Fine in New York (she lives in Philadelphia), Fine called her to check out some ideas she was "cooking." It was important to her to be able to make a connection and to have her partner's reaction while her thoughts were fresh and percolating: "If I am cooking this idea, I just need to know if it is a rotten egg, and I think we tell each other."

When I asked MacPherson how she feels about the urgency of her partner's need to make contact, she responded:

I was happy to have her say "I want you to think about this coming up on the train." I was happy to hear, what direction she was coming in from. And I have come up with my own contribution to this outline last week after two days of deep thinking by myself. And then I wrote that out, saw Michelle the next morning, talked her through my notes and felt that we got into sync about that. So she was getting back to me with something else that can bolster this draft. (personal communication, 10, April, 1993)

Fine and MacPherson have a well-developed routine in their collaboration. It is not only based on their deep enjoyment of each other's thinking and their effective ways of dialoguing face-to-face, or on the phone, or through successive drafts of their joint articles, but also because they share a lot of their values as committed, feminist scholars. At the same time, they are quite aware of some interesting differences in their styles of working. MacPherson is a writer, while Fine is a charismatic teacher who presents ideas with force and self-confidence. She relies upon her working partner to deepen her thinking.

While MacPherson uses extended notes, Fine writes her drafts quickly and then rewrites them many times. In characterizing her friend's method of working, she says:

Pat will do many detailed, wonderful notes and then she will produce a draft... My experience with really fine writers is that they do a lot of interior work and then a production. And I do threads, and spit something out and then I work it, and work it... I really do 10 to 15 drafts. That is where I really do my work. I really don't know what I am thinking until I have written a draft of it. (personal communication, 10, April, 1993).

Their current method of working has taken some time to develop. In the beginning, MacPherson tried to work too closely with Fine's early drafts which were like an exploration of the territory. Fine says:

Its much more like a map, all the ideas that I have. I assume that it is the wrong draft, but I got to get them all out there. And Pat was taking them too seriously. Conversation and getting them out into early drafts is what I need to do.

After the two of them have come to understand their patterns better, Pat has learned "to lift the ideas out of the text" and she feels free to reorganize them, and Michelle is comfortable in staying with her partner's language. "I will touch the ideas but not the language."

The anthropologists Elinor Ochs and Bambi Schieffelin are another dyad of women whose collaboration weaves together friendship, shared values, and an enormously successful common working style. They met at a conference and recognized very quickly how similar their ideas were and how much they needed to explore them in dialogue. Their shared enterprise was symbolized from the very beginning by putting all their notes together "into a green canvas bag." They carried this bag and a small portable typewriter with them to any quiet place where they could work. Their basic working pattern has not changed much throughout the years:

We always talked each line through. We did not ever allocate parts of the paper to one person or to the other person. Every single sentence we discussed. The typewriter was between the two of us, and we put our chairs so that we could both see the text. While saying one sentence, we would think of the next one to write. It was definitely constructed on the phrasal level, together. Sometimes we used the blackboard to plan ahead. (personal communication, 6, April, 1990)

The green canvas bag remained with the stationary partner when the other went on a field trip. It served as the repository of their common data and thoughts.

After completing several articles and an edited book together, they identified their central theme as "language socialization." Having achieved clarity about their own theoretical direction, Ochs and Schieffelin decided to try to broaden their "thought community." In order to achieve that, they taught courses covering similar topics, and they organized symposia on language socialization:

We wanted to encourage this emerging enterprise, we wanted to get more people involved. This has been a sustaining strategy ...to try to nurture a community of people, not just the two of us. To fill out this enterprise, to make it healthier.

The sustaining power of these carefully shaped and joyously nurtured of women social scientists is recognized by the participants. But it is by others in their field who prefer solo endeavors, jointly authored papers, reflecting a broad cultural commitment to autonomy.

Full intellectual equality in academia still eludes us. In part, this is due to the legacy of nepotism rules; DeWitt-Morette described how she (as the wife of a physics professor) taught part-time and worked on soft money for 16 years. Then a French woman mathematician, Yvonne Choquet-Bruhat, invited her to give three lectures in Paris. That invitation revitalized her career and was the beginning of a long collaboration which produced two influential volumes on *Analysis, Manifolds, and Physics*. Since that time, each of the two women have also had other intellectual partners, but their work together has a very special role in their lives.

A strong emphasis on mutuality which includes cognitive and affective elements characterizes a number of the Q-sorts and interviews which we have collected. We refer to this approach as the *inclusive pattern of collaboration*. Such a relationship is sustaining to women who frequently experience marginality, who love to collaborate, and who speak with pride of their partner's mind. One woman described collaboration as "the affair of the mind." Jean Baker Miller and Janet L. Surrey -members of the Stone Center group of psychotherapists who are exploring a relational theory of development -write of "agency in community". Judith Jordan, another participant in the group, describes mutuality as follows: "In intersubjective mutuality, then, we not only find the opportunity of extending our understanding of the other, we also enhance awareness of ourselves" (1991, p. 96).

Dyadic collaboration between women has many sources and causes. Women who like to collaborate do not limit themselves to women partners. But when they choose males to work with, their choice' is carefully made: Jill Tarule commented in her interview that the classic gender stereotypes could not work in her partnerships. Many women rejected the Q-sort card that expressed a generalization which they considered too simplistic: "The female collaborators with whom I work are more nurturing and relationship oriented than male collaborators." The women who placed this item as relevant to their own experience are women who have worked in highly competitive environments such as corporations. They expressed the pain of not being fully heard by men, being given care taking jobs (keeping track of materials), and finding that whatever women did, it was devalued because it was done by women.

On the other hand, women who have had successful collaborations with men describe two different patterns. One of them is a situation of clear role definitions, where each collaborator is an expert who complements the skills of the others performing the joint task. These *collaborations of complementarity* are very widespread, and they vary considerably in the way in which women are treated within them.

In this paper, I have focused more on dyads who **think together**, who are jointly engaged in generating new ideas, new approaches, new theories. In these dyads, the relationships are inclusive and mutual. While complementarity of skills exists, the bonds are deeper. To create these bonds when the partners are both men and women is a more complex and demanding task. But some of the participant dyads and groups in this project did achieve this elusive objective. These were partnerships in which the men worked hard to implement their deeply held beliefs in "agency in community."

Thus, a commitment to dialogue and community is not exclusive to women, although it occurred with greater consistency among female participants interviewed to date. Men who have ranked highly some of the items dealing with interdependence and mutuality on the Q-sort, have also spoken of their conscious commitment to an ideology of working, caring communities. The sociolinguist John Dore was quite clear in his interview when he spoke of inclusive and dialogic communities:

"I am now aware at this stage of my career that a sense of mission is absolutely imperative, in the sense that it is the overarching vision of what one is doing. The only way it can really get done is with the help of a community of co-participants" (personal communication, February, 1993)

Not all women see collaboration among women, not even among feminists, as conflict-free. Hirsch and Keller (1990) edited an important volume titled *Conflicts in Feminism*. They write of a "decade of intense mutual criticism and internal divisiveness"; a decade in which "the dream of a common language" gave way to "the realities of fractured discourses" (p. I). They are writing of the 1980s.

In this work the participants did not express much conflict among themselves. They represent social scientists whose commitment to collaboration is powerful and who have relied upon "agency in community" as a way to break new ground in intellectual work. These women and men have gained a sense of fulfillment in their relationships with their partners. These psychologists, linguists, mathematicians, and anthropologists have been successful in creating small communities within the larger, frequently impersonal world of academia. They reject many features of the dominant model of intellectual work -a model of excessive objectivity and

impersonality. Instead, they are reaching towards new possibilities of human interdependence and shared creativity.

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