Pursued by Polanyi

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ABSTRACT Key words: Michael Polanyi, Women's Ways of Knowing, intellectual development, uncertainty, apprenticeship, confidence, discovery, uncertainty, personal knowledge, commitment, belief, doubt, connected knowing, separate knowing, subjectivity, objectivity.

In the present essay, I explore some ways in which Polanyi's concepts can be applied to enrich our understanding of epistemological development and the educational practices that seem to facilitate or suppress it. Among the concepts discussed are Polanyi's notion of uncertainty, combined with confidence as driving intellectual activity; the role of conviviality in the collaborative construction of knowledge; the act of discovery as beginning with a problem that obsesses the thinker and proceeding through the integration of (often tacit) fragments into a coherent whole; the notion of personal knowledge and commitment as transcending the disjunction between subjective and objective; apprenticeship as a personal relationship between a learner and a more sophisticated master, and most important, the assertion that belief is prior to doubt. Thus, in terms of the concepts my colleagues and I have developed, "connected knowing" (a personal approach) is not simply equal to "separate knowing" (a detached, impersonal mode) as a procedure for arriving at knowledge, but is prior to it, "making meaning" being a necessary prerequisite to testing the validity of a position. Drawing on interview data and memoirs of academic experiences, I argue that because these priorities are often reversed in educational practice, students learn to delete their personal responses from their essays in order to meet what they perceive as the utterly objective standards of the academy. When educators "endorse" uncertainty, students are encouraged to engage in the collaborative making of meaning and the pursuit of problems of personal importance.

I have been pursued by Polanyi for years, although I didn't realize it until relatively recently, and my paper "Beyond Subjectivism," which appears in this issue, makes no mention of him.

I see now, though, that, unbeknownst to me, his ideas had from the beginning crept into the research on epistemological development that my colleagues and I were engaged in. My earliest work, a longitudinal study of epistemological development Claire Zimmerman and I conducted among students during their four years at a women's college (Clinchy & Zimmerman, 1982; 1985), was inspired by William Perry's (1970) study of intellectual and ethical development among (mostly male) Harvard undergraduates.

Polanyi's philosophy had influenced Perry's thinking, especially with respect to commitment, but we paid little attention to commitment, and none to Polanyi, and the same has been true of other research descended from Perry's (e.g., King & Kitchener, 1994; Baxter Magolda, 1992). The four highest positions on Perry's scale, tracing the evolution of commitment, seemed irrelevant to our concerns. Almost none of our participants had reached such heights, and what did commitment have to do with the development of notions about truth and knowledge, anyway?

Everything, as it turns out, but Polanyi had to teach me that. And so, even though my co-authors and I allude to Polanyi's notion of "passionate knowing" in our 1986/1997) book, *Women's Ways of Knowing* [*WWK*] (Belenky, Clinchy, Goldberger & Tarule), I began to explore his work only when Dale Cannon, having read a paper of mine on "Connected and Separate Knowing" (1996), suggested that I might find Polanyi's ideas

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resonant with mine. He was right: I did, and I do.

David Rutledge, in an essay published in this journal, says that Polanyi "gives us a new axis or center around which to organize our understanding" (1998/99, 20), and this is precisely what he is doing for me, although I do not find him easy to read or to understand. I am no philosopher; I'm a developmental psychologist. That's what I know, that's what I do, that is my passion. I study cognitive development (especially epistemological development) from approximately womb to tomb, trying to see how notions of truth and knowledge evolve from early childhood into adulthood, and trying to identify experiences which seem to facilitate development and those which seem to inhibit it, both in and out of school. In the present essay, drawing largely, although not exclusively, on interviews with women, especially undergraduates, I explore some of the ways in which I am using Polanyi's concepts (or my no doubt primitive constructions of his concepts) to help me think about these issues.

Uncertainty

I was taught, and for many years I taught my students, that cognitive conflict was the engine of development. According to this model, we undergo cognitive growth when, for example, someone criticizes our position (using the procedure we call "separate knowing"), pointing out flaws in our reasoning, or offering an alternative argument, causing us to doubt our position and modify it. Now, no one would deny that cognitive conflict can be an impetus to growth. But two psychologists, Acredelo and O'Connor, have suggested a different model, citing Polanyi's (1960; 1966) view that, as they put it, "all new explicit knowledge must be preceded by a period in which there is only tacit foreknowledge, that is, a vague but rational hunch of the notion that is eventually constructed." They argue that it is this "vague uncertainty," rather than explicit cognitive conflict, that is the driving force in cognitive development, "the constant motivation for growth" (1991, 219).

I think Polanyi would take to this notion, but we developmental psychologists have not rushed to embrace it, partly, I think, because our methodology gets in the way. In our research we routinely force our participants to choose which of two conflicting answers to the problems we present is correct. For instance, in a classic Piagetian "conservation" experiment, after the child has agreed that two identical balls of clay contain equal amounts, the experimenter rolls one ball into the form of a snake, and asks if the two still are equal or if one now contains more clay than the other. The child is not invited or even permitted to express uncertainty. Acredelo and O'Connor and other researchers have found that when such experiments are redesigned, allowing children to express their uncertainties in a context that does not challenge them to "find the solution," the uncertainties emerge, and children begin to think out loud. Barbara Rogoff reports that in an experiment conducted by Subbotskii (1987) in a Soviet kindergarten, when teachers acted "like peers with the children (avoiding use of authority and demonstrating uncertainty and errors), the children's classroom activities became more creative and independent" (Rogoff, 1990, 175).

The uncertainty model of cognitive growth seems to fit the stories adult women tell in interviews concerning their educational experiences better than the conflict model does. For instance, in a project called "Education for Women's Development," which led to *WWK*, we asked each of the 135 women we interviewed (drawn from a broad range of educational institutions and social and economic backgrounds) to tell us about a powerful and positive educational experience. Only a handful mentioned an occasion upon which a teacher aggressively challenged their notions. They spoke instead of teachers who acted as midwives to their thinking. A college junior described her favorite teacher:

I felt that when she had something she wanted to get across, she *drew* it out of you. It's almost like the business of Plato and the little servant boy and the geometry problem. She sort of ultimately proves that you had it there inside of you, to discover it yourself, but it just needs that prompting.

In *WWK* we called this sort of pedagogical approach "connected teaching." Connected teachers use the approach we call "connected knowing," akin to Polanyi's "intellectual sympathy" which enables individuals to "listen sympathetically . . . to a doctrine they have not yet grasped" (1958, 151). They assume that the student's inchoate notions may make some sense. Apparently aware that their students "know more than they can tell" (to use a Polanyian phrase), they encourage them to articulate and develop their "tacit knowledge." The emphasis is on "making meaning" rather than assessing validity. Belief predominates over doubt.

Students cherish memories of classes like the one mentioned in "Beyond Subjectivism," in which the teacher, Barry Kroll tried to "endorse uncertainty" (1992, 97), to promote an environment of mutual trust, in Polanyi's terms a "convivial" setting in which students felt free to share the process rather than defend the products of their thinking. As Todd, one of Kroll's students says, "you mumble on and maybe somebody else can pick up what you mean by what you're saying. . . . It was okay for people to see I wasn't polished."

It is easier for students to express uncertainty (and for teachers to endorse it) when the material under study is vague, sparse, or ambiguous. In an interview, a student we call Marianne[1] tells us about a seminar on approaches to the study of art history she is taking during her senior year at a prestigious liberal arts college. She claims this is the first course she has taken in which "it's ever been presented" that there are no right answers. The teacher wants the students to emerge from the seminar "learning there is no right way to approach art," but committed to their own approaches: "If you were to approach art, how would you do it? You would have to make a decision and back it up with why."

We've all been discussing it and all of us have different opinions. But she's presented it so openly that the three ways that I think you should approach art and the three ways that she thinks she should approach art are quite different.

As in Kroll's course, the students engage in the collaborative construction of knowledge. The atmosphere is one of trust and acceptance, and the goal is understanding. Marianne says,

[Y]ou need discussion, because it's very vague. [It helps to] have people saying, "Well, do you mean . . .?", and somebody else saying, "No, I mean this . . ." It's clarifying. It's allowing everyone to voice things that they think are uncertain. It's allowing people to realize that they're not stupid for questioning things. It's okay to say, "Why" or "How" or "What." I think it's important to let everybody voice their uncertainties.

Dora, another member of the seminar, said that she had always felt contemptuous of "so-called discussion" in most of her courses. The students weren't talking with each other, she said; they were talking to the teachers, trying to show them how smart they were. (As one of our interviewees put it, "the purpose of class discussion is to show the teacher what we know.") But it was different in the art history seminar, Dora

says: "It was on Roman villas and they don't have a lot of information on that, 'cause most of the things have been destroyed. So talking was really important. That's what made that class." "Why was talking so important in that class?," the interviewer asked. "Because there wasn't really a lot of information that the teacher could say this is it. You just sort of — you built up your own ideas from what you read. And sort of, you know, battering it back and forth."

There is danger that such a discussion could deteriorate into mindless subjectivism, with everyone spewing forth their unexamined, unsupported intuitions, and nobody listening to anybody else. But that does not seem to be what's happening in the art history seminar. The students seem to be constructing knowledge: they speak of "backing up" their opinions, "building up" their ideas, "questioning things," and "battering back and forth" – taking steps, perhaps, toward Polanyian "acts of discovery."

Discovery

Polanyi describes the act of discovery as follows:

> It starts with the solitary intimation of a problem, of bits and pieces here and there which seem to offer clues to something hidden. They look like fragments of a yet unknown coherent whole. This tentative vision must turn into a personal obsession, for a problem that does not worry us is no problem; there is no drive in it, it does not exist. Indeed the process by which it will be brought to light will be acknowledged as a discovery precisely because it could not have been achieved by any persistence in applying explicit rules to given facts (1966, 75).

In one of our studies we asked students nominated by their professors as "complex thinkers" to tell us how they went about writing essays. These students do not speak of "applying explicit rules to given facts." The images they use are circular, rather than linear. Although (and in part because) their descriptions verge on the inarticulate, I think they sound remarkably like Polanyi's portrayal of the act of discovery. For example, Amy:

> You proceed out of confusion. . . . There's just sort of a sense of a mixing bowl where you sort of let — where you are confused and you don't have any solid or stable. . . . I think it's sort of like a whirlpool or something like that. Where you've got a lot of ideas ["bits and pieces"] zooming around, and you haven't yet affixed any of them to being right or wrong in your head yet or meshing with all the others. Things are still just sort of whirling around; then you start pulling them out and filtering things out and making sense out of them.

Similarly, Marie:

> A lot of it has been lots of passive and then "Boom!" all of a sudden something comes and really sticks, and I'm very active, and [then] lots of passive again, and then "Boom!" again. It's like I have to take in a whole lot and sift it all down. You know, put it all in a big sieve and sift it all down and the stuff that falls through I collect and start building with, and then "Wham!" – all of a sudden the right piece will fall into the sieve and something will be completed.

Claire Zimmerman asked students in her seminar on psychology and education to write papers about how they went about writing papers. One student described the process this way:

> When I receive a written assignment, there is an initial floating period in which I continue my day-to-day affairs (other class work, taking showers, eating meals, etc.), while remotely playing with the paper's topic in my head. At this stage, there is no sense of organization or even of existence to my thought processes; if anyone asked about my paper, I might answer, "I haven't even thought about it yet." But of course, I have.

In time, this student moves into "an intense writing mood" which "is just a very abstract feeling of self-confidence and a sense that I am ready for sustained introspection and analysis." Notice that, like Polanyi, she speaks of "self-confidence," but not "certainty." She chooses to write in her own room, her own personal space, rather than in the library: "There's something about the stark barrenness of those plain wooden carrels that is just too empty; perhaps I need to be more aware of my own individuality." Throughout this process, the student struggles to resist. "The guilt which can occur when I compare my progress in an assignment with that of my classmates or my own expectations." The voice of the culture, ingrained in her own conscience, seems to urge her to abort this lengthy indwelling and get that something down on paper, but she resists. "It's my way of working," she says.

Personal Knowledge and the Suppression of Subjectivity

The "ways of working" all three of these students describe seem to me similar to Polanyi's notion of "personal knowing," involving, as Newman says, the "immersion of [their] whole persons in that which [they] are seeking to know" (2002-03, 63). In a passage of profound importance to me, Polanyi defines the personal as "neither subjective nor objective."

> In so far as the personal submits to requirements acknowledged by itself as independent of itself, it is not subjective, but in so far as it is an action guided by individual passions, it is not objective either. It transcends the disjunction between subjective and objective. (1958/ 1964, 300)

I am enormously grateful to Polanyi for his distinction between the personal and the subjective, but I find his treatment of subjectivity occasionally unduly dismissive, as when he refers to "subjective states, in which we merely endure our feelings." I argue that some integration of subjectivity and objectivity is necessary as a basis for personal knowledge, that the suppression of either makes the development of personal knowledge difficult. In particular, I am concerned about the degree to which students report that they deliberately exclude all signs of subjectivity from their work. For instance, in an attempt to meet what they perceive as the utterly impersonal standards of the academy, they delete themselves from their essays, manufacturing arguments in favor of positions which they do not believe but can successfully defend against the doubts of authorities. A college sophomore told us, for instance, that in art history it was always easiest for her to write papers about paintings she "didn't like," because then she could be "objective" about them. She said, "I didn't ever abhor a painting that I did, because that would have been just as bad as doing one that I really liked. Just – just one that I wasn't particularly crazy about." In the course of her "education," this student has learned, as the philosopher Sara Ruddick did, to "think about things [she doesn't] care about."

Judy, an eighth grader participating in a project on girls' development directed by psychologist Carol Gilligan, had already concluded that the things you learn in school have nothing to do with believing. "You have to know about them," she says, "but you don't have to believe them to get a good education." "Feeling and knowing, she says, are two different things. . . . The knowing sort of comes from the brain, like your intelligence . . .. Like your smartness, your brightness, your education part." Judy distinguishes between this brain, her "education part" and (pointing to her stomach) her "mind," which involves "a deeper sort of knowing" that is related to feeling and unrelated to education (Brown & Gilligan, 1992, 137).

Catherine, a sophomore, said to the interviewer, "When I write a paper I just think of one position that I can just totally stand by and give support and then write on that. It's not that I believe in it. It's not as if I believe in it or support the idea. It's just easier for me to write on." The interviewer asked Catherine what she would do if she disapproved of nuclear power and the company she worked for ordered her to write a report in favor of it. "No problem," she said. "I'd write the report. I figure I can always go to anti-nuclear rallies. If I've come to the decision that I'm against it, then just saying I'm in favor of it would never change my ideas."

I fear that I have often colluded with my students in their attempts to suppress subjectivity – (to listen to their "brains" and keep their stomachs out of it) by presenting them with problems which can be solved by "applying explicit rules to given facts" – problems which may or may not "worry" them and thus may or may not "exist" for them; more often than not, I suspect, they don't. Students leave messages on my answering machine: "I'm working on *your* paper . . .." "It says in *your* notes . . .." And, worst of all, "What do you want . . .?"

Two philosophers, Sara Ruddick and Alice Koller, have provided eloquent accounts of how, in the course of their years of formal education, culminating in PhD's from a highly prestigious institution, they learned, in Ruddick's words, to "avoid work done out of love." "My intellectual life," she says, "became increasingly critical, detached, and dispensable" (Ruddick, 1977, 136). "Academic custom dictated," Koller says, that she avoid the first person singular in her dissertation; instead, she was to say "We have seen that . . ." and "We must conclude that . . .," phrases which "conceal any hint of the scholar's individuality." In the thesis she played devil's advocate with herself, "thinking up the strongest possible arguments against my own position" (1990, 53). The idea was to construct an argument "so soundly based that anyone can retrace your steps and arrive at your very same conclusions. If your own personality were to intrude, the impartiality you're aiming for might be tainted. Your ability to persuade might be charged, not to the strength of your argument, but to the power of your big blue eyes" (56-57). I shall return to their story later in this essay.

Apprenticeship

Presumably, Ruddick and Koller underwent some sort of apprenticeship during their graduate studies, and both acknowledge the value of the traditional philosophical knowledge and skill they had acquired. But for them, something seems to have been missing. According to Polanyi, because "the methods of scientific enquiry cannot be explicitly formulated," they "can be transmitted only in the same way as an art, by the affiliation of apprentices to a master." While acknowledging that "the authority of science is essentially traditional," Polanyi insists that it is "an authority which cultivates originality" (1969, 66). Neither Ruddick nor Koller would claim "originality" for their graduate work, if originality includes the right to challenge the existing paradigm. Their training, heavily tilted toward separate

knowing, taught them to doubt, but did not help them to believe; it did not prepare them for committing "acts of discovery." Their dissertations speak in utterly impersonal terms, and perhaps the relationship to their masters was also relatively impersonal. This is not Polanyi's conception. For him, apprenticeship involves "close personal association with the intimate views and practice" of the master (Polanyi, 1946, 43).

Polanyi sometimes pictures apprenticeship as a relationship between a learner who possesses extraordinary gifts and a "distinguished" master (1946, 43), and David Rutledge seems to see the personal relationship between master and apprentice as "crucial" only at "higher levels of learning" (1998-99, 25). But a growing number of "cultural psychologists" portray cognitive development in ordinary children as taking place, in Rogoff's words, through an "apprenticeship in thinking," the title of her seminal book (1990). Learning a culture, as these psychologists describe it, is very like learning the premises and practices of a discipline, as Polanyi describes it. Children are seen as "active in their efforts to learn from observing and participating with peers and more skilled members of their society, developing skills to handle culturally defined problems with available tools, and building from those givens to construct new solutions (1990, 7).

Rogoff defines apprenticeship as "guided participation," indicating that "both guidance and participation in culturally valued activities are essential," and she is aware, as is Polanyi, that "guidance may be tacit or explicit" (1990, 8). Guided participation involves "intersubjectivity," "a sharing of focus and purpose between children and their more skilled partners." Like Polanyi, Rogoff perceives apprenticeship as a personal relationship "involving cognitive, social, and emotional interchange" (9). I share the view of Rogoff and other cultural psychologists that such a relationship is crucial to "lower" as well as "higher" levels of learning, that it is sharing the process of knowing "as it happens," in Rutledge's felicitous phrase, that "makes genuine knowledge possible" (1998-99, 25).

Given the criteria for promotion and tenure that prevail at many educational institutions, it takes a sort of Polanyian "confidence" for us teachers to exhibit our faltering efforts at "making meaning" in front of a class, to dare to share the process (as well as the products) of our thinking, to act on the assumption, as Todd puts it, that we "don't always have to be polished." Peter Elbow, a writer and teacher of writing, reports that it was only after years of effort (assisted, perhaps, by his reading of Polanyi) that he became "willing to dignify and take seriously the fecundity of the inarticulate, to trust that my grunting and my fishing around are in fact getting at something. Only when I do that, both for myself and for my students, do I sense that I am getting progress" (1988, 8).

According to Lev Vygotsky's (1981) widely-accepted theory, cognitive development will occur only when apprentices participate in activities slightly beyond their current competence, within their "zone of proximal development" or "zpd." The most appropriate tutor is someone at a slightly more advanced level than the tutee. It might be a four-year-old child or an illiterate peasant or, as in Polanyi's illustration, a "distinguished master" directing an extremely "gifted" learner. Among our undergraduate interviewees, especially at Wellesley, the women's residential college where I taught, these everyday apprenticeships often took the form of informal tutelage from a somewhat more sophisticated peer, usually a friend. Jill, a junior English major at Wellesley, tells a story that illustrates the process.

Asked to describe "a good paper" she had written, Jill recalled one she had done in her freshman year for an introductory art history course. It was five o'clock in the morning, she had just finished writing the paper,

it was due the next day, and a friend was typing it. Jill knew that it was "a shitty paper," and the typist confirmed her opinion. Unable to see "how to get out of it," Jill sought the help of a friend, Sonia, a sophomore planning to be an art history major who, she said, had been "mothering" her through the course. Sonia read the paper and burst out laughing. "So for about ten minutes,"Jill said, "I wanted to kill Sonia, and kill the girl at the typewriter, `cause it was clear that this whole thing was going to have to be rewritten."

> And together, Sonia sat down with me and talked it through – You know, "This is where you went wrong, you went off on this tangent," and helped me write the things more tightly, and then it turned out it was a good – it was a <u>very</u> good paper.

> Now, I look back on that experience – first of all that people would be willing to stay up with me that late to do something like that, and then the fact that then we went through it together – meant, not only meant a great deal to me from an emotional standpoint, but the fact that I – I was learning something, that it was a peer that was teaching me, and that we were taking time out to do it together.

> That was one of the best experiences I've ever had, because *it was something that I had got on my own – well you know, or with a friend*, completely out of classes, completely out of the books.

For Jill, "getting it" with a friend is indistinguishable from getting it on one's own. Rogoff would agree: knowledge, in her view, is always co-constructed: in thinking about cognition "we must suspend our assumption that the basic unit of analysis is the individual" (1990, 209). Although an increasing number of developmental psychologists share this view, the dominant model remains individualistic, both in psychological research and in educational practice. In evaluating students' work, for instance, the basic unit of analysis is nearly always the individual. Since only Jill's name appeared on her paper, the teacher no doubt assumed that it was "her own work," which, of course, in Jill's mind, it was. Jill herself doesn't remember what grade she got, and she doesn't care – she knows, by her own criteria, that "it was a <u>very</u> good paper" – but, two years later, she remembers the experience vividly, and she remembers the painting "inside out": "It was *Bal á Bouganville*, by Renoir – the two dancers, and they have lilacs on the ground, and sort of wispy people in the back."

Connected and Separate Knowing, Believing and Doubting

As I say in "Beyond Subjectivism," the two procedures we called connected and separate knowing were built on Elbow's (1973) notions of the Believing Game and the Doubting Game. In that essay I describe how Claire Zimmerman and I first encountered what we came to call connected knowing while looking for evidence of Perry's Position 4, which involves critical thinking. Because at the time we equated "uncritical" with "unthinking," it took us a while to see that when a student said that in reading a philosopher she tried to "think as the author does," she might be really thinking. Elbow helped us to reinterpret such comments as indicating an active effortful attempt to understand, very like what Scott calls "imaginative sympathy," which she sees as akin to Simone Weil's "creative attention" (Scott, 1985, 73). As a way of "teaching" the procedures, my *WWK* co-authors and I have asked participants in our workshops to play each game, following "rules" we constructed for doubting a given position (e.g., "Look for flaws in the reasoning" and "Offer opposing views") and for believing one (e.g., "Look for what's right about it," "Try to share the experience behind it"). In our

experience women frequently do conceive of doubting (separate knowing) as a game, and they are willing – if not always eager – to play it, but, as we said in *WWK*, "believing feels real to them, perhaps because it is founded on genuine care" (113), and they object to treating it as a game.

Elizabeth Sargent agrees, entitling her powerful essay "Believing Is Not a Game" (2002). Sargent takes Elbow to task for presenting belief and doubt as "a balance of opposites . . . equally important both necessary and balancing each other" (109). This is how we treated connected and separate knowing, but Polanyi has convinced Sargent, and he and she have convinced me (and also Elbow, I'll bet) that, **"**belief is prior, is the root of all knowing, is the essential power of the mind" (Sargent, 2002, 108), that "while doubt has an essential role to play, it is always a subsidiary, dependent, secondary role. It can test what believing has made or discovered, but it can never make or discover anything on its own" (Sargent, 2002, 109). From this perspective, connected knowing is prior to separate knowing. It all seems so obvious now. How can you look for flaws in a position you have not yet grasped? Perhaps we were so determined to show that connected knowing was a respectable way of knowing, "as good as" separate knowing, that it never occurred to us to conceive of it as in any sense "better," more important, "prior."

So believing is not a game, and connected knowing is not just a game, and maybe – it now occurs to me – maybe it's not a procedure, in the usual sense, in the sense that separate knowing can be. Designing rules for the Doubting Game was easy: "look for flaws in the argument" and "think of exceptions to the statement," for example. But we found it very difficult to formulate specific rules for Believing. "What do you mean, 'Share the experience'?," our participants complained: "How?" Our rules for believing seemed to them more like goals than strategies for reaching a goal. I was reminded of my experience in teaching a course on "Research Methods in Developmental Psychology." The textbook I assigned in that course spelled out clear instructions for ensuring and testing the validity of data collected in an experimental study. It had little to say about how to come up with a researchable problem of personal significance. As Esther Meek says, "Nobody seems to want to talk about *how* you form a tentative hypothesis" (2003, 63). We didn't talk about it much in that course. We didn't know how to, and anyway it would have taken too much time.

There is another sense, too, in which connected and separate knowing are not "balancing opposites." Connected knowing, it seems to me now, is a more *complex*, more heterogeneous approach than separate knowing: it employs both thinking and feeling, both deliberate effort and, often, a kind of patient, relaxed, receptive attitude, relying on both tacit and explicit knowledge; it has a dual focus, oriented both inward and outward, searching the self as a source of "clues" for grasping the reality of the other – "projection in the good sense," as Elbow puts it.

In these respects, as well as in its "believing" orientation, connected knowing bears some resemblance to Polanyi's "personal knowledge." I think there must be some relation between the two, but I don't know how to define it, partly, I think, because I don't fully understand Polanyi's notion of personal knowledge. Sometimes, he seems to equate it with Commitment. For example, he says, "Personal knowledge is an intellectual commitment" (1958, vii), and "Such granting of one's personal allegiance is – like an act of heuristic conjecture – a passionate pouring of oneself into untried forms of existence" (1958/1964, 208). The many humbler, transitory instances of connected knowing clearly do not, especially those involving the knower's self-interest, as, for example, when a lawyer examines a potential juror in order to determine how he might interpret a defendant's story. Indeed, few of the instances of connected knowing that we have recorded rise to the level of the sort of personal commitments to science that Polanyi describes and I. I. Rabi

experienced. For Rabi, science was nothing like a game. In an interview he said,

> Some physicists say that physics is fun. I always hated the idea that it was "fun." . . . I have
> always taken physics personally. . . . It's my own physics, within my powers. It's between
> me and nature. . . . You must feel the thing yourself – feel that it will change your outlook
> and your way of life (Bernstein, 1975, 53, 64, 108).

Sara Ruddick and Alice Koller also arrived at personal commitments, although not until they had escaped from the academy. Ruddick's transformation came about through immersion – intensive indwelling – in the works of Virginia Woolf. This reading, unlike the dissertation work, began as a sort of "play." Unlike the dissertation, it had no instrumental purpose; it was "completely divorced from public ambitions or expectations."

> Insofar as I brought problems to my reading, they were personal – connected with my sense
> of aging and death, with an interest in women and feminism, with my earliest love for my
> mother and fears for her death. Indeed, I was more than a little in love with Virginia Woolf
> herself (1977, 136).

Like a Polanyian act of discovery, Koller's project, an essay on Plato's *Euthyphro*, began with "an intellectual problem [which] had been nattering at me for years" and had become an obsession; "I had to resolve it." The paper had no purpose "other than the sheer doing of it," she says, and for the first time, she found herself "loving [her] work for the work's sake" (1990, 102). These two women's "discoveries" may seem paltry in comparison with Rabi's – they will win no Nobel prizes – but, like his, they are transformative: "The change," Polanyi says, "is irrevocable. . . . Having made a discovery, I shall never see the world again as before. My eyes have become different; I have made myself into a person seeing and thinking differently" (1958, 143). Through her immersion in the works of Woolf, Ruddick found herself learning to think and feel in new ways. "For the first time in years," she writes, "my mind was truly alive, truly mine" (1977, 144). Once so careful to "avoid work done out of love," she says, "I now care about my thinking and think about what I care about" (1984, 151). Koller's experience in writing the *Euthyphro* paper was equally transformative. "Doing it, and completing it," she says, "marked for me the turning point from which thereafter I thought of myself as a philosopher . . .. Finishing [it], I knew that I was a philosopher and would be one ever after" (1990, 54).

The stories Ruddick and Koller tell suggest that, while connected knowing is not synonymous with personal commitment, it can pave the way for it, may even be a prerequisite for achieving it. Through marriage and child rearing and her study of Woolf, Ruddick says, she learned "new ways of attending . . . to people, especially children. This kind of attending was intimately concerned with caring; then I found myself watching more carefully, listening with patience, absorbed by gestures, moods, and thoughts. The more I attended, the more deeply I cared" (1984, 151). Ruddick began to question the philosophical ideal of detached and abstract reason which had controlled her intellectual life for years. "Reason was failing me," she writes, "as a lover, mother, and citizen. . . . I needed to act on passion and be responsible to love" (1989, 8). Still convinced of the value of reason, but rejecting the version she had been taught (signified by a capital "R") she asks herself,

> If I could not reject Reason, could I honor Reason differently? If I could no longer serve the
> Reason I had known, was it possible to reconceive a reason that strengthened passion rather

than opposing it, that refused to separate love and knowledge? (1989, 8).

Koller's first venture into connected knowing occurred with respect to a dog named Logos. She had adopted Logos as a means of protection, but, finding herself without need of protection, Logos "caught [her] attention as himself," and she found herself "trying to see the world from his point of view" rather than in terms of her own needs (1990, 49), "caring for Logos for his own sake, rather than repaying him for what he was doing for me" (101). In time, she began to do the same with people. Although earlier, she says, "comprehending another person's purposes was all but impossible for me, I now grasped with equal perspicacity the purposes of other persons" (102). Finally, "Loving my work for the work's sake, loving another person for the person's sake: each of these facets of my life germinated and flourished, starting with the seed that was my commitment to Logos" (1990, 102).

> Writing the *Euthyphro* paper was the first time I had used my philosophical knowledge and skill to do something philosophical for its own sake. My unremitting absorption in it for all those days without being paid to do it, without even the promise that it would be published, gave me the exemplar for doing something for its own sake in my work, in my professional life. It matched the exemplar I already had at hand in my personal life" (1990, 54).

While Rudddick and Koller use the word "commitment" in describing their experience, more often – repeatedly, in fact – they speak of "love." (So far, I've found no references to love in Polanyi's work.) Could "love," be seen as a manifestation of personal knowledge, of commitment? Clearly, as these two women define it, love "transcends the disjunction between subjective and objective" (Polanyi, 1958/1964, 300). Are women more likely than men to conceive of commitment in terms of love? In "reconceiving reason," Ruddick asked herself, "were there alternative ideals of reason that might derive from women's work and experiences, ideals more appropriate to responsibility and love?" (1989, 9). She answered the question by developing the concept of "maternal thinking" (1989), a way of thinking that grows out of the "discipline" of maternal practice, but is relevant to issues well beyond child-rearing (See *Maternal Thinking*, 1989). Koller had no children, but her relation to Logos has a maternal sound to it: "taking-care-of" him turned into "caring-for" him, she writes, and loving one's work means "caring-for" work, as well as for pets and people (1990, 60).

I have paid little attention to the relation between gender and epistemology in this essay, although it is true that such a relationship exists, at least in some populations, with males being more oriented toward doubt, as represented by separate knowing, and females more oriented toward belief, as represented by connected knowing. This being so, it is possible that if women had had the power to reframe philosophy and reconstruct education, they might have assigned higher priority to belief than to doubt, and placed more emphasis on the making of meaning than the testing of validity. But, as both Polanyi and Perry demonstrate by the positions they take on these issues, it is clear that the two modes are not gender-exclusive.

In the early days of our research, as I confessed at the start of this essay, Claire Zimmerman and I largely ignored Perry's ideas about the development of Commitment. At the time we were narrowly focused on constructing specific criteria for coding our interview data in terms of epistemological position, and since none of our undergraduate participants seemed to have much conception of commitment, we didn't need to know how to code it. Today, I find this shocking. After all, we were teachers as well as researchers, and we both cared deeply about education. Why did we not ask ourselves *why* so few so few of our students had reached a position of commitment, what sorts of educational practices might facilitate its development? In a passage

near the end of his book, Perry offered a kind of answer, urging educators to supply "a certain openness – a visibility in their own thinking, groping, doubts and styles of Commitment," and he "enjoin[ed]" on them "the duty of confirming the student in his community with them (a membership he achieves at the very least as an apprentice or colleague-to-be) through his own making of meaning, his daring to take risks, and his courage in committing himself." Perry thought this was rare: "How usual, for example, is the student's experience that his paper has been read with primary attention to his meaning and only secondary attention to establishing his grade?" (1970, 239).

I like to think that sometimes I (unwittingly) followed Perry's advice during my teaching career, but I wish I had done so more frequently and more deliberately. One such missed moment comes to mind. Claire and I were team teaching an introductory psychology course which involved lecturing to some two hundred students in a large auditorium. Students rarely spoke up under these circumstances, but one day a brave student raised her hand in the midst of my lecture on Piaget to ask a question. "Mrs. Clinchy," she said, " you do the lectures on Piaget and child development, and Miss Zimmerman, you do the ones on Freud and personality and all that. Why is that? I mean, does one of you just *like* Piaget and the other one just *like* Freud?" I remember being stunned by the student's audacity in interrupting my lecture to ask such an inappropriately personal question, but I quickly recovered, shifting into researcher mode, smiling tolerantly to myself at the student's epistemological innocence: she seemed to be a subjectivist, since she thought we might be choosing our areas of interest on the basis of sheer "liking." I don't remember what I said. I think I said that it wasn't a matter of "liking," and maybe I stuttered something about "reason," but, as fast as I could, I hustled back to the security of my lecture notes.

If I could rewrite that episode today, I'd toss those lecture notes aside, and Claire and I would reminisce, mumbling along together as best we could, trying to reconstruct the evolution of our own (capital C) Commitments to the issues in human development and personality that "obsessed" us. I'd say to the students that although it wasn't just a matter of "liking," it wasn't just "reason," either – at least not the sort of impersonal reason Ruddick spells with a capital R. It was a form of reason that incorporated love. I'd confess to being "a little in love" with Piaget, and I'd talk about the ways in which my experiences as a mother had helped me to understand (and sometimes to challenge) his ideas, and I'd explain, with concrete examples, how his work had caused me to observe my children more carefully and respond to them more sensitively.

Claire and I might try to explain how the research in epistemological development that we were currently conducting grew out of the frustration we felt as teachers when our students had trouble understanding the material we were presenting. We might go on to describe that research, what we were trying to find out and why the answers mattered to us. (Some of our colleagues would no doubt find it shocking that we were revealing the nature and purposes and even the preliminary findings of our project to students who might well be presently participating in it and would no longer be "blind" to our hypotheses.)

Of course, developmental epistemological theory predicts that, if we were correct in assuming that most of the Psychology 101 students were still at a subjectivist level, they would be unable to fully grasp the stories we were trying to tell, Commitment being well beyond the capacity of their zpd's. But I like to think that some bits of the experience might remain in their memories (as the actual event remained in mine), to be puzzled over from time to time, and one day drawn upon, perhaps, when issues of commitment loomed large in their lives. I hope so.

Endnotes

[1]All research participants' names have been changed

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