home sphere to the public, commercial, and standardized sphere. [24] Furthermore, weaving requires intricate skills as threads are brought together to make whole cloth. The cloth while functional on its own, also serves as a history of its construction. It records the decisions of the weaver in terms of weight of yarn, patterns of weaving, changes in weft yarn, and tightness of the weave. Thus, weaving is an appropriate metaphor for the task before me, interlacing feminism and pragmatism into a strong, functional, and cohesive whole.

Tales are narratives of a series of events just as weavings are temporal records of weft thread introduced into the continuing strands of warp threads. In this chapter, the order in which I introduce feminist writings will create a tale of the intermingling of gender and technology and pragmatism. For now, I will look at the more general issues of gender and technology in a feminist -pragmatic framework. In this chapter, I draw on my concerns for a materialistic world outlined in the first chapter as I bring the pragmatic ethos of the second chapter into service.

The tales I tell are built on the weft strands of control of nature (and the natural body), gendered experience, transactions of bodies and tools, loss of bodies, and organic holism. Taken together, they form a synthesized theory, "a holistic feminism". Chapter 4 steps back to examine web based instruction (WBI) as it is now practiced. Chapter 5 raises the issues of possibility: what could be if holistic feminism were applied to form sustainable technology.

Pragmatic Feminism

This section introduces pragmatic feminism. The first part is a brief historical review of where pragmatic feminism fits with its kin, feminism and pragmatism. A lengthier section is an ideological discussion of how pragmatic feminism helps with the weft issues I raised in chapter one including control of nature (and the natural body), gendered experience, transactions of

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[24] Weaving is not alone among the skills that transitioned from the home to the commercial sphere and in so doing were deskilled and had their gender affiliations changed. Think of the cooking crafts and midwifery as pertinent examples.

bodies and tools, loss of bodies, and organic holism. Finally, I expand on these themes to develop my own synthesis of feminist pragmatism.

What does pragmatism do for feminism, and what does feminism do for pragmatism? Can we have a happy and productive melding of the two? The amalgamation of an anti-foundationalist ethos, pragmatism, with a highly pluralistic discipline, feminist theory, must produce a wide range of results. There are so many possible combinations of feminism and pragmatism that it is unlikely that discussion of feminism and pragmatism, once initiated, will soon end. Several researchers have begun this investigation. (a partial list includes Duran, 1993; Hart, 1993; Kaufman-Osborn, 1993; Keith, 1999; Leffers, 1993; Pappas, 1993; Rooney, 1993; Scheckler, In Press; Seigfried, 1993a; Seigfried, 1996, 1998a). Dewey contributed to early thoughts on feminism and pragmatism when he defended co-education in the <u>Ladies Home Journal</u> (1911).

<u>A Brief History of Pragmatism and Feminism</u>

It is likely that Jo Ann Boydston first raised the issue of pragmatism being a supportive philosophical ally for feminism in her paper "John Dewey and the new Feminism" (1975). Here she said, "It is well known that John Dewey was the philosopher of the common man. It is not as well known that he was also the philosopher of the common woman" (Boydston, 1975, p. 441). Boydston draws from Dewey's extensive correspondence with Scudder Klyce, a retired engineer-mechanic. These letters reveal Dewey's opinions on women and feminism that were not part of his published work. Dewey publicly supported women's suffrage, and co-education, but his letters to Klyce address a far broader range of feminist issues including division of labor, double standards, and women's changing roles over her lifetime. Dewey consistently opposed Klyce's stereotypes and generalizations about women. Although, I would have rather seen some of these opinions in Dewey's public record, there is the assurance that these words favoring women's rights were genuine. However, Dewey, in his written works, clearly made the distinction

between roles imposed on women by cultural patterns and the far more equitable role that women could and should perform (Dewey, 1902). This stance is consistent with his understanding of essence as stable but mutable and anticipated the much later woman's' movement that followed Dewey's death.

In the 1980's there were a few papers looking at Dewey in terms of a feminist pedagogy of education (Miranda, 1980; Sherman, 1984). Susan Laird followed up on this work and that of Jane Roland Martin's work on co-education with her own interesting analysis of women and education (Laird, 1988). This paper pointed out some inconsistencies and ironies in Dewey's support of coeducation that could have served as a launching point for more scholarship on feminism and pragmatism. Laird clearly shows inconsistencies between Dewey's <u>Ladies Home Journal</u> article and the practices in his laboratory school at the University of Chicago. While both the article and the school ostensibly support co-education, Dewey presents a much more conservative view in the <u>Ladies Home Journal</u> article. The article, ironically written for women, suggests that the mere presence of women, in an educational setting, is sufficient to ensure equal opportunities for women. Later studies in feminist pedagogy (Maher & Tetreault, 1994; Rosser, 1995; Rosser, 1997) confirm Laird's intuition and analysis of Dewey. In particular, Sue Rosser (1997, pp. 3-4) presents a linear progression of feminist pedagogy where stage 2 or 3 out of six represent the co-education promoted by Dewey in 1911. As critics of Laird point out, she calls Dewey to task for work that had not yet been published (Seigfried, 1996, p.283 n.37). My reading is that she was criticizing the inconsistency between his public record and his private practice, a rather unpragmatic practice (Laird, 1988, pp 112-115). Laird also points out that the women who ran Dewey's laboratory school, including his wife, Alice Chipman Dewey, practiced and espoused a different kind of co-education. This practical pedagogy included disruption of stereotypes about what women and men can do rather than just accepting the presence of women in the academy as equity (Laird, 1988, pp. 120-121). Several years later Laird wrote a response to the critics of her earlier paper (Laird, 1995). This paper stands alone as an excellent analysis

of co-education, both past and present. In this paper, Laird talks about the many meanings implied by co-education. She particularly emphasizes the Deweyan concept of co-education's necessity for democracy. Although the paper proper does not address criticisms to her earlier paper, some of the footnotes reveal her pain at being misread (Laird, 1995, p. 209 n.2,3,7). Other papers in the 1980's include Lisa Heldke's comparison of John Dewey and Evelyn Fox Keller (Heldke, 1987).

Most studies in feminist-pragmatism have originated in the last ten years. Nancy Fraser analyzed the work of Richard Rorty in 1989 with the "aim … to rescue the possibility of another pragmatism -- a democratic-socialist-feminist pragmatism -- with another understanding of the relation of theory to practice" (Fraser, 1989, p. 6). She attempted to close dualisms of public and private, social and political, theory and practice that she saw Rorty re-introducing into his work. This paper represents the first of several feminist critiques and responses to Rorty (e.g. see Bickford, 1993; Fritzman, 1993; Kaufman-Osborn, 1993). Fraser responded to Rorty's presentation of the Tanner Lecture at the University of Michigan (Fraser, 1991; Rorty, 1991) in 1990 in a similar vein to her 1989 paper. Here, she accused Rorty of " a surprisingly dichotomous view of cultural and discursive space" (p. 261). Fraser is protesting Rorty's public versus private dualism, an integral part of his neo-pragmatism. Rorty caused another flurry of responses when his 1991 piece was reprinted in <u>Radical Philosophy</u> (Skillen, 1992; Wilson, 1992). Other publications about feminist-pragmatism in law and literary theory appeared in the early 1990's (Seigfried, 1996, p. 3).

Seigfried's 1990 paper at the Society for the Advancement of American Philosophy (SAAP-reprinted in <u>Hypatia</u>) questioned the absence of pragmatist feminists and feminists pragmatists from the ranks of philosophers (Seigfried, 1991b). This paper motivated a plenary symposium at the 1991 SAAP conference, later published in the <u>Transactions of the Charles S. Pierce Society</u> (Gatens-Robinson, 1991; Miller, 1991; Moen, 1991; Seigfried, 1991a).

By far, the most prolific writer on feminism and pragmatism is Charlene Haddock Seigfried (1991a; 1991b; 1993a; 1993b; 1996; 1998a; 1998b; 1998c). Although Seigfried calls her work "preliminary and descriptive," she has done the most thorough exposition of feminist - pragmatism to date. In her several essays, edited volume, and book on feminism and pragmatism, Seigfried points out the absence of pragmatists writing about feminist issues (or racism), and the absence of feminists who use pragmatism. Seigfried's work also discusses female philosophers such as Charlotte Perkins Gilman, Jane Addams, Elsie Ripley Clapp, Ella Flag Young, and Lucy Sprague Mitchell, recalling their unheralded contributions to pragmatism. A special issue of Hypatia, edited by Seigfried in 1993, remains one of the most interesting sources on feminism and pragmatism (Duran, 1993; Hart, 1993; Kaufman-Osborn, 1993; Leffers, 1993; Pappas, 1993; Rooney, 1993; Rorty, 1993; Seigfried, 1993a; Upin, 1993). [25]

Seigfried's "intent is to sketch out a research program sufficiently promising to be further developed and revised by others" (Seigfried, 1996, p.5). Indeed others have taken the challenge explored and promoted by Seigfried. In addition to Seigfried, the most prolific writers on feminism and pragmatism are Timothy Kaufman-Osborn, Shannon Sullivan, and Nancy Fraser. Kaufman-Osborn's most recent work lies at the intersection of technology, gender, and politics (1997). This book, The Creatures of Prometheus, is a lucid and entertaining discussion of quotidian experience and the Cartesian paradigm. I will return to specific examples from this book in a later section of this chapter. Sullivan is completing a book about feminist pragmatism from the standpoint of the body and I return to her writings later in this chapter (2001) [26]. Other recent writers on feminism and pragmatism include John Capps (1996), Mary B. Mahowald

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[25] The largely unnoticed work of Marjorie C. Miller (1992) is a self-proclaimed and interesting rediscovery of a classic philosophy in its approach to the problematizing of experience, the critique of "reason", and the conception of philosophy.

[26] Shannon Sullivan generously sent me a pre-print of chapter six in her forthcoming book, which is a discussion of feminist standpoint theory in her unification of subject and object.

(1997), Nancy J. Holland (1995), Barbara Thayer-Bacon (Thayer-Bacon, 1997), and Kathleen

Knight Abowitz (1999). Abowitz's paper investigates a growing dualism between difference and

communities of learning. This duality relates to the public/private split that Rorty promotes.

Pragmatic-feminism views knowers as functioning in communities rather than as atomic

individuals (Johnson, 1993; Rooney, 1993). This forges a link between social constructivism and

the desire of many women for caring connection (Belenky, Clinchy, Goldberger, & Tarule, 1986;

Gilligan, 1982; Phelan & Garrison, 1994). There are also conjunctions between this concept and

situated cognition (Brown et al., 1989) in that both insert knowing into a community of knowers.

The community then becomes the situational context. My work here enlarges the community as

the situational context into the organically holistic environment, which includes the community

as well as its biological and ecological adjuncts.

Revisiting the weft

My goal is to add to this important work with particular attention to issues raised in

Chapter 1. Again, these issues include control of nature (and the natural body), gendered

experience, transactions of bodies and tools, loss of bodies, and organic holism. In this section, I

discuss the intersection of pragmatism and feminism for my purposes as stated above. I then

develop these intersections further. I do this by situating these cusps inside stories of

motherhood, biology, and teaching in order to "flesh" them out into embodied experience and in

order to develop my own analysis of feminist pragmatism. Keep in mind that despite my ability

to articulate a set of issues arising from commercial images of the tools of WBI, these discrete

topics represent the larger problem of the tension between certainty, safety, and control versus a

holistic worldview. Thus while I frequently discuss the parts as separate entities, all the previous

discussion of organic holism applies and I must often step back to look at things holistically and

continuously rather than materialistically and atomically.

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<u>Starting with Seigfried</u>

A brief description of pragmatic feminism in Seigfried's book (1996) characterizes it as a feminism that starts with women's experience, which adopts a holistic approach to this experience, and looks at feminism as an interdisciplinary enterprise. Feminist pragmatism is a pragmatic philosophy that recognizes the oppression of women and has as one of its major goals the emancipation and empowerment of women as well as the amelioration of other oppressive social conditions. Some of the more obvious intersections between pragmatism and feminism are: paying attention to consequences, recognizing how action arises from interest, a concept of social morality, desire for connection/community, recognizing the value of experience, attention to unifying dichotomies, and attention to aesthetics (Seigfried, 1996).

Seigfried sees pragmatism as marginalized for the same reasons that many feminists would currently find it appealing (1996):

> These include early and persistent criticisms of positivist interpretations of scientific methodology; disclosure of the value dimension of factual claims; reclaiming aesthetics as informing everyday experience; linking of dominant discourse with domination: subordinating logical analysis to social, cultural, and political issues; realigning theory with practice; and resisting the turn to epistemology and instead emphasizing concrete experience (p. 21).

An alliance between pragmatism and feminism is one between two rebels that reject dominant power hierarchies. Feminism tries to break free of patriarchy. Pragmatism is a response to the hold of dominant strains of thought such as analytical philosophy and logical positivism. Both pragmatism and feminism suffer from the blight of perceived "softness" as evinced by their attention to the aesthetic, affect, and the body. This puts both pragmatism and feminism in a double bind of having to use tactics that seem to endorse certainty and foundationalism in order to get exposure. An affiliation between feminism and pragmatism functionally involves

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dependence upon common tools and common goals. The tools they both invoke are social ethics, contextualization, and merging of theory and practice. Their goals include melioration, pluralism, and diversity. Often the tools and the goals become entwined, interchanged, and modified by each other and thus defy separation.

Seigfried presents a compelling case for Dewey's involvement in feminism as well as highlighting areas where he was surprisingly silent or unsupportive of women (Seigfried, 1998a). She points out that "Dewey's political activism included…women's suffrage, women's right to higher education and coeducation, unimpeded access to and legalization of birth control, and just wages and worker control of the conditions of work…" (Seigfried, 1998a, p. 187). Dewey's pragmatism is steeped in pluralism and multi-perspectivalism, a genuine aid to feminism as it tries to incorporate a multitude of women's voices representing standpoints based on race, class, sexual orientation, physical ability, religion, and country of origin. Dewey's attempts at freeing philosophy from the epistemological turn aids a feminist understanding of experience in that it is interactive and unifies theory and practice (Seigfried, 1998a, p. 188).

Seigfried thinks that the central issues for a feminist interpretation of Dewey are whether he censured sexual, class and racial discrimination and whether his philosophy can accommodate marginalized and alienated "others" (Seigfried, 1998a, p. 192). The answer to the first issue is not clear. Although Dewey saw the need to interrogate prejudices, he did not see the institutional and personal misogyny, racism, classism, and homophobia that feminists notice and condemn (Seigfried, 1998a, p. 194). He also saw sexism as less important than racism and classism (Seigfried, 1998a, p. 205). Nevertheless, even in this minimization of the potential for people to harm each other, Dewey was somewhat saved by his acknowledgement of selective interest. Thinking that selective interest made unbiased decision making impossible, Dewey based his objectivity on including multiple viewpoints in decision making processes (Seigfried, 1998a. P. 194). For Dewey (1939/1981),

> To co-operate by giving differences a chance to show themselves because of the belief that the expression of difference is not only a right of the other person but is a means of enriching one's own life-experience, is inherent in the democratic personal way of life. (p. 228)

From his neo-Darwinian position and from his understanding of democracy, Dewey saw diversity as a necessary for the survival of humanity. Cornel West and Seigfried spar a bit. West (1989) asks:

> Does American pragmatism put too much of a premium on the aggressive will? Is it another expression of patriarchal culture? Will the assertive agency of women from different classes and cultures shun this mode of intellectual expression in the future? (p. 181)

West has an answer for his questions, suggesting that the answer will be determined by how "American women will reshape and revise pragmatism…" using the resources of an Emersonian creative democracy. (West, 1989, p. 181). Seigfried wonders why West uses the lineage of Emerson, a very patriarchal heritage and not the ancestry of the feminist philosophers that Dewey sometimes emulated (Seigfried, 1996, p. 73). She feels that West could find a more comfortable place for women in pragmatism if he adopted a different reading of the roots of pragmatism.

Publics and Privates

Dewey identifies in <u>The Public and Its Problems</u>, three sources of problems in the way in which a public functions. These are: a narrow public or special interest group, a diffuse public which cannot identify each other, and a distracted public which is saturated with things such as entertainment and amusement. Recognizing technology as a source of a diffuse public, Dewey (1927/1984) writes:

…the machine age has so enormously expanded, multiplied, intensified and complicated the scope of the indirect consequences, has formed such immense and consolidated unions in action, on the impersonal rather than a community basis, that the resultant public cannot identify and distinguish itself. (p. 314)

The composition, interest, and attachment of a public are very critical when one considers whose voices to include in a plurality. With Internet access, we see a diffusion of the public unknown yet predicted by Dewey. I could also make a case for the Internet contributing to a distracted and a narrow public. The information we, in the affluent western world, can access may be inaccurate, narrowed by our self-interest, and diffuse in its attention to local problems. [27]

I ask if the mode of formation of a public changes its relation to or separation from its private components. Pragmatic feminism spends much energy trying to unify the public and the private. Thus, I am concerned about the nature of the publics, which may acerbate the unification. A narrowly defined public created by special interest groups might keep most of its interests as private and separate from its public concerns. Margaret Talbot writes in The New York Times Magazine about a family of fundamentalist Christians that is one family among many trying to keep itself separate from the public (Talbot, 2000). This family home schools its children, has no television and very little contact with shopping malls and other commercial interests. Fathers in this type of family typically work in middle class or better jobs and are the main contact with any kind of public. Although this is an extreme example of a narrow public, I remember my own family of origin where the quip "blood is thicker than water" was a common way of reinforcing exclusion of "others" who were not family. Clearly, the narrow public keeps its public and private very distinct. There is almost no transaction here between components of

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[27] I suggest that while the Internet expands our reach in time and space, it may indeed limit our exposure to ideas different from our own. This is because sophisticated search engines make it possible to hone in on very narrow and parochial interests. Once we find those interest groups, their support reinforces our previous assumptions, stereotypes, and prejudices. In a more pluralistic conversation, in our local neighborhood for instance, there may be more reason for us to question these assumptions, stereotypes, and prejudices.

the public sphere and components of the private sphere. When the narrow public uses the Internet, they use it to narrow their view with restricted search engines, not to widen their view.

Those participating in a diffuse public have little sense of identity in the public sphere so may not have a difficult time negotiating between public and private. Yet, I hypothesize that their private sphere is also diffuse and difficult to identify. This type of public seems to have little sense of identity or affiliation. I think communications of the Internet encourage this kind of public. With listserves we talk to everyone superficially and no one intimately. This is typical of the person so decentered in a field of action that they have almost dispersed out of existence. Some density, in the sense of Star (Star, 1995), is necessary for transactions to occur.

The Internet also affects the distracted public, particularly by multi-media opportunities. This public gets its information in sound bites on the television or from the Internet. This public is also distracted in its private sphere. Transactions between the public and the private are rare because communication is unidirectional from public to private in the style of the "conduit metaphor" (Reddy, 1979).

In all this talk of publics, it is reasonable to wonder how to define a public. For Dewey, a public exists among those who suffer the consequences. "If it be asked, 'where' a transaction is located, the only possible answer … appears in many cases to be that it is located wherever it has consequences which it is deemed socially important to regulate" (Dewey, 1925/1981, p. 156). This observation by Dewey is powerful and predicts the effects of the Internet although it greatly preceded that invention. We have many instances of cyber-crime in the current news such as hackers breaking into web sites and blocking commercial enterprises. Where does such a crime occur? Is this crime at the site where the hacker is working, at the server site where the disruption of service occurs, or within the public, affected by the breakdown in service?

<u>Power</u>

Seigfried notices that Dewey does not go far enough to analyze sources of power and oppression. Seigfried writes (1998a),

He [Dewey] does not, however, pursue the sources of oppression far enough to reflect on why the need to develop and consolidate one's own power is so often understood as requiring denying it to others. And in his conscientious concern with the plight of those who are unjustly treated …, he seldom exhibits the anger and angst characteristic of those who practically suffer… (pp. 195-196)

Furthermore, Seigfried laments that Dewey introduces examples of women's subordination to illustrate points other than the deepening of feminist analysis (Seigfried, 1998a, p. 196). For example, while Dewey vocally and emphatically supported co-education for women, he did not analyze the source of women's exclusion from most educational institutions as the result of patriarchal exploitation. Moreover, Dewey demonstrated his misunderstanding of the virulent hatred involved in racial prejudice when he told a meeting of the NAACP that their difficulties came only from economics conditions and not from their color. This attitude made it difficult for him to be effective in combating racial prejudice (Seigfried, 1998a, p. 197). Despite these criticisms, Seigfried says that,"...feminism and pragmatism have much to offer each other" (1996, 39). She summarizes their major advantages to each other as follows. Pragmatism explains how the neglect of context is a fallacy. Feminism shows pragmatism how gender, race, class, and sexual preference are parts of this neglected context (Seigfried, 1996, p. 39). Both Seigfried and West agree that "…the difference pragmatism makes is always the difference people make with it" (cited in Seigfried, 1996, p. 39; West, 1989, p. 181).

What difference can I then make with pragmatism? The difference I hope to make is to refocus on the uses of WBI. I will use feminism and pragmatism to uncover appropriate uses of

WBI in our society, ones that sustain and preserve what is valuable and deserving of maintenance.

I now look to the feminist-pragmatist literature that strengthens the feminist analysis of pragmatism. This literature reinforces the warp of my weaving and identifies the places that need more strengthening.

Gendered Experience

Recall the strong images of gender represented by advertisements in Wired. The connection of gender images with digital technologies creates the risk of reinforcing gender dualisms in IT. It is difficult to know which came first, gender dualisms, or the representation of gender dualisms. But regardless of the order, I recognize that the gendered dualisms in technology are strong, they are produced largely by men, they may be serving to discourage women from entering technological fields, and in their caricature-like nature may serve to confuse feminists' attempts to introduce attention to gendered experience back into academic fields. Thus, we have a very confused issue regarding gendered experience. Many feminists want to reintroduce gendered experience since it is often a missing perspective in academic work. However, for the most part, they do not want to introduce gendered experience as a dualism or essentialism. Thus, there are two related but conflicted issues. The first is to reintroduce a feminist perspective or experience back into academic fields such as medicine, biology, philosophy, and psychology. The second is to do this in a way that does not essentialize "woman" or add to gender stereotypes. I first tell a tale of gendered experience and then use feminist pragmatism to analyze and comment on that story. Here the weaving is messy for birth is messy, arduous, and embodied. It is almost the antithesis of the good girl image of my youth. She was dainty, controlled, discrete in her bodily movements, and certainly never appeared to endure physical exertion. Giving birth is one of those dirty little secrets of womanhood. I was

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brought up to be a "lady" as well as expected to be a mother. I now understand the quandary of this myth, the impossibility of giving birth while maintaining a lady-like demeanor.

The Birth of Gendered Experience

This is a story of birth a reasonable place to start since all our lives began with a birth. We are all born from a mother and all mothers share some commonality of experience when giving birth. This story of birth is very important just as our individual births are important to our existence. In addition to bringing forth a new person (and all the sense of possibility that entails), it is a story about the construction of gender (the birth of gendered experience). In addition, this narrative connects gendered experience to technology. Finally, with the aid of standpoint theory, strong objectivity, and Deweyan pragmatism, I show how neglect of gendered experience introduces inaccuracies and loss of context into an account of technology.

A woman in North America labors to give birth to her first child.[28] She is totally centered on the job of pushing this fetus from her womb, through her birth canal and into the impatient hands of a waiting obstetrician. As centered as she is on her own pain, efforts, and exertion, her thoughts still encompass the welfare of this fetus/person to be. She forces herself to labor as the outlet of her birth canal is stretched past stretching and pain and fatigue drain all desire to labor any longer. With her attendants' urging and her continued effort, the arduous pushing yields the passage of the baby's waxen looking head in a rush of pent up amniotic fluid and blood. Following the head, now shaped by the forces marking its passage through the birth canal, is the birth of the much more slender and slippery body. With the baby's first breaths, howls of protest, and surprised inhalations, waxen skin gives way to the color of skin diffused with oxygen. Relatively enlarged genitals on the tiny body are immediately noticed and the prerequisite words

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[28] I locate this birth in a geographical area that represents a broad conception of culture because gender is a cultural construction and birthing practices are culturally constrained. Even without the construction of gender, I could substitute physical sex for gender and maintain most of the meaning of this section.

are spoken "**It's a girl**".[29] This is the moment, of the birth of gender. With this phrase,

expectations are initiated that will follow this sexed creature until she dies. If she is "lucky", her

embodied sexual feelings and the gender expectations of her culture will be somewhat congruent.

 The birth of gender is the identification of external genitals and the exclamation of an

Aristotelian category of gender. Immediately following the noticing and the naming, rituals

begin that serve two important functions. First, they indoctrinate this baby girl into the customs

and practices of her gender. Second, they remind those around her to follow the customs and

practices of that gender. The color and style of her clothes, her name, the way she is addressed,

her toys, the way she is handled all reflect the North American cultural construction of female

gender. [30]

In the best of circumstances, the baby girl, now draped in a gender appropriate receiving

blanket is handed to the newly actualized mother within minutes of the infant's first breaths. This

often happens before the cutting of the umbilical cord, ending her obligatory attachment to her

mother. The infant girl, placed on her mother's abdomen, which is still quivering from the

contracting womb's continuing efforts to expel the placenta, begins the work of finding

nourishment that the umbilical cord no longer provides. Instinctively, the baby, whose cheek

brushes against a breast or a hand or her pink blanket, starts rooting for a nipple. The rapid back

and forth rotations of her head are rewarded when her mouth latches onto a protuberant nipple.

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[29] Notice the shift from neuter to female in this usual phrase. This customary phrase may be declining since ultrasound examination s of the fetus frequently reveal the child's sex in utero.

[30] Gender construction is not uniform across North America but there are some commonalities of construction that generally hold. I point out one difference in gender construction that was apparent among the participants in a graduate seminar on literacy research. When talking about our family of origin's attitudes about literacy and learning, there were some notable differences regarding the relationship of gender to learning. There were some families, notably my own, where male children were encouraged to study and female children were merely allowed to study. In other families male children were valued for physical and athletic attributes and encouraged in those pursuits while studying was deemed appropriate for their female siblings. I do not want to generalize about this too much without further study but I do want to point out that gender constructions are not uniform.

With greater force than would be expected from such a tiny creature, her mouth seals around the nipple and she receives reward for her efforts as she sucks out the sweetness of warm colostrum. The sucking of the baby initiates a cascade of hormonal responses that intensify the mother's uterine contractions and lead to the expulsion of the placenta, further evidence of the initial, obligatory separation of mother and child. The mother flushed from the birth and noticing the sensations of her emptying womb starts crooning to her daughter. The words, sweet and gentle, form the infant's initiation to one of the most powerful tools of her culture, language. The infant associates the comforting sounds with the succor of nursing. The words, chosen by the mother in recognition of the child's gender form the girl's very early experience with the technology of language. These words intermingle gendered experience with technology for this newborn creature.

An infant has been born into a sophisticated culture, succeeded with her first symbolic interactions, and had her gender mapped out for her all in the culmination of the dramatic events of childbirth. In one cataclysmic yet extremely commonplace event, the lives of the participants are irrevocably changed. The birth of a child is literally and figuratively intertwined with the birth of meaning, with the birth of experience, with the birth of gender, all three situated in a historical context, a cultural context, and an institutional context. Communication between mother and infant is evident even with the first significant unspoken interactions of handling, stroking, and feeding. As Dewey describes (see chapter 5 1925/1981), the scream of an infant is organic, having no intent. Yet, the infant receives the response of an adult and perhaps the consequence of feeding. Now the infant learns to expect feeding when he/she screams and the adult learns that feeding the infant stops the uproar. "Something is literally made common between at least two centres [sic] of behavior" (Dewey, 1925/1981, p. 141). The child and caretaker have learned to anticipate consequences together. "The heart of language is….communication; the establishment of cooperation in an activity in which there are partners,

and in which the activity of each is modified and regulated by partnership" (Dewey, 1925/1981. P. 141). Adult and infant are now partners in the feeding and care of the infant.

The metaphor of expected gender behavior now merges with experience. The helpless appearance of the infant's startle reflex, the insistence of her rooting instinct cause emotional discomfort and receive responses from her caregivers. An intricate dance of needs and needs met, emotional attachment and emotional necessity keep the parents and infant connected and communicating in a most intimate and functional way. The goal is that the infant might receive the sustenance she needs to survive to a more independent state. As the mother and other primary caregivers tend to the infant, their actions invoke judgement and correction from the surrounding culture. Imagine the hypothetical scene of a pink swaddled child bought to the local mall. Passersby and slight acquaintances, taking their cue from the pink blankets, remark on the delicate features or the beauty of the infant. If this child is a boy, the mother feels embarrassed by his "feminine" attributes and vows to make his sex/gender obvious in the future. This mother is unlikely to dress here son in pink again.

I use the birth just described, as an aide to examining gendered experience and particularly women's gendered experience. I also use it as a demonstration of the gendering of technology. Both gender and technology have complicated and contested cultural meanings and histories. Thus, I digress to explain my usage of the words gender and technology. This next weaving is neat and straightforward, both intricate and dense.

Technology

Following Larry Hickman's interpretation of John Dewey's critique of technology (1992), I understand technology in an expansive sense as tools and artifacts including language. For Dewey, tools are never value neutral but are always created for some "end-in-view". "Manufactured articles do no exist without human intervention; they do not come into being without an end in view….They are simply prior natural things reshaped for the sake of entering

effectively into some kind of behavior" (Dewey, 1917, p. 92). The "ends-in-view" are not static.

They are in constant interplay with the means "that are devised and tested in order to secure

them" (Hickman, 1992, p. 12).

According to Hickman, Dewey tried to expand technology beyond an epistemological

understanding since he viewed experience with technology as encompassing more than

epistemology could cover. I interpret this as an invitation to consider the emotional and spiritual

effects of technologies. This is an important consideration for educational technologies since the

body, the emotions, and the beliefs of students go to school with them. Dewey saw technology as

deeply intertwined with the common place events of daily life, not only the realm of engineers

and scientists. Again, in the educational sphere this is a relevant observation. Teachers are

constantly struggling to make sense of technologies for their use in the classroom and for

understanding the meaning in their student's lives. Dewey did not see technology as the defining

criterion of human life, but as a very important part of many other intertwining strands

(Hickman, 1992. pp. 7-8).

Dewey saw technology as one of the complex tasks of human society. As such, tool

making is not the highest good of human existence. Tool use occurs both knowingly and

habitually without thinking. Tool design occurs with some goal intended, imbuing them with

value (Winner, 1980). However, these same tools often have a momentum of their own,

changing their value with use. Dewey's views differed from instrumentalism most significantly

in connecting with the goals of tools as "ends-in view". Tools represented possibilities whose

meanings could change with use. Thus, the goal of a tool is renegotiated many times in its life

span. In the sense of Dewey's instrumentalism, as a tool is used the means constitute the ends and

the ends are repeatedly assessed. This view of technology is useful for Instructional Technology

where historical and cultural trajectories of computers guide but do not limit their usage.

Gender

"Gender … emerged as a politically pragmatic alternative to the biologically determinist category of sex, emphasizing the socially constructed and hence alterable character of difference" (Bryson & de Castell, 1997, p. 86). Gender is then not universal but local and particular to a culture. This point is important to remember as we consider the Internet, now called a global economy or perhaps more accurately a global colony of the United States (Lohr, 2000). Mary Bryson and Suzanne de Castell describe four currently used definitions of gender:

> …first a positivistic conception of gender as biological sex; second, a constructionist
> conception of gender as socially produced and sustained; third, a critical conception of
> gender as the ideological product of a repressively patriarchal hegemony ; and fourth, a
> critical conception of gender as a noncohesive, open-textured pastiche of characteristics,
> aptitudes, and dispositions whose ongoing construction and reconstruction it is the central
> task of feminist praxis to enable and encourage.(Bryson & de Castell, 1997, pp. 95-96)

In my usage of gender, women's gendered experience arises not primarily from her chromosome compliment or her reproductive organs and their functioning, but from the culture that surrounds her and imbues her with gender standards. This usage is an amalgamation of Bryson and de Castell's second and third meanings. I attribute gender to cultural construction, and I waiver on the meaning of this as an ideological stance. I am tempted to make the move to the postmodern concept of gender as performance, but physical differences foil some manifestations of gender switching. By this, I mean that men can cross dress and perform as women in many significant ways but they can never ovulate, menstruate, or lactate. At the same time, linkage of these

physical acts of ovulation, menstruation, and lactation to cultural performances can be enacted by men or women without regard for the physical possibilities. [31]

Sandra Harding put a more emphatic emphasis on the construction of gender when she wrote:

> …it is important to remember that in a certain sense there are no "women" or "men" in the world--there is no "gender"--but only women, men, and gender constructed through particular historical struggles over just which races, classes, sexualities, cultures, religious groups, and so forth, will have access to resources and power. (Harding, 1991, p. 151)

This says that racism, classism, and sexism creates races, genders, and classes. This statement supporting Bryson and de Castell's third category of gender is a bit of an overstatement, since it ignores the utility of categorization for purposes other than oppression and power hierarchies.

Shannon Sullivan uses an exploration of Dewey's idea of habits and Judith Butler's gender as performance to explore "gender as a constitutive structure of bodily existence" (Sullivan, 2000, p. 23). This is very similar to my explanation of the source of gendered experience. Sullivan's explanation of gender is helpful but like Dewey, she underplays the effects of power hierarchies in keeping gender stable and thus frustrating change.

Gendered Experience Revisited

I review the past bit of weaving by returning to my discussion about the birth of gendered experience. Here, I view the experience of birth from the eyes of the child rather than from the eyes of the mother. Not all women give birth; thus, the experience of birth cannot be a metaphor for women's experience. Not all women menstruate, lactate, or ovulate. Yet, all women are born

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[31] My daughter would lift her shirt to "nurse" her doll when at the age of three she watched me nurse her younger brother. She would also have been very happy to wear a nursing bra at that time, had one been available for a toddler's form. She performed the cultural trappings of nursing without the physical capability of such an act.

into a culture. As a child experiments with the world, the extant culture enforces mores of gender where male and female are considered mutually exclusive and hierarchical. In this section, using my insights as a biologist and mother, I create an amalgam of feminist standpoint theory, feminist epistemology, and Deweyan inspired feminist pragmatism. I do this to create a theoretical explanation of women's experience and the imperative of considering it. The issue of women's experience and the related issue of the "nature" of women is of great importance to where the consequence of a persistent technology-gender gap (American Association of University Women, 1998) threaten to make an "unnatural" environment for women.

Despite the importance of noticing women's experience, the noticing is fraught with the dangers of categorizing women as different from humanity (Riley, 1988), with the overgeneralization of the category so as not to notice, race, class, and sexual orientation (Spelman, 1988), and with the dangers of hardening women's varying experience into an unchallenged female epistemology (Grant, 1987). Jane Roland Martin notices that every naming or categorization tends to call attention to similarities and to neglect differences" (1994, p. 636). I discuss essentialism as it relates to women and nature in a later section of this chapter. Here I try to make clear the necessity for considering women's gendered experience, to demonstrate the importance of experience to epistemology, not as a female epistemology's sole determinant but as a necessary one. Thus, I merge feminist standpoint theory with Deweyan pragmatism to examine experience as experimentation with the world.

This is a continuation of my discussion of experience as experimentation in chapter 2. Dewey commented on experience as experimentation when he wrote: "The conjunction of problematic and determinate characters in nature renders every existence, as well as every idea and human act, an experiment in fact, even if not in design" (Dewey, 1925/1981, p. 63). I claim that experience, viewed as experimentation with the world, allows women's experiences to be as stable and enduring or as changeable as the environment that is the location of the experimentation. Then experience has more credibility and weight than one momentary

transaction might suggest. The backlash to feminism and criticisms within feminism (Riley, 1988) dispute the value of women's experience as source for theory. Dewey, although not talking specifically about women's experience had an answer to this criticism when he wrote: "The serious matter is that philosophies have denied that common experience is capable of developing from within itself methods which will secure direction for itself and will create inherent standards of judgement and value" (Dewey, 1925/1981, p. 41).

This discussion of gendered experience also brings to mind the strong images of gender in the advertising of Wired magazine and images of control of bodies by software that tries to standardize and enforce a universal vision of how students must act. Standardization and control attempt to create a uniform and compliant student, to erase differences. These are the very difference that gendered experience tries to recognize.

When we consider experience as experimentation with one's world, this raises certain issues. First, experience, as experimentation is the work of bodies in conjunction with minds and feelings. Neither bodies alone, nor minds alone, nor feeling alone experiment but the experience is the result of complex aspects of existence. I claim that experience is the finding of meaning in the material world. Experience then links the symbolic or semiotic with the material or situated. Second, experience, as experimentation is a transaction with the world, external to the self to a greater or lesser extent. For instance, experiencing tropical rainforests from a video requires little transaction with the external worlds while hiking in a tropical rainforest requires much transaction. The closer we are to the material rather than a symbolic representation of the material world, the more likely we are to transact, and find meaning in the experience. Third, the imperative to follow one's cultural roots is very strong. The responses (results) we get from our experimentation, as demonstrated in the pink dressed baby story above, keep our experimentation relatively disciplined and stable. For example, we usually follow convention in how we give birth, how we dine, and how we respond to criticism or we face isolation, categorization as anti-social, or even categorization as insane. Thus, ideology drives the possible

meanings we can make in our experimentation. It is possible to overcome the heavy weight of custom, culture, history, and the ideologies they imply, but only with great effort and loss.

The ignoring of experience by philosophy, in a turn to rationality, brings us to the brink of the intellectualist fallacy where only cognitive traits are valued. As Seigfried describes the intellectual fallacy of philosophy "Anything that cannot be reduced to the properties of the objects of knowledge is disparaged as subjective and merely phenomenal" (Seigfried, 1996, p.146). The counter for this argument is Dewey's statement on the organic holistic nature of objects where objects become "…merely instrumental and abstract character of the reflective objects of knowledge when they are isolated from the situations in which they arise" (Seigfried, 1996, p. 146). I would go even further to say that there is no meaning, no knowledge without context because we create meaning from experience.

Sandra Harding provides evidence for this position in her discussion of strong objectivity in relation to standpoint theory (Harding, 1991). Strong objectivity makes the (normally invisible) value ladenness and situatedness of theory visible. The bias of the people with power is often unseen and unchallenged. This bias is like the air we breathe. We do not think about its cleanliness, wholesomeness, or even presence unless smog, smoke, or scarcity makes it visible. Strong objectivity looks for the historical and cultural embededness of all knowledge, not just that of the marginalized "other". Harding also distinguishes strong objectivity from judgmental relativity and value free objectivity. In the opinion of Harding, both these positions are impossible. Value free objectivity is an attempt to mirror the world as it "is". This mirroring is akin to Donna Haraway's god trick (Haraway, 1991). One cannot mirror reality without being outside of reality, or outside of the world, as we know it. Judgmental relativity recognizes all positions as equally "good" and does not allow the valuing of "goods". Strong objectivity looks for and interrogates background beliefs in all cases, not just for those experimenters at the margins. Harding is attempting to develop a feminist philosophy of science yet her discussion of strong objectivity is relevant to all experience.

Dewey's explanation of experience attributes it to the interaction of an organism with its environment "…which, when it is carried to the full, is a transformation of interaction into participation and communication" (Dewey, 1934/1980, p. 28). Interaction is the way of attributing meaning to the material world. This explanation is also a clear attack on subject-object duality for the subject transacts with the objects of its environment and changes in the process (Dewey, 1934/1980, p. 50). Reflectivity, where the subject reflects on her/his interaction with objects and thus reflects on herself/himself merges subject and object.

The merging of subject and object is a more general term for Kaufman-Osborn's projection and reciprocation of tools discussed in chapter 1. Remember that projection is the using of tools to expand human capabilities and reciprocation is the reflection of the tool back onto its user. Indeed both these categorizations of humans with their environment remind me of Dewey's critique of the reflex arc concept in psychology (Dewey, 1895/1972). In this essay, Dewey writes that the unification of stimulus and response into the arc reflex do not go far enough. Like other dualisms such as body and soul, stimulus and response represent coordination, a continuous circuit that defies reduction into its component parts. Similarly, the subject and object of experience form a circuit rather than an arc or more precisely a continuous spiral. As a person acts on her environment in the process of an experience, she gets responses from that experience which guides her next interaction with her environment. Each experiencing act (or experiment) takes place in a slightly different environment than the previous experiencing act if for no other reason than temporal advance. It is only in the first halting attempts to try a new experience that the spiral gets broken into segments that have a clear beginning and ending. For instance, when one is learning how to serve in tennis, the service is broken into distinct steps, stance, toss, approach to ball, and follow through. With practice, the tennis serve becomes one habitual and continuous motion. The path of the ball and success in its return provide responses as to modifications to make in the service motion for future serves.

I look at the use of a simple tool, a pencil. Sometime in our pre-school years or at the latest in kindergarten, we learned to hold a pencil perhaps by mimicking the holding of a pencil by another person. These first attempts at using a pencil required some conscious effort to hold the pencil just so, put the paper just so, and use appropriate pressure to produce a mark. The reward from these efforts was seeing something appear on the paper or by our teacher's approval and we adjusted our technique to please our teacher or to get a different result. In time the actions of writing became habitual and took less effort at conscious planning. Still, there were times when we were leaning new skills with a pencil when we had to rethink our technique. Despite the habitual use of the pencil, there were still times when we saw a result we favored or not and modified our response to duplicate or eliminate that response. The pencil is an extension of the functioning of our bodies to make symbols. Every time we make a mark with a pencil, we have changed and the world has changed from the previous use of the pencil. Use of the pencil becomes invisible with habitual use so that one use merges into another without noticing the beginning and the end of a circuit.

Again, experience, from a Deweyan pragmatic perspective is an active experimenting with the world. In these experiments subject and object transact and thus merge. Technological objects become extensions of the acting subject and thus become parts of the experiments. Surrounding and permeating this active subject/object/tool triad is a context, composed of history, culture, temporal trajectory, values, and many other subject/object/tool triads. If people are born into a gendered identity, ignoring gender gives only a partial understanding of experience and precludes strong objectivity. When dealing with technologies, association genders tools and artifacts. For instance, it only takes a moment to decide that a football helmet is a male technology and a clothes iron is a female technology. We know that these tools are rarely used by the other gender. Yet, when they are, rather than shifting their gender affiliation they make the user look a little odd, or liberated, or even "queer". I have had the experience of studying in traditionally male gendered fields like computer science. I never felt that computer

science became identified as female by my being there. Rather, I felt somewhat unusual and abnormal for my interests and abilities in computer science.

Of critical importance to the visions of technology I invoked in Chapter 1, technologies, once gendered seem to keep that identification. Thus, it is important to understand the gendering of instructional technologies. Without this understanding, theory and practice of instructional technology (IT) are only partially understood and never understood with strong objectivity. Ignoring women's experience in IT results in loss of meaning, loss of continuity of action, and loss of strong objectivity.

Noticing of women's experience as the source for feminist epistemology is sometimes attributed to the creation of a rational/experiential dualism (Grant, 1987). This dualism connects closely to mind/body dualism where the mind thinks rationally and the body experiences emotionally. Jay Lemke writes about his distaste for such dualisms (1997),

> We rebel, we transgress. We want freedom to construct a materiality of mind, an intelligence of the body. We want meaning to arise from material processes and Culture to be once again a part of Nature. We want to resituate cognition in a larger meaning-making system of which our bodies and brains are only one part. (p.37)

I understand Lemke's distaste for these dualisms yet I wonder why, as a feminist, I fight so ardently for unification of mind/body and other similar dualisms. If "the mind has no sex" (quote from Poullain in Schiebinger, 1989, p. 1) and if the mind is separate from the body, then women's minds are philosophically the equal to men's, and there is no need for feminist epistemology, feminist science, feminist technology. Am I maintaining artificial gendered differences where none exists when I merge women's body (obviously different from man's) to her mind? There are two questions here: Why maintain the difference of women from men if equality is the goal? Why unify mind and body if this forms difference?

The justification of unifying dualisms is close to the heart and soul of the pragmatic ethos as discussed in the last chapter. Briefly, organic holism explains the complexities of the world

better than dualisms. However, I want to push the pragmatic ethos further to encompass the differences of sex/gender. Pragmatism has no problem with the general concept of difference but in the realm of experience Dewey chides those who would ask "Whose experience?" as trying to ascribe subjectivity to experience (Dewey, 1925/1981, pp. 178-179). Seigfried argues for the possibility of accomplishing this aim without neglecting the experience of those marginalized because of gender, race, sexual orientation, or other distinctions (Seigfried, 1996, p. 158). I agree with Seigfried and give the example of Harding's strong objectivity as such a way of maintaining difference while being subjective. However, I want to push this concept even further and ask: what are the consequences of unique experiences for women? Are all consequences helpful to feminism and to the relief of oppression?

First, it is unlikely that there is a uniform woman's experience. It is easy to imagine that the experience of a white middle class lawyer is vastly different from a the experience of a Hispanic migrant laborer, even though both may be mothers and share some commonality. Judith Grant worries that the dangers of multiple experiences are "narrowing and fragmenting" where multiple oppressions may be viewed as yielding more experience and thus more epistemological clout to those doubly, triply or more oppressed (Grant, 1987. P. 110). For example, an African-American, lesbian would have more knowledge from her experience of triple oppressions than an Asian woman with her double oppressions.

Second, when we assume a common experience for women, are we retreating to a dualism that should not be perpetuated? Here there is confusion between categories and dualisms. There are biological reasons to make distinctions between men and women, and consequently between men and women's experiences. I cite three reasons to perpetuate gender differences. First, perpetuation of the species Homo sapiens requires knowing whom we should mate with for the purposes of procreation. There is a ready criticism of this. We have an overpopulated earth, why not give up sex signifying gender distinctions? We do not need anywhere near the current birth rates to perpetuate our species. Second, there is the reason of

recognizing gendered individuals for those who seek the pleasure of connection, love, and sexual acts, for both homosexuals and heterosexuals. Third, there is the separation forced on women by oppression. An oppressive hierarchy that wants an underdog forces women to be different. Thus perpetuates a dreadful circle of oppression.

The circle originates in this way. Women are different because women are oppressed so women fight this oppression by announcing the importance of different experiences, different ways of knowing (Belenky et al., 1986), different morality (Gilligan, 1982), different ways of teaching (Noddings, 1992). The difference of gendered experiences marks women as different and thus a better target for oppression.

I do feel a special connection with other women, even those very different from me. Does this feeling of connection emanate from the XX chromosome complement? Is there nothing else besides genes? Can we reduce existence to biological imperative? The answer here is that there is a biological foundation to existence (and I intentionally use the word foundation knowing its connotations to pragmatism). Our physical similarities and differences may be the only real foundation we have with the rest of sameness and difference emanating from culture, context, and history. Indeed the culture and context I have lived with, as a woman, have encouraged my attachment with and support from other women.

With a biological basis for gender difference, the body gains importance since difference resides first in the body. Dewey would say that habit, arising from culture, also resides in the body. I now begin my second feminist-pragmatic tale. This one is a story of the mind and its tribulations when it loses its body.

Much of Dewey's works dealt with experience (1925/1981; 1934/1980; 1938). He (1919, p. 45) said,

> When women who are not mere students of other persons' philosophy set out to write it, we cannot conceive that it will be the same in viewpoint or tenor as that composed from the standpoint of the different masculine experience of things.

Clearly, Dewey appreciated the difference between male and female experience, at least in the way it played out in his time and cultural space. Clearly, also, he predicted long before the current feminist movement what exciting and wonderful things could happen once women found acceptance in public activities.

The central premise of his theory of experience is that of the participatory transaction of subject and object or a live creature with its environment. "There are conditions to be met without which an experience cannot come to be….that every experience is the result of the interaction between the live creature and some aspect of the world in which he [sic] lives" (Dewey, 1934/1980, p.50). I take this statement as evidence for the holistic organization of experience. In an experience, subject and object change and are changed, they act and are acted upon, and the result of experience is something that now exists between but outside of both subject and object. "Because pragmatism takes the active transaction of organisms and environment as the basis of human action which is specifically characterized as striving for goals, its feminism is perspectival and pluralistic" (Seigfried, 1998a, p.202). Experience always involves the unique viewpoint of the subject and thus many subject's perspectives over time yield a pluralistic sum of experience.

Seigfried identifies "those aspects of Dewey's analysis of experience that seem particularly apt for enriching feminist explorations of women's experiences (Seigfried, 1996, p. 146). These include:

> …(1) the identification and rejection of philosophical dualisms that have systematically distorted our understanding of everyday experience, (2) the thesis that ignoring the perspectival nature of experience is a source of oppression, (3) the development of standards of judgement and values from concrete experience and (4) the role of feeling in experience. (p. 146)

In contrast, neo-pragmatist Richard Rorty dispenses with experience completely in favor of language as source of meaning by saying "what you experience yourself to be is largely a

function of what it makes sense to describe yourself as in the languages you are able to use "(Rorty, 1991, p. 244). Furthermore, Rorty argues that androcentrism will end when women learn the language of the men's club or men learn the language of the women's club (Rorty, 1991, p. 247). Rorty says that women's experience has no more usefulness than the talk of women's nature traditionally used to subjugate women. While I take some comfort in the anti-essentialism of Rorty's views, I also feel a sense of profound loss of identity and wisdom gained from the uniqueness of womanhood, sisterhood, and motherhood. My unique experience as a woman and as one particular woman constitutes my identity. Take away that identity whether it comes from biology or culture and I am much the poorer.

I see the source of Rorty's argument as differentiating between the particular woman and the generic "Woman", or between the public and the private. He is asking whether women can ever be generalized to "Woman" without also essentializing her. Dewey might have answered this objection to essentialism by his observation that "A thing may endure secula seculorum and yet not be everlasting; it will crumble before the gnawing tooth of time, as it exceeds a certain measure. Every existence is an event" (Dewey, 1925/1981,p.63). Dewey, of course, did not reject the value of language. He called it the "tool of tools" and viewed it as the bridge between existence and essence.

Some feminists (see Grant, 1987) agree that experience is too essentializing, while Radical feminists (see descriptions of feminisms in Tong, 1998) applaud woman as essential and unvarying. Postmodern feminists also see the value of replacing experience with language (e.g., see Riley, 1988). I would argue for seeing women's experience as both particular and general. I base this on biology and culture. Biology and culture both have stabilizing effects on experience. Biology and culture change yet usually only slowly. This is what Dewey meant when he said (above) "that things may endure …and yet not be everlasting". Darwin showed us that biology changes and anthropologists showed us that cultures change. It seems that early in the feminist movement, oppression and marginalization often forged a common bond among women. This is

an example of a negative aspect of culture providing bonds among women. Now, in the year 2000, feminists seek bonds from the more positive parts of culture and womanhood.

When I decided to breastfeed my first born, a slightly premature infant who required some extra medical intervention, my mother was enthusiastically supportive. She had not nursed her three children and had been indoctrinated as a young mother that formula was superior to breast milk. She had little exposure to nursing dyads, yet sensed the value I placed in suckling my first born despite the difficulties of temporarily pumping milk for this child in his incubator. Her support was unhesitating. She read about nursing so she could give me informational as well as moral support. She became an avid supporter of the right for women to nurse in public. Perhaps she sensed my investment in breastfeeding and supported me for the sake of family harmony. Yet, she had never before been reticent about giving me advice, requested, welcomed, or not. Other people such as my husband were also supportive but not with the fervor I saw in my mother. I therefore surmise that she sensed a common bond in the physical act of nursing despite her never having "experienced" this herself. Perhaps it was the possibility of breast-feeding that she carried that provided us with a special bond at that time. In retrospect, I see her support for my breastfeeding her premature grandson as both biological and cultural although I cannot differentiate between these effects at any particular time. It is also clear that the biological and cultural transacted or co-effected each other so that what started out as biological might have ended up as cultural and vice versa. Or perhaps more truthfully, the biological and cultural ended up irretrievably blended and homogenized. I am saying that Rorty sees an essentialism in experience that those experiencing cannot usually see. Moreover, experience is felt before it can be explained. The experience is had, before the words come to explain it, "…intuition precedes conception and goes deeper"(Dewey, 1930/1984, p. 249). Rorty's argument is difficult to deconstruct because experience comes before words, thus we cannot always say what we are and have as a result of experience. My mother and I shared an experience born of love and concern and caring that preceded words and reason. My mother also recognized the difference between

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breastfeeding as an institution (that excluded her) and as a bodily function (which included her). Timothy Kaufman-Osborn explores this same issue of gendered experience.

Kaufman-Osborn uses Dewey's arguments, Adrienne Rich's prose, and the events of pregnancy and childbirth to bring experience back into pragmatism (Kaufman-Osborn, 1993). From Rich, Kaufman-Osborn differentiates between the experience of childbirth as both a medicalized institution and as a potential relationship of a woman with her reproductive power (p. 135). Thus, a women's lived experience is both created externally to her and encountered within her own body. There must therefore be a balance between "doing and undergoing" (p. 139). From Dewey, Kaufman-Osborn notices how experience "extends much further that which at any time is known" (Dewey, 1925/1981, pp. 27-28). Kaufman-Osborn disrupts Rorty's critique of experience by pointing out that pregnancy is both "nature" and "culture" or perhaps neither, and that "…to be pregnant is to come to doubt the Cartesian ascription of antecedent reality to autonomous 'subjects' and discrete 'objects'" (Kaufman-Osborn, 1993, p. 137). Kaufman-Osborn points out language is a part of experience and experience is a part of language. That language can not be fully understood until it is resituated "within the non-discursive context of embodied experience" (Kaufman-Osborn, 1993, p. 141). Finally, he gives the last word to Dewey (1925/1981),

> When the varied constituents of the wide universe, the unfavorable, the precarious, uncertain, irrational, hateful, receive the same attention that is accorded the noble, honorable and true, then philosophy may conceivably dispense with the conception of experience. But till that day arrives, we need a cautionary and directive word, like experience, to remind us that the world which is lived, suffered and enjoyed as well as logically thought of, has the last word in all human iniquities and surmises. (p. 372)

In this way, Dewey reaffirmed his denial of the "intellectualist fallacy" by which our primary relation to existence is cognitive rather than moral or aesthetic. This fallacy reduces philosophy to epistemology and epistemology to cognition.

The "intellectualist fallacy" is closely allied to this discussion of experience. Dewey (1925/1981) states:

> …"intellectualism" goes contrary to the facts of what is primarily experienced. For things are objects to be treated, used, acted upon and with, enjoyed and endured, even more than things to be known. They are things had before they are things cognized. (p. 28)

I summarize by claiming that Rorty, by denying the importance of experience, appears to commit the "intellectualist fallacy".

As with many other aspects of feminism, the concept of experience introduces a double bind. The double bind here is the way gendered experience both frees and oppresses women. It frees women to validate and celebrate their particularity, whether biological or cultural, and oppresses women by risking essentialization of their particularity.[32] Pointing out gendered differences can serve to oppress or to liberate women, usually both. Yes. I want to validate my embodied and gendered experiences of motherhood and child rearing for they were an important part of my life that shaped my perceptions and interests in irreversible ways. But, that is not all that I am and I do not want those gendered experiences to isolate me from humankind and from all the commonality I share with both men and women. I look to pragmatism to reinforce the value of experience coming before knowing. I look to feminism to remind me of the experiences, gendered, raced, bodied, left out of public concern because they are not the experiences of those at the political center.

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[32] For instance, women continually struggle to have their health and well being protected during pregnancy without this protection being the means of denying opportunities during other parts of their lifetime. Few mothers of new born infants would turn down extensive paid leave followed by on site child care. Yet, the capitalist response to birthing and nursing infants has been more often to exclude these women form the work force in some patriarchal scheme to protect them. What this neglects is the fact that these children are the future of our culture. If we truly believed and supported that aspect of gendered experience, we would gladly pay a little more for goods so that mothers (and fathers) could stay home and nurture their newborns without making huge financial sacrifices.

Classification/Generalization/Difference

Here, I stop to look at an intersection or knot (depending upon your viewpoint) of the weaving. It is a place where essentialism, categorization, and difference come together in a dense tangle of interest to feminism and pragmatism. This discussion prepares for a further examination of essentialism later in the chapter and builds on the discussion of continuity and anti-dualism from Chapter 2, and the discussion above on the difference between the particular and the general woman. Here, I stop to notice a theoretical commonality between Dewey (1925/1981), Jane Roland Martin (1994), and Bowker and Star (1999). The question here is what are the effects of classification, as generalization of sameness and classification as generalization of difference. I first turn to Bowker and Star where they note that classification systems reify into infrastructure and information systems (p. 323). As such these classifications or categorizations are often political, may be ambiguous, may hide voice in their "black boxing" of embedded concepts, and may be exclusionary (pp. 324-325). An example that relates to feminist experience is the classification of premenstrual syndrome, hysteria, and other "female" disorders as psychiatric illnesses in the Diagnostic and Statistical Manual (DSM).[33] Classification of an illness has many of implications such as the availability of insurance coverage, treatment modalities, qualification for jobs, and self-image.

Martin reviews how the effort to root out essentialism in feminist research has unwittingly led to other traps such as overstating difference, looking for some sources of difference while ignoring others, and generally leading to a hostile climate for feminist theorists. Of great importance is Martin's observation that "Any naming or categorizing tends to call attention to similarities and to neglect differences" (Martin, 1994, p. 636). She also notices that perhaps less important than categorization is how one uses the categorization (p. 641). This gets

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[33] The DSM is an official publication used to categorize psychiatric illnesses. It is regularly revised. Thus something that is not an illness in one edition may become one in another edition.

her into a political and cultural discussion of categories that recalls Bowker and Star's use of categorization. Martin's discussion of temporality and the historical nature of categories allows her to note how temporally inflected categories mask diversity as well as non-temporally inflected categories (p. 641). Martin's comments on temporality are reminiscent of Dewey's observation that everything is decaying and changing (Dewey, 1925/1981, p. 63). Martin also says that the "context of our investigation changes over time and so do our interests and purpose" (Martin, 1994, p. 638). This, of course, leads her right into what Dewey calls a situation (see discussion in Chapter 2) as she notices that the need for categorization is also changeable.

Taken altogether, these four theorists rather than condemning categorization for its risks of essentialism and ignoring of differences, see categorization as necessary for understanding and conceptualizing. They (particularly Bowker, Star and Martin) also see this as potentially dangerous and exclusionary. However, it is not the usage of categorization that is dangerous but the context of the usage. Of great importance is Dewey's and Martin's notice of the shifting of categories over time, the necessity of change. This allows categorization without essentialism because every category is a particular case of a chronotope rather than a monument to eternity. Martin's point is that feminists need to remember this and not seek to destroy all categorization for fear of appearing essentialistic.

Loss of Bodies/ Need for Bodies

In Chapter 1, I described how digital technologies control, maintain power, and guarantee certainty. The ultimate in control of the body is total annihilation of the body so it no longer exists. Remember how MCI and Nortel discount the realities of the body by suggesting that the Internet only requires mind. The result could be an avatar or a cognitive representation, an

abstraction of the wholeness of the body to one or more dimensions but with some parts left out.
[34] Pragmatism addresses the need for the body in all its wholeness and messiness:

> Existentially speaking, a human individual is a distinctive opacity of bias and preference
> conjoined with plasticity and permeability of needs and likings. One trait tends to
> isolation, discreteness; the other trait to connection, continuity. This ambivalent character
> is rooted in nature, whose events have their own distinctive indifferences, resistances,
> arbitrary closures and intolerances, and also their peculiar openness, warm
> responsiveness, greedy seekings and transforming unions. (Dewey, 1925/1981, p. 186)

The body described by Dewey is dispersed and continuous with those things outside the body. Its
bias and preference define its individuality and its plasticity and permeability incorporate its
sociability and connection. This talk of opacity foreshadows S. Leigh Star's (1995) references to
densities:

> The brain is not a lump of meat with a few electric channels strung through it. The
> body/brain of any one person is a location of dense arrangements, nested in like others.
> When we use the shorthand individual or individual cognition, we are thus only pointing
> to a density (p. 20).

Both Dewey and Star are searching for ways of not only maintaining the wholeness of the
mind/body including its emotions and spirituality but also demonstrating that the mind/body has
continuities and connections beyond itself. An understanding of the continuity of bodies and
environments is a prelude to Dewey's reflex arc concept (1895/1972). Dewey summarized his
objection to the traditional reflex arc idea as follows,

> …the reflex arc idea, as commonly employed, is defective in that it assumes sensory
> stimulus and motor response as distinct psychical existences, while in reality they are

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[34] In the terminology of virtual reality, an avatar has come to mean the virtual representation of a real
person. The avatar is often controlled by an individual embodied person.

always inside a co-ordination and have their significance purely from the part played in

maintaining or reconstituting the co-ordination;… (p.99)

This reminds us that stimulus and response are as transactive as the individual is with the

environment. There are no hard edges, where the body starts and stops its effects, just porous

skin separating some systems from others. Similarly, there are no true divisions between a

stimulus and a response and their effects, but rather continuity. If we accept such attachments

and continuities, then it is a short step to the cyborgization of the individual as it joins with some

of the tools of its environment.

Unfortunately, cognitive science, artificial intelligence, and psychology strive to maintain

the dualism of mind and body when they only consider the mind as part of the learning process.

Sandra Schneider discusses the dominance of mind in Instructional Design (ID) and notices the

oddity of ignoring the body since only action can restore harmonious functioning from a state of

disequilibrium to equilibrium. She also notices that motivation for learning is affective and left

out of consideration in ID (Schneider, 2000).

Mary Leach (1995) brings a slightly different feminist-pragmatist sensibility to a

discussion of embodiment as language use. She talks about "… the lived experience and the

embodied nature of the subject as this view that gives a positive value to the embodied self as a

material-symbolic agent of change" (Leach, 1995, p. 293). In so doing, Leach brings together the

Deweyan idea of language, the symbolic, as creator of self together with the gendered

experience, the material, of women's bodies. Language in a hierarchical society constructs

gender and the necessarily attached material body plays out the assigned role. The resulting

subject/object exists within a material context, history, and rhetoric. Thus, for women to recreate

themselves they have to somehow subvert the language of their oppressors. Leach builds a case

for gossip being practice in escaping from the language of the patriarchy. She describes gossip as

freeing, playful, oral history outside the more formal discursive practices. As such, gossip is very

different from the public and supposedly "ideology-free discourse in which gendered, raced,

sexed relations, or privilege and power do not exist" (Leach, 1995, p. 300). Later I shall explore

gossip and other non-traditional dialogue as it to relates to computer mediated communications.

Now I weave another story across the weft. This ones concerns loss of body in

cyberspace and what that entails. It is a story that starts again with an advertisement in an attempt

to interrogate and deconstruct that advertisement.

Loss of Body, Loss of Place

A girl, such as the one "born" in the last tale, because of her gendered experience, grows

up thinking about the importance of her body, its appearance, and its comparison with some

imagined norm. Advertisements, movies, TV, peers, magazine articles, newspaper spreads are

frequent reminders of how she must adorn, paint, and possibly torture her body. However, this

tale does not start with the girl's feelings about her objectified body, as important as they are.

Rather it starts with an image of cyberspace, one reflected in an advertisement.

Recall from Chapter 1 an MCI commercial that claims "There is no race. There is no

gender. There are no infirmities. There are only minds. Is this a great time or what? :-)" (MCI,

1997). This story is about meaning without the body. It starts with the assumption of a

disembodied Internet, looks at that assumption and what it does to women, explores the

possibility of meaning on the Internet without an embodied context, and examines how women

receive and are received by the Internet. In a later chapter, I look at the implications for web

delivered distance education in the context of mind/body dualism.

The MCI concept of the Internet describes a frictionless place where bodies are

irrelevant. Isn't this place heavenly? Would it not be bliss to leave behind eyeglasses, arthritis,

toothaches, the pain of childbirth, both the trivial bodily inconveniences and the major tragedies

of illness and death that beset our bodies? In leaving the body behind we would also lose the

satisfactions of the body: the pleasure of a good meal eaten with pleasant company, the first taste

of summer's fruit, the fatigue of a hard played game, and of course sex and procreation. The

incredible joy of the birth and the satisfaction of hard labor well-done temper even the pain of childbirth. If we give up on the body we lose as well as gain.

Perhaps MCI is wrong and there is little or no disembodiment in cyberculture. Yet there are reports of gender role switching and use of pseudo identities in MUDS (multi-user domains) (Turkle, 1995). If this is not disembodiment, it is surely body confusion in some very fundamental and entertaining ways.

Pure Mind Versus Pure Body

The pure mind of the Internet is an uncomfortable foil to the pure body seen in the Madison Avenue objectification of women. Fashion magazines and family magazines typically use photo touchups to exchange body parts between models even using muscular male parts on female models. Some women even have plastic surgery in order to fit into that special dress (Yazigi, 1999). Because advertising does such a good selling job, these manufactured images create an impossible role model for girls and women to emulate.

Adding to the equation of the objectification of women is the importance given to appearance by our society. Beauty has its own life brought to existence by a potent male hierarchy.

"Beauty" is a currency system like the gold standard. Like any economy, it is determined by politics, and in the modern age of the West it is the last, best belief system that keeps male dominance intact. In assigning value to women in a vertical hierarchy according to a culturally imposed physical standard, it is an expression of power relations in which women must unnaturally compete for resources that men have appropriated for themselves. (Wolf, 1991, p. 12)

Few women can resist the importance given by this view of beauty in their quest for economic security, procreation, and companionship.

Let us review the story so far. We have women impelled by competition for material resources and powers, usually seen as possessed by males, trying to reach an unattainable standard of attraction where the tacit assumption is "attract the man and get the goods". Yet, there is more. The next part of the algorithm is to objectify women and keep them from focusing on things other than their. The ideal women's body is easy to study in museums where women appear most frequently as nudes and "Madonnas". A trip to a museum reveals trends during different parts of history and in different localities with the emphasis, or de-emphasis, adoration, or disgust of various female body parts. Not only are women's bodies objectified but also these objectified bodies are dissected and minutely examined and judged. Her parts then identify her, an example of synecdoche. For instance, her breasts or her legs may come to represent her. How often do you hear men, usually, remarking "Look at those legs!" with no recognition of the legs being an organic part of a body, usually female?

At various times and places women suffer platform shoes, high heels, corsets, bustles, starvation diets, plastic surgery, excessive exercise, induced vomiting, foot binding, and genital mutilation. These bodily modifications and mutilations do not exist for the improvement of a women's health. They exist for their value to prepare women as commodities in the marketplace. In this hypothetical yet commonly imagined marketplace women are vying for the power already attributed to men, which supposedly will be available to them when they are aligned with powerful men.

The last insult is the encouragement of the belief that there is absolute ability to control appearance. This concept is also a production of the advertising industry whose job it is to sell face lifts, tummy tucks, clothes, diet books, cosmetics, and dissatisfaction with one's appearance. A sinister view of capitalism suggests that companies purposely lure women with tempting and

unhealthy foods (with which they make a profit) so that they might again profit from their diet and health products. [35]

The powerful interests of capitalism drive the campaigns to keep women enslaved to adornment, cosmetic surgery, and a specific image of beauty (Hansen & Reed, 1986). For instance, a slump in sales of cosmetics as a result of the women's movement of the 60's and 70's spurred a mammoth advertising campaign to re-enslave women in rigid notions of beauty (Hansen & Reed, 1986, pp.16-18). The Marxist interpretation of this is that "capitalists want women to blame themselves, not the social relations of production, for the economic and social problems they confront every day (Hansen & Reed, 1986, p. 16). Think how this resonates with images of education as business in chapter 1. There, school will emulate business and perhaps strive for the same cutthroat practices as the powerful business interests in our country.

Our grim portrait is now one of girls and women striving for an impossible body type that changes through time, with the belief that they can control their appearance with absolute precision. The prize if they attain the right "look" is material wealth. The ad agencies profit from this "game" and the power structures are reified. The rest of us, if we buy into this myth, suffer by comparison with "lookism", convinced of our own inadequacy to control our access to wealth by means of our innate free will to control our appearance (for more discussion of these issues see Bordo, 1993 ; Bronwmller, 1985; Wolf, 1991). The incidence of eating disorders in girls as young as elementary school is epidemic and is evidence of the effect these expectations have on women (Orbach, 1978).

What a sad and ironic situation!! Can the Internet, said to be pure mind, host women more usually objectified as pure body? What does this disembodiment of the Internet mean to women regarded as bodies without minds in most other circumstances? One way to answer this

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[35] A recent article in Harper's Magazine (Critser, 2000), points out some interesting class issues around food and body image. This article discusses the marketing of fat laden fast foods to the poor and the subsequent epidemic of obesity in the U.S.

question is to view the treatment of women on the Internet. If the Internet is gender free then women will find equality there. If the Internet is gender free, we have discovered the way to an egalitarian society through the suppression of all differences. If the Internet is not the egalitarian heaven described by MCI then we need to examine how to make it work for marginalized populations. Furthermore, if the Internet is a place of reduced context, we need to pay attention to the amount of context it provides for the making of meaning.

Is the Internet Egalitarian?

A gender-blind Internet would be an interesting place. People there could communicate free of the intimidation and aggression inscribed in other forms of communication. To suppose a gender blind Internet, we would have to assume that when we can neither see nor hear the people we are communicating with, we cannot detect their gender. What this assumption overlooks is the commonly accepted premise that gender is a social construction, that this construction includes the meaning of our body, and that language forms are an important part of this socio-cultural manifestation we call gender. Therefor, computer mediated communication (CMC) is gender-blind only if speech forms do not reflect gender and are not embodied (see Herring, 1994; Spender, 1995; Tannen, 1990; We, 1993, for discussion of language as gendered).

Susan Herring, Deborah Johnson, and Tamara Bendetto (1995) looked at women's use of the Internet. Through dialectical analysis and frequency of use, they analyze gender differences in CMC, specifically listserve discussion groups. They found that men dominate CMC, "by 'talking' more, by taking an authoritative stance in public discourse, and by verbally harassing and intimidating women into accommodation or silence". This study involved mixed sex listserves where women persisted in posting despite discouraging tactics. Herring et al. show that when women's discourse gets beyond about 30% of the volume on the list, men rebel with active discouragement and open hostility toward female posters. Furthermore, Herring et al. say that men's predominant style of discourse on the Internet is characterized by tactics such as put-

downs, contentious assertions, and sarcasm. On the other hand, female-gendered style on the same listserves was usually supportive and attenuated.

Even those of us women, who are not too meek to brave the innards of a Solaris™ workstation, are "flamed" on the "net". With a graduate degree in computer science, I was a systems analyst for several years yet I would rather have a root canal than post to certain listserves. Even mentioning gender in the same sentence as instructional design was enough to ignite a bonfire on one local listserve. However, I have learned my lesson, I wish to avoid third degree burns; I will not post there again. Self-censoring or loss of voice results from flaming. Unfortunately, voices are disproportionately lost depending upon power hierarchies also at play. Men frequently silence women. Professors silence students. Those in the know silence "newbies", and those without access do not have to be recognized at all.

As discussed in Chapter 1, Madison Avenue has been quick to recognize and exploit gendered usage of the Internet. In the November 1999 issue of <u>Wired</u> most images of women are those involved in e-commerce. Recall the advertisement from e-centives, a double page spread titled "Give the people what they want" (e-centives, 1999), and the bluefly lady buying ties at 11 p.m.(www.bluefly.com, 1999).

If discourse in CMC is gender specific and women are targetted as shoppers on the Internet, the Internet is not anonymous, gender-blind, and democratic. It thus seems evident that even with reduced context, the Internet is not totally disembodied. My next step is to examine the effects of reduced context on the users of CMC. Does reduced context equally affect men and women?

<u>Formation of Meaning with Reduced Context: Some Bakhtinian Reflections</u>

Let us stop to examine or admire another confluence of strands; this one around meaning and language. Mikhail Mikhailovich Bakhtin was a central figure in the theory of socio-cultural functioning of the mind and particular in the role that language plays in the mediation of

thoughts. Sometimes thought of as a semiotician, he focused on the utterance and not the sign for

meaning making. The utterance, he located in a social, cultural and historical context, coining the

term <u>heteroglossia</u> to describe the creation of utterances from many authors. He asked about the

possibility of connecting the necessity for fixed meaning to the need for meanings to vary in

different situations (Wertsch, 1991, pp. 48-50). Bakhtin's theory of language fits in well with

the multiple connectedness of organic holism. Thus, I find his work useful for exploring meaning

from a pragmatic and a feminist perspective.

I start with a Bakhtinian concept of meaning to examine the formation of meaning within

a reduced context. Bakhtin formulated four interrelated aspects of meaning including;

> 1) rejection of a "disengaged image of the self and the atomism associated with it; 2)
>
> recognition of a "dialogic" as well as a "univocal" text function; 3) recognition of the
>
> authority attached to a text; and 4) rejection of literal meaning as the starting point for a
>
> theory of meaning. (Wertsch, 1991, p.68)

While all these points are important, the second invoking the dialogic function of text and the

last, invoking the literalness of meaning, are particularly pertinent to this discussion.

Bakhtin rejected the idea of individuals who are metaphysically or epistemologically

independent of society. Furthermore, he suggested that meaning is always based on group life.

An individual, born into a group, interacts with the group in the creation of meaning. This insight

is augmented by the work of George Herbert Mead (and to a much lesser extent John Dewey)

who developed a theory of the decentered self distributed in a field of action (Garrison, 1998b).

The decentered self interacts with others and the field of action is the ever-changing socio-

cultural context of the individual. The atomic self, in contrast, is a detached objective observer of

the world, distinct from nature and from culture, able to function as an inherently rational agent

with innate free will.

Computer based technologies create complications for the making of meaning in a social

group. An essential question is how much context is required in order to create meaning in a

social group? A secondary question is whether CMC allows this minimal amount of context? When a computer user does not know the one to whom she/he is writing, I suggest that the tendency is for the user to imagine himself or herself as the recipient. Just as the black children in Margaret Riel's (1995) study imagined they were communicating with other black children, there is the tendency to substitute what we know the best, ourselves, for the unseen recipient. Then instead of dialoguing, we are creating a mirroring of meaning back and fourth ad infinitum as if two mirrors were facing each other in some Escherian nightmare.

Rejection of an autonomous, disengaged image of self relates to the recognition of a dialogical as well as a univocal function of text. The dialogue can be internal (e.g. thought) or can involve other people. Eventually our speech and thought involves dialogue. Use of univocal text to transmit knowledge follows the transmission metaphor of information passed down a pipe. I call this the modem method of transmission. We have a modulator and a demodulator at the ends of the chain with cable in between. The modulator and demodulator only map from a digital form to an analog form and back to the digital form for representation on a computer monitor. Their job is to leave the transmission untouched so that the digital image at the start is identical to the digital image at the end. Reddy (1979) uses a similar image that he calls "the conduit metaphor" to explore univocal text (see figure 2.1). The conduit metaphor has a passive sender and receiver with an equally passive conduit connecting them. The job of the conduit is to convey the message unchanged from sender to receiver. There is no room in this metaphor for selective receiving, creative manipulation, or reflection upon the text.

CMC has a difficult time supporting dialogic approaches to meaning. CMC encourages individualism and atomism by isolating the individual at her/his computer station where she/he stares at the screen or at the keyboard. The writer is often creating monologues, because sustaining a discussion is difficult in such CMC place as unthreaded chat rooms. When required to use chat rooms, students will frequently post long monologues unconnected to other postings

in an effort to gain points with the instructor. I have seen this done more by males than by females.

Dialogical text creates new meaning because it enforces heteroglossia and allows interanimation from other sources. Our words are the result of hearing others' words and thoughts. They become an intricate blend of our parents, peers, teachers, and friends' words and thoughts with very little recognition of the mix. Computers are excellent conduits for information but they severely limit dialogue and perhaps meaning. Chat rooms and listserves are attempts to provide dialogue via CMC. While both these tools provide some room for interaction, they create problems due to their reduced context and inability to enforce the communicative virtues of

> ...tolerance, patience, respect for differences, a willingness to listen, the inclinations to admit that one is mistaken, the ability to reinterpret one's own concerns in a way that makes them comprehensible to others, the self imposition of restraint in order that others may have a turn to speak, and the disposition to express oneself honestly and sincerely (Burbules & Rice, 1991. P. 411)

Bakhtin recognizes the authority of text. Reception of authoritative text comes unchanged directly down the "conduit of power". This text demands allegiance and allows no play with its borders and no interanimation. It is the parent's voice making the unalterable rules, the religious texts that do not allow reinterpretation, political stances, the teacher, the physician. The authority of text requires one to be clear on the origin of the text.

The authority attached to text is a troubling problem for CMC since it is largely text based. We create our monologues that then show up as text. The textual nature is then static and authoritative. In a sense, the very presence of the text in black and white gives it authority over oral conversations. We create it and then we see it published on the web where the text reflects back our image of ourselves in an affirming way, whether or not affirmation is appropriate.

In addition, the authority of text raises other important issues in relation to computer mediated communication, namely the clarity of the source of text and the notion of power. Do

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computers allow a clarity of source? When we consider the amount of casual "publishing" on the world wide web, where links present one day are gone the next, when we consider the problems this raises in citations for academic publications, when we consider the ease of cut and paste plagiarism, we realize that the world wide web presents problems for an established source. A partial solution to this problem has been to add a time stamp to a web citation. Then we are citing the source at an intersection of time and space (the URL). In other words, we are defining a chronotope for that text. Still, there is little clarity of source.

There is more diversity via CMC than in face to face communication. In a study of decision making via various media (Dubrovsky, Kiesler, & Sethna, 1991) the conclusion is that electronic groups have difficulty coming to consensus and that they tend to shift to more extreme positions than face-to-face groups. I suggest that the lack of rich context make it easier to "flame" and take extreme views. I posit that seeing the expressions, moods, body language of those we are talking to, makes us less likely to be hurtful and adamant about our position. After all, we are social creatures and social feedback in the form of smiles, frowns, and sadness affects us.

As I come to the end of my second feminist pragmatic narrative, I conclude that the Internet is neither gender-free nor completely disembodied. Socialized discourse patterns identify writers by gender despite lack of identification via visual channels. Inscription of androcentric hierarchies takes place on the Internet as it does in other modes of communication. Examples of male dominated discourse and the suppression of women's voices indicate the same patterns of discourse via computer mediated communication as via face to face communication (Herring, 1994; Herring et al., 1995). Women may feel even more repressed in this electronic medium because context is extremely reduced making connected knowing, intuition, and use of metaphors more difficult than in face to face conversation.

I told two stories. The first one was about the need for attention to gendered experience and the gendering of technology. The second discussed the difficulty of maintaining context on

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the Internet with its tendency toward disembodiment. Reduction in meaning-making is the result of this second story. A conundrum seems to be developing for women in CMC. Women need to establish their gendered experience, a context based process, while communicating within the reduced context of cyberspace.

<u>The Cyborg at School</u>

I now weave in my third narrative, which concerns the cyborg at school. This is a postmodern feminist story that has its roots in pragmatism, science fiction, and youth cultures of the Internet. It takes us from culture to nature, which will provide the setting for the fourth story: The domination of nature.

Think of the cyborgs envisioned in Chapter 1. The software becomes the obligatory adjunct of the teacher. Used for assessment, curriculum development, control of Internet access, and record keeping, the computer-software dyad extends the teacher's function. This compulsory attachment both frees and burdens the teacher and above all changes her/him.

"Cyborg", formed from the combination of words cybernetics and organism, is defined in the Oxford English dictionary (OED) as a "person whose physical tolerances or capabilities are extended beyond normal human limitations by a machine or other external agency that modifies the body's functioning; an integrated man-machine system". The cyborg is itself a transaction of nature and culture. "Other external agency" includes tools, technologies, language, eyeglasses, dentures, and all other cultural artifacts. To blend the biological being, according to this definition, with any tool of culture, a machine, a computer, a pair of shoes, sunglasses, or any other cultural artifact, yields a cyborg.

Donna Haraway's image of the cyborg began as a metaphor for feminist engagement in technology but was adapted by a more general cult for promotion of cybernetics.[36] In its

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[36] For example note (Albright, 1997; Gray, 1995; Lykke, 1996)

disruption of dualistic boundaries between humans and machines, animals and humans, and physical and non-physical world, the cyborg could be an aid to education. Yet, I see the cyborg metaphor as complicating the issues of instructional technology (IT) particularly concerning experience, continuity, and connection. Of critical importance is Haraway's insistence on an asexual origination of the cyborg, removed from nature and materiality. In this story, I extend the history of the cyborg. I enhance the concept of the cyborg by fortifying it with a Deweyan organic holism. I follow the cyborg to school.

Tools as Gendered Habits

I now pause to examine another dense area of strands. In this section, I establish tools as gendered habits. In order to do this I begin with Dewey's discussion of habits as tools. I discuss habits from the perspective of Dewey's arc reflex concept and I discuss tools from the perspective of Elaine Scarry's and Timothy Kaufman-Osborn's theory of projection and reflectivity. I then connect the arc-reflex concept with projection/response to demonstrate that habits function within the body the same way that tools function outside the body. Lastly, I use Shannon Sullivan's discussion of habits and gender to connect habits, tools and gender.

For Dewey, habits result from inquiry. The embedding of the result of inquiry into the body is a habit. In defining habit, Dewey says (1922/1983),

> …we need a word to express that kind of human activity which is influenced by prior activity and in that sense acquired; which contains within itself a certain ordering or systemization of minor elements of action; which is projective, dynamic in quality, ready for overt manifestation; and which is operative in some subdued subordinate form even when not dominating activity. Habit even in its ordinary usage comes nearer to denoting these facts than any other word. (p. 31)

In this definition, habit becomes a part of the body, it is dynamic, operative, and projective. As an operative part of the body, habits are not much different from say eyes or hands except that

they are more dynamic. Larry A. Hickman calls habits "internal artifacts" (1992, p. 15), the result of practice that is intelligent. All this points to how formation of habit connects to learning as growth (see chapter 2). Recall that learning is proceeded by a sense of disequilibrium. Equilibrium is restored when a person adopts new beliefs that are embodied as habits (Garrison, 1997, p. 91). Thus, the components of habit formation are often disequilibrium, initiating inquiry, establishing new beliefs, embodiment of belief as habit, and restoration of equilibrium. These events are not necessarily linear or uninterrupted. Sometimes a point of disequilibrium nags at someone for days, months, or years before that person finds and adapts an adequate solution.

Habits being projective and dynamic suggest that they change with use. Not only do they change with use, but also they change the person performing them. With this observation in mind, I point out the connection between habits and the reflex arc concept of psychology (Dewey, 1895/1972). Imagine overlaying the reflex arc concept, discussed earlier in this chapter, onto habit formation. This suggests a connection between stimulus and disequilibrium, inquiry, and belief formation. Similarly, it suggests a connection between response and all the rest of the components of learning, particularly embodiment of belief into habit. The main caution with this connection is that the distinction between stimulus and response is not rigid. The reflex arc concept is a circuit where the stimulus and response transact in a never-ending spiral of activity. Similarly, habit formation does not leave the body unchanged but each new habit projects itself onto the body, which transacts with the habit. A very simple example of this projection is the habit of walking to work. At first, the walk may seem tiring. In time, the body strengthens from the increased exercise and the walking becomes more effortless and enjoyable. The added enjoyment of the walk might be a response that keeps the habit in place or even stimulates other habits of exercise such as a twice-weekly tennis game. Thus, the reflex arc and the formation of habits are both transactive. They are both transactive and they both involve the physical body.

Dewey reminds us that when thinking of bad habits we have an easier time imagining the physical hold they have upon us [MW:3:228]. Think for instance of smoking. No one denies the physical hold that this habit has on people, that the habit has become part of the self. Similarly, other habits such as typing or driving a car, although not usually considered "bad", are as much a part of the person as those habits that we would rather avoid but often cannot. I wish to further stress that what is embedded in the physical person is more than neural impulses. Along with the physiological manifestations of the physical act are the cognitive, emotional, and spiritual manifestations of the habit. If this were not so, we could easily substitute another physical act for a particular habit. This substitution is rarely satisfactory. [37]

I continue making the connection between habits and tools. Even in his early works, Dewey made this connection. "…habits are the tools which put at our immediate disposal the results of our former experiences, thus economizing force" (Dewey, 1895/1971, p. 241). In Human Nature and Conduct, Dewey made a distinction between passive tools in a toolbox and the projective, dynamic nature of tools that make them function like habits (1922/1983, p. 22). He stressed that tools in organization with things "which independently accomplish definite results" are habits.

I stress the connection of habits and tools, where habits are functions (cognitive, affective, and spiritual) embedded in the body, and tools are more normally artifacts outside the body. Habits expand the function of the body in an internal way while tools extend the function of the body in an external way. In other ways, they are very similar. Dewey's use of metaphor in connecting habits to tools shows his understanding of their similarity

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[37] Think of eating habits. Not only do we want to eat particular foods but we want them cooked in a particular way, served in a particular way, and surrounded by expected ritual. Our eating habits, formed in childhood, are so hard to change that we often prefer badly cooked, unhealthy foods that remind us of our mother's cooking rather than what we know is healthier and tastier.

I now turn to the literature of feminist-pragmatism. Timothy Kaufman-Osborn's book Creatures of Prometheus, gives more warrant to this connection. Kaufman-Osborn talks about tools with a projection/reciprocation dialectic that mimics the stimulus/response of habits. Kaufman-Osborn adopted this terminology from Elaine Scarry's, The Body in Pain and modifies it to eliminate any dualism it might suggest much as Dewey comments on the reflex arc concept. For Kaufman-Osborn, the dialectic of projection/response establishes a continual cycle of action and response. Here the action of projection is a way to inscribe tools with tasks previously done by bodies. Reciprocation points to the ways that the tools affect their users. For example, think of the use of cars. They transport us, a function previously preformed by walking or riding an animal. The more we ride in cars rather than walking or riding animals, the less physically fit we become (a kind of reverse of the walking to work example above). Being less physically fit may have many other repercussions such as being less interested in participant sports and there are of course a huge web of other reciprocations of car use.[38]

Think again of the teacher as part of a cyborg relation. The association changes the teacher. Perhaps he/she is using software for individualized teaching as Schank recommends. The student and the teacher and the software now form a "triborg", where instead of forming a transaction between teacher, student and subject matter, it is a relationship between a teacher, a student, and a machine. How does this change the normal transaction of teaching/learning? That is yet to be learned.

Shannon Sullivan uses Dewey's concept of habit to represent gender (Sullivan, 2000). She has found a way of representing gender so that it is performative, relatively stable, but changeable. As Sullivan says, "Dewey's pragmatism has important resources to offer feminism

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[38] For example, the success of the car industry, rates of premarital sex and pregnancy, status of certain cars, pressure on governments for road building, effects of car accidents, need to enforce intricate laws forbidding drinking and driving, establishment of car inspection routines, licensing schemes, car registration schemes, driver training operations (to name just a few parts of the web)

on the particular topic of gender formation and transformation" (Sullivan, 2000, p. 24). Recall that Dewey thought of essences as enduring yet precarious. Gender is just such an essence. It is a habit formed from repeated practice of gendered behavior. Recall my story of the birth of gender, and the enforcement of gendered behavior by social and cultural structures. Habits do not change easily and the stability of habits is what keeps gender in place.

Dewey's representation allows gender to affect and be affected by its context but remain relatively stable. It allows removal of the worry of essentialistic considerations of gender. It also suggests more connection between gender as habit and gender as tool. Gender as habit is inscribed in the body and gender as tool is an extension of the body. Certain kinds of computers, mainly large UNIX and NT servers are mainly used by men. Men more than women use certain kinds of computer software, such as compilers and games. These tools, while projections of human bodies, are usually projections of male bodies. Yet, the reciprocation of these tools affects both users and non-users. I suggest that when reciprocation of a tool affects a much wider range of people than its users, it is the result of power inequities. Thus in our society, male gendered tools have more of an effect on women than female gendered tools have upon men. Female gendered tools have largely been circumscribed by and enclosed in the home, out of view of all but a small circle (Wajcman, 1991). I now weave my third tale, the story of the cyborg and how it goes to school.

Creation of the Cyborg

Humans were already cyborgs when women learned to swaddle their young infants in absorbent moss or to pick up a branch to knock ripe fruit off a tree. Humans became cyborgs with their first tool use. [39] For John Dewey, "to be a tool… is to have and endow with meaning";

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[39] This is not to say that other animals are not also cyborgs. Jane Goodall reports that chimpanzees and other primates are tool users and tool modifiers. These primates can also learn our language when their physical

therefore, language is the "tool of tools".(Dewey, 1925/1981, p. 146). He also refers to the self as the "tool of tools" (Dewey, 1925/1981, p. 149). "Cyborgization" is the inevitable and inexorable interconnection and transaction of nature and cultural artifacts. Inevitable, because any construction humans make has a material base and will return to that base with time. Inexorable, because human frailty needs the protection of clothing, weapons, and communication to survive in a cold (or hot) and hostile world populated with human eating animals. Because human frailty requires protection from nature and culture, there is a constant drive to improve cyborg tools. As tools are improved and new human offspring produced, there is the additional urge to pass on the knowledge of these improvements to offspring.

Not only have we always been cyborgs (at least as long as there has been recorded history, language being a tool), but we are cyborgs from the day we are born until the day we die, when we return to the elemental and material state of decay. What is variable in our "cyborgization" is how cognizant we are of the cultural parts that run through us, engulf us, and support us. It is never a matter of culture separating us from nature. Such a prospect is not possible. Culture is of nature and nature is of culture. We can barely see where the edges of culture and nature begin and end. Those who try to resist or reverse their "cyborgization" will not have long to survive. They will quickly freeze, starve, dehydrate, be eaten, or die from an infectious disease.

I turn now to examine Haraway's explicit cyborg concept beside Dewey's implicit cyborg in order to establish a longer history of "cyborgization" than Haraway created. I then examine this cyborg for help in understanding diversity, experience, and continuity in computer based distance education. I plead to keep the cyborg connected to nature. Finally, I consider the

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limitations to forming our vocalizations are removed by using aids such as American standard sign language (Goodall, 1999).

appropriation of the cyborg by those who might subvert rather than applaud feminist use of technology.

The Deweyan and Harawayan Cyborgs and their Progeny

Haraway traces her cyborg to the post World War II cold war era fusion of the cold war and space age. This cyborg creates confusion of boundaries, looks for a world without gender, avoids totalizing imagery, attempts to take responsibility for science and technology, and wants to subvert nature (Haraway, 1991). The particular boundaries of confusion are the intersection of human and non-human animal, animal and machine, and physical and non-physical (Haraway, 1991, pp. 151-153). Of its origin Haraway writes:

> The cyborg is a creature of the post modern world; It has no truck with bisexuality, pre-oedipal symbiosis, unalienated labor, or other seductions to organic wholeness through a final appropriation of all the powers of the parts into a higher unity…. The cyborg has no origin story in the Western sense…The cyborg skips the step with original unity, the identification with nature in the Western sense. (pp. 150-151)

This origin story allows the cyborg to evade nature. In addition to side stepping nature, Haraway is trying to disrupt the category of gender and to disconnect humans from their origin story. Later in her well-known essay, *A Cyborg Manifesto*, she says that "gender, race, or class consciousness is an achievement forced on us by … patriarchy, colonialism, and capitalism"(Haraway, 1991, p. 155). Seeing gender as created by oppression, she attempts to disrupt it. I have already discussed this and other definitions of gender.

The cyborg erases the dualism of nature and culture because it comes from both. This is a cyborg formed from a person born of nature and a tool born of culture. As I point out later in this dissertation, in erasing this dualism, there is also the danger of erasing nature when the hybrid cyborg is made to live in the cultural realm.

Dewey's cyborg greatly precedes Haraway's cyborg since it includes both pre-industrial and pre-historical cyborg creations. Although Dewey's interpretation of cyborg may not be what Haraway intended, I can be sure that she would not say that I have "bastardized" the cyborg. After all, the cyborg is not a sexual creature, but is created from "some of the lovely replicative baroque of ferns and invertebrates"(Haraway, 1991, p. 150). The cyborg as an asexual creature has no father and cannot suffer illegitimacy.

Dewey knew his cyborg without giving it this name. The commonality between Dewey's cyborg and its Haraway offspring finds its zenith where boundaries collapse. These boundary crossings were important to Dewey as disruptions of dualisms. The same fluidity of connection that marks border crossings also disrupts dualisms.

Dewey would distinguish between ontological and functional categories in his attempt to disrupt dualisms and accept even the category of gender as being functional despite its roots in oppression. Recall my earlier discussion of dualisms in the pragmatic ethos. Here I extend the pragmatic ethos with feminism. As John Stuhr writes:

> Classical American philosophy did not refuse to use these dualisms; instead, their point is that these notions refer to distinctions made in thought rather than dualisms among different kinds of beings or levels of existence. That is, these terms have a functional rather than an ontological status: they stand for useful distinctions made within reflection, and not for different kinds of being, discrete and separate before reflection. (Stuhr, 1987, p. 5)

For Dewey, dualisms meant sharp demarcations between terms related in experience. Experience for Dewey means an experimenting that leads to changed habits, emotions, conceptions, and sense perceptions (Dewey, 1911/1978, pp. 424, 451). Thus, his definition of experience in itself was a disruption of the schism between doing, thinking, and feeling. Dewey saw all these dualisms unified on the empirical plane of experience.

For Karen Warren, dualistic oppression derives from value hierarchies. Dualisms are oppressive when they represent oppositional, hierarchical, foundational, and exclusive categories. Non-oppressive dualities are continuous, inclusive, and functional (Warren, 1996, pp. xi-xii). This feminist opinion of dualities shifts their meaning into their context, an inference that Dewey would have applauded. I now review some of the cyborgian dualisms (or boundaries) that Dewey attempted to disrupt.

For Dewey "human nature" is a part of nature. In the introduction to The Collected Works edition of Experience and Nature, Sidney Hook writes:

> After all, Dewey has always argued and quite properly that the conduct of life, if it is to be intelligent, requires that we rely upon the relevant knowledge of the nature of nature. Otherwise all our plans and projects would be shipwrecked. Human nature is a part of nature, too, albeit a distinctive part, and must be studied in the same spirit and the same logic of inquiry, though not with the same techniques, as we study inanimate things and other animal behavior. (Dewey, 1925/1981, p. ix)

Hook highlights Dewey's interest in blurring the boundaries between human and non-human animals. This blunting is part and parcel of Dewey's rejection of the "spectator" view for the "participant" view of being and knowing. Hook, suggesting that human nature is a part of nature, puts all animals in one category of needing to deal with their environment. Living organisms require material conditions such as food, water and shelter. As humans, we can sever ourselves from nature as easily as we can sever ourselves from food.

Dewey's discussion of the psycho-physical plane represents the blurring of animate with inanimate parts of nature. Dewey attributed the uniqueness of life to the transaction at the plane of connection of the psycho-physical. In this interaction, the animate organism is not aware of its feeling although it has feelings. Awareness of meaning is not part of psycho-physical activity. When there is awareness of meaning Dewey called this activity mental (Dewey, 1925/1981, p. 198).

Although Dewey did not discuss the boundary between animal and machine, he did discuss the boundary between communicating animals and their primary tool, language. For Dewey, language, the "tool of tools", makes cyborgs out of all communicating creatures (Dewey, 1925/1981, p. 146). This is because language transforms the creature that uses it. "The consequences of partaking in communication modify organic ways of acting; the latter attain new qualities" also called the body-mind (Dewey, 1925/1981, p. 217). Dewey's use of the body-mind is an attempt to blur the boundaries between the physical and non-physical dimensions of life.

Dewey and Haraway differ substantially on the origin of the cyborg. Dewey's cyborg originates directly from human connection to nature while Haraway's cyborg clearly avoids nature. Dewey firmly connects his cyborg to the environment or nature when he writes:

> … some parts at least of the environment become what have been called "extra-organic" organs; that is to say, all the tools and devices of all the arts, although outside the body, operate in behalf of the functions of life just as do the eye, stomach, hands, etc. (Dewey, 1911/1978, p. 439)

This quote characterizes a very functional and grounded cyborg defined by tool use, a distinct contrast to the metaphorical and ironic cyborg of Haraway that avoids material origination. The "extra-organic" organs are the solidification of connected tools. Computer memory is an example of such an organ. The hard drive of a computer stores all kinds of information we do not have the time or desire to commit to memory. Along with the appropriate software, such as database software used to retrieve information systematically and efficiently, the hard drive expands our capacity to remember. This kind of expansion of human capacities makes a substantial difference when the cyborg enters the classroom.

My cyborg, the ironic offspring of Dewey and Haraway, needs to blur culture and nature. Culture and nature are slippery words to define and use. Often born from oppression and

maintained as polar opposites, I reclaim them for emancipatory work and blur their identities.[40] I cannot define them in opposition or as distinct entities because they simultaneously create and engulf each other.

As far as humans claim, nature started untouched by culture (even though we can only know it through our cultural constructions), being the material environment that was and is around us. Nature is the background condition of our existence; the necessary but not sufficient things that preceded life on our planet, the water, the air, the sources of nourishment, and the shelter that are necessary to sustain species. Nature is not static. Many processes affect nature and are affected by nature. For instance, hurricanes, rain showers, tidal waves, and particularly living organisms all affect nature and are affected by nature. Even the most passive looking plants break down their substrate, convert water and carbon dioxide to carbohydrates, and produce oxygen. We clearly need to consider nature as in constant and continual flux. The only immutable thing about nature is that it is always changing. Our descriptions of the nature of our environment only manage to catch a fleeting essence of the moment.

Culture inscribes itself on nature when organisms begin purposeful manipulations of nature consequently developing "extra-organic" organs. At first, this might have been simple tool use such as breaking off a branch, modifying it by pulling off its leaves, and using it for reaching or defense.[41] Language grew from the efforts of organisms to coordinate their activities for common purposes and then culture escalated (Dewey, 1925/1981 p. 141). The main point here is that culture affects nature and nature affects culture. The tearing of tree limbs could not occur

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[40] See Carolyn Merchant, *The death of nature: Women, ecology and the scientific revolution* (New York: Harper Collins Publishers, 1980/1990). Karen Warren, "Ecological feminist philosophies: An overview of the issues," in *Ecological feminist theories*, ed. Karren Warren (Bloomington, IN: Indiana University Press, 1996), ix-xxvi. and other ecological feminist philosophy.

[41] Jane Goodall observed this kind of behavior in Chimpanzees so I surmise that other primates had this behavior as well. (Goodall, 1999).

without the presence of trees and the action of the tearing serves to prune the trees. The birth of culture also means birth of the cyborg.

My cyborg inherits ironic sensibilities, abhorrence of oppression, and playfulness from Donna Haraway and its close relation to the organic and natural world from John Dewey. I want this hybrid cyborg to make visible the accepted relation of humans and machines in . Of particular importance, I note that Haraway's cyborg, a participant in Instructional Technology (IT), has perhaps lost its connection to nature.

<u>The Cyborg Goes to School</u>

In the age of digital technology, computer mediated IT is a frequent component of pedagogical situations. I now address four themes regarding IT. First, Haraway's cyborg is a regular participant in IT. Second, IT reinforces this cyborg's separation from nature. Third, the cleavage of Haraway's cyborg from nature risks the continuing survival of humans during an age of environmental degradation. Fourth, a cyborg that incorporates Deweyan organic holism is an alternative to separation from nature.

Haraway's cyborg is a regular participant in IT. Cognitive science, the theoretical source of computer technologies, focuses on mind and ignores body.[42] While, I doubt that Haraway supports this mind/body dichotomy, the unnatural origin of her cyborg, in addition to its use in science fiction literature, make it right at home in cognitive science based IT. The cyborg's separation from nature makes it possible to adapt it to a disembodied existence because there can be no bodily existence outside of the materiality of nature.

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[42] For instance, in Howard Gardner, <u>The mind's new science: A history of the cognitive revolution</u> (New York: Basic Books, 1985, p. 6), Gardner says: "there is the belief in that in talking about human cognitive activities, it is necessary to speak about mental representations and to posit a level of analysis wholly separate from the biological or neurological, … and the sociological and cultural".

IT is disembodied by cognitive science, welcomed by a cyborg already separated from nature, and then involved in encouraging that cyborg to distance itself further from nature. Haraway's cyborg, already a hybrid attached to a machine, which could easily be a computer, is at home in IT. I do not want to destroy this hybrid because it does valuable work in unifying dangerous and disruptive dualisms. I also hope this cyborg will accomplish the elusive task of getting women involved with the production of computers and their opus. Is it not then appropriate to send this cyborg to cyberschool where it can continue functioning as part of a computer?

In schools, as elsewhere, the importance of challenging dualisms underlies the existence of the cyborg. Dualities in school serve to separate, oppress, and rank categories that should be connected and continuous. This is no more apparent than in terms of race and gender. The girls can not play with the boys and the blacks can not play with the whites. We know without question whose interests are privileged. The dualities inherent in schools are destructive and ugly. Tracking defeats racial integration legislatively enforced by bussing. Unrecognized gender attitudes defeat girls' interest in science and math (American Association of University Women, 1992). We must find the cyborg that disrupts both dualities of race and gender in schools and allows connections to nature. Let us briefly step back from the cyborg and look at some general characteristics of computers.

Computers and the Internet, frequent candidates for educational technology, are not value neutral and not always benevolently bestowed. Like any technology, they serve the purposes (have values) of their creation (Winner, 1980). Recall from Chapter 1 how computers can be used to control, to observe, and to monitor. The valuation of technologies derives both from the way they are constructed and from the way they are used. Haraway wrote: "Technologies and scientific discourses can be partially understood as formalizations, i.e. as frozen moments, of the fluid social interaction constituting them, but they should also be viewed as instruments for

enforcing meanings"(Haraway, 1991, p. 164). We must be clear about the meanings they enforce.

In schools, the rhetoric of computer usage foresees computers replacing science labs, field trips, and other embodied experiences. In the IT scenario, we can explore the world by surfing the net, learn lab science from computer simulations, and connect to classmates and teachers via e-mail, listserves, chatrooms, and multi-user dungeons (MUDS). The experiences that IT is supplanting are embodied and they generally tend toward the natural or environmental part of our existence. Computer simulations can teach the facts of nature but I doubt they can excite love for nature.

The invention of computers was not for pedagogical purposes of sharing experiences in diverse classrooms. Computers were largely created by the investments of the military powers of the Western world or as Haraway says, are "illegitimate offspring of militarism and patriarchal capitalism…"(Haraway, 1991, p. 151). IT was further developed by the military for sure and certain teaching of military skills that allow no variance in their performance (Noble, 1991)

Clearly, technologies that emancipate and technologies that control, technologies that connect teacher and student with subject matter and technologies that divide all coexist in our educational institutions. Thus, not all cyborgs, whether born of irony or of nature, are created equally. A cyborg in school is handicapped or enhanced by the technologies to which it is connected. Furthermore, those technologies change meanings in the situations we find ourselves. Think of a visually impaired child (even mildly so) who can finally clearly see the world with effective corrective glasses and then finds that wearing glasses brands her as "four eyes". Perhaps she can get contact lenses and thus hide her technological dependency. However, perhaps her visual impairment does not lend itself to correction by contact lenses or, her family cannot afford them. She now finds her means of visual improvement also marks her as socially unfit. Her cyborgization is useful for the function of seeing the visual displays in her classroom but dysfunctional socially and psychologically. Similarly, IT, can be used for different ends.

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To reiterate, IT is disembodied by cognitive science, welcomed by a cyborg already separated from nature, and then involved in encouraging that cyborg to distance itself further from nature. Haraway's cyborg, already a hybrid attached to a machine, which could easily be a computer, is at home in IT. IT reinforces the cyborg's separation from nature with its emphasis on simulation, the mind, and military technologies. This argument is circular as any holistic argument must be, but not viciously so.

I now come to my third theme in which I differ very strongly with Haraway, concerning the particular danger for those technologies that separate organisms from their environment. Haraway wants us to take "pleasure in the confusion of boundaries and for responsibility in their construction" (Haraway, 1991, p. 150). She also wants to disrupt nature and states that "Cyborg replication is uncoupled from organic reproduction" (Haraway, 1991, p. 150). I interpret this as a reconceptualization of nature/culture dichotomy with perhaps the boundary shifted a bit. I think that in order to disrupt the construction of gender, Haraway wants to attribute all things to cultural construction. I particularly want to examine how this nature/culture dichotomy plays out in IT and follow the repercussions of the dichotomy to environmental consequences such as human survival. I like Dewey's concept of organic holism as an alternative to Haraway's distancing from nature. In organic holism the transaction of people and nature and culture all meet.[43] In organic holism, there is no identifiable end of nature and no identifiable beginning of culture. Nature and culture create and are created by each other.

The Environment and Education

My claim is that if we are to avoid continued environmental destruction, we must educate our students to cherish the natural environment, to be environmentally wise, and to evade

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[43] There are sulfur fixing bacteria that live in environments deprived of oxygen. They have evolved to thrive in a very different environment from such organisms as mammals. Similarly mammary glands nurture the infants of mammals but birds nurture their young in different ways, thus a breast has no meaning to an eagle

technology that enforces destructive values. Thus, I make the assertion that education must include connections and embodied experiences with nature (or environment). I feel particularly strongly about this claim as I watch over population, habitat destruction, and desertification of continental areas all serve to make the lives of humans and other creatures difficult to sustain. Thus, if we wish to suffuse students with an appreciation and respect for nature, we must implement organically holistic educational situations with more field trips, labs, and experiential activities. IT makes these goals difficult to implement.

My cyborg story ends. The cyborg has always been with us, certainly as far back as we have recorded history that uses language. Although the cyborg already merges the person with technology, this does not ensure the success of all technologies such as those used in IT. Rather, the cyborg complicates the issues of educational technologies particularly concerning experience and diversity.

Technologies are forms of solidified knowledge. As such, they actualize certain perspectives and certain experiences while excluding others. Those already marginalized in schools will find themselves equally or more marginalized by educational technologies unless great care is taken to prevent this reinscription of oppression. Furthermore, the student in a Distance Education (DE) situation is less visible and can stagnate and flounder without notice of the teacher since visual observation is not possible and other forms of observation and intervention are more difficult.

Haraway's use of the cyborg to subvert nature is a huge danger in any classroom but is particularly dangerous in the classroom, which already has reduced bodily context. Computers can easily separate the user from the environment. For students, this leads to a limited view of the world as constructed by the computer programmer or instructional designer. A consequence of this warped view might be disinterest in the physical materiality of the world, and even a

student's own body.[44] We have many pressing and worrisome environmental concerns. Issues such as acid rain, global warming, destruction of forest ecosystems, mass and escalating extinction of both plants and animals need to be examined and interrogated by all ages of students. A pragmatic framework that recognizes the organic holism of a child with her environment is a possible alternative framework for supporting cyborgs.

In my hybrid cyborg, I have tried to maintain Haraway's ironic tone as a means of disruption and contestation of objective truths. Perhaps because of Haraway's irony, the cyborg is seductively appealing for supporters of , for those who see women as already having achieved equity in technology, and for science fiction cultists. It is likely that those cultists and others, who so ardently and ironically embrace the cyborg as a means of stopping feminists from whining about lessened opportunities, have ironically misunderstood the tone and goal of this disrupting image. The most telling irony occurs when usurpers of the cyborg pervert its function of patriarchal subordination into one of patriarchal support.

Control of Nature (and the Natural Body)

I now come to the most delicate and treacherous part of my weaving. I fear that the stakes are very high if I fail to make my case here. Recall the images of nature controlled by computers. I claim that the use of computers to model nature is very seductive. Some advocates of computers even insist that the computer is superior to other means of experience with nature (Schank & Cleary, 1995). The computer is certainly more predictable and controllable than field trips, lab experiments, and hikes. Yet, with few exceptions, feminist pragmatists have spent little time discussing a feminist-pragmatism of nature (Gatens-Robinson, 1991; Heldke, 1987). Francis Bacon established a legacy where science's aim was the control and domination of nature (Keller, 1995, p. 33). Man's role was to dominate nature and nature was clearly female (Keller,

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[44] Decreased physical fitness among school children and increased obesity support this unfortunate trend.

1995, p. 36). In this model,, science must dominate and subdue the female-gendered nature and this oppression is "natural". As Evelyn Fox Keller summarizes the aims of Bacon, "Science controls by following the dictates of nature, but these dictates include the requirement, even demand, for domination" (1995, p. 37). How can the pragmatic ethos break the hold of masculinist control of femine nature? Considering the strength of Dewey's organic, naturalistic holism and the ardor of the eco-feminist movement (Merchant, 1980/1990; Tong, 1998; Warren, 1996), pragmatists and feminists have been surprisingly silent about the control of nature as it parallels the control of the natural body and particularly the control of women's bodies. I wish to remedy this gap by putting ecofeminism along side pragmatism in order to examine nature, essentialism, and the domination of nature. Here I look briefly at a Deweyan concept of nature as a prolegomenon to the work to follow. I also make a case for why feminist-pragmatists and pragmatic-feminists should care about the control of nature. [45] This is followed by another feminist pragmatist weaving of women and nature.

Nature can have many meanings such as a social system, a biological system, a cultural system, or some combination of these (e.g. see Macnaghten & Urry, 1998). Dewey saw nature as part of a holistic continuum that encompassed culture. I suggest that domination of nature is a part of the power hierarchies that philosophers often fail to recognize or at least underestimate and neglect to remark forcefully upon. There is sometimes the tendency, even among those philosophers who try to disrupt the dualism of nature and culture, to ascribe more power to one part or the other. Sometimes this is done metaphorically, ascribing to nature the characteristics of something like a garden that requires pruning (Warren, 1996). This metaphor justifies the weeding and cultivating of the environment. The biblical injunction for "humans to have dominion over the earth" is also an invitation to do what one wishes with the environment.

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[45] I interchangeably use feminist-pragmatism and pragmatic-feminism because I am not sure whether feminism trumps pragmatism or pragmatism trumps feminism trumps and if I want to promote the domination of one over the other.

Dewey noticed, "… the course of nature which is not fixed and complete, but which is capable of direction to new and different results..." (Dewey, 1929/1982, p. 290). There are two points that Dewey makes that support his insistence that nature is continuous with culture. One is that "change rather than fixity is now a measure of reality" or put another way "natural science is forced by its own development to abandon the assumption of fixity and to recognize that what for it is actually 'universal' is process" (Dewey, 1920/1982, pp. 114, 260). The other is his desire for diversity.

Dewey has two criteria for evaluating a society: "How numerous and varied are the interests which are consciously shared? How full and free is the interplay with other forms of association?" (Dewey, 1916/1980, p. 89). As Garrison (1996, p. 429) expands on this theme, "Oppressive societies eliminate diverse interest in favor of the special interests of the powerful few. Such societies are maladaptive because they are unable to respond agilely to environmental change. Diversity provides alternatives thereby funding freedom." Both genetic diversity and the social diversity of a pluralistic democracy provide alternatives for survival under adverse situations. Just as the individual must adapt to its environment in order to survive, political groups must also adapt to their environment for long term survival. Plurality enhances long term survival of political groups

Thus if one were to view nature as a garden that required constant weeding and cultivation, one would try to control change and eliminate diversity. Of course, we need both change and relative stability in our world. We must literally cultivate our gardens (farms) so we can have predictable harvests. A problem for feminists (and pragmatists) arises when the cultivation is complete, overwhelming, laced with power, and allows no other ways of being.

As we struggle, today, for a sense of environmental preservation in terms of tropical rainforests and in terms of control of land by endemic populations, this discussion takes on new meaning. At root to many of our current quandaries are varying amounts of cultivation. Michael Apple tells a story of capitalistic interests in search of cheap french fries (Apple, 1996, pp. 1-5).

This is not a happy story. It describes the displacement of farmers off their lands and into cities with the resultant destruction of community, sources of livelihood, and opportunities for education. In this story farmers are converted into homeless and jobless slum dwellers so that mega-corporations can manage the land "more efficiently" in the service of cheap French fries. In other places, the quest for cheap hamburgers and cheap orange juice has similar effects. Both the conditions before corporate takeover and the conditions after corporate take over involve cultivation of farmland. Yet, the degree, quality, and consequences of the cultivation are very different. Thus, I demonstrate both the dangers and utility of this metaphor.

How Natural is Woman?

In this, my final feminist-pragmatic story, I continue my weaving, here connecting the cyborg from culture to nature as I ask, How natural is women? I continue to weave ecological feminism into my pragmatic ethos in order to invoke an ecological pragmatic feminism. This serves both eco-feminism and pragmatism well since it unifies the deep-seated dualisms of eco-feminism, allows pragmatism to connect human and non-human communities and solidifies the need for both to find strength in diversity. The images of control, power and certainty in chapter 1 motivated me to seek an alternative paradigm of organic holism. Now I examine this paradigm and seek to assess its hospitality to women.

The pragmatic ethos from Chapter 2 includes consequences, organic holism, anti-foundationalism, fallibilism, social character of the self, contingency and chance, plurality, meliorism, radical empiricism, centrality of community, paying attention to consequences, recognizing how action arises from interest, a concept of social morality, desire for connection/community, the centrality of experience, attention to unifying dichotomies, and emphasis on artistic production and aesthetic appreciation. I view this ethos as supporting a continuity of self in an intricate web of connections with community, world, and nature. This

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web places the social realm (also called culture) as central to the emergence of self, community, and government and locates culture firmly joined and transacting with nature.

What happens when we bring to these principals a concern for relieving the oppression of women? Will pragmatism wilt under the demands of emancipatory expansion past hegemonic concerns for society or is it well suited to take on these additional demands?

Starting with a view of pragmatism that is comfortable with a general concept of feminism, I look at a specific feminist theory. Thus, I consider eco-feminism as it struggles to connect the cultural with the natural. This is an important connection to make in my quest for synthesis and one that pragmatism approves. At two critical points eco-feminism and pragmatism intersect and aid each other. Pragmatism can help eco-feminism bridge dualisms, eco-feminism can help pragmatism connect the human to the natural. These two intersections rely on the need for community connections within the diversity of populations, a place where the biological orientation of eco-feminism and the democratic orientation of Deweyan pragmatism support each other.

Eco-Feminism

Another cluster of threads catches my attention: ones composed of feminism and nature. Eco-feminism is based on the premise that the oppression of women is related to the oppression of nature and consequently that the relief of the oppression of women will also bring about the relief of the oppression of nature. A concept of female connection (essentialistic or changing) to nature leads very directly to eco-feminism. Eco-feminism is multi-faceted and has several distinct stances that disagree quite radically on major issues. These include social constructionist eco-feminism as explained by Carolyn Merchant , socialist eco-feminism as exemplified by Maria Mies, spiritual eco-feminism as exemplified by Starhawk, and nature eco-feminism as exemplified by Mary Daly. (1980/1990)

Karen Warren sees eight areas of connection between feminism and the environment (or nature) including historical and causal, conceptual, empirical and experiential, epistemological, symbolic, ethical, theoretical, and political (1996). I am particularly interested in the conceptual and symbolic connections since pragmatism views the self as emergent and thus greatly affected by language and symbolism.

Warren considers value dualisms and value hierarchies that derive from the dualisms of nature/culture, subject/object, and man/women. According to her, dualisms presented as continuities rather than distinct categories, and as functional differences, rather than foundational differences are useful. Categories that are exclusive rather than continuous, oppositional rather than complementary, confrontational rather than inclusive, hierarchical rather than synchronic present a problem for feminism (Warren, 1996, p. xi-xii). It is when culture is valued over nature and man is valued over women that there are problems with these categories. It is not the noticing that man is different from women that leads to oppression, it is the valuation of the difference that oppresses.

Warren's discussion of symbolism concerns the overlap of language dealing with the environment and gendered language specifically relating to women. Warren gives many examples of the language that "feminizes nature and naturalizes women" such as women being described in animal terms (cows, foxes, chicks, bitches), and nature described in female and sexual terms ("Nature is raped, mastered, conquered, controlled."..."Virgin timber is felled…Fertile soil is tilled and land that lies fallow is 'barren'.."). (1996 p. xv)

This primary aspect of eco-feminism, the connection between women and nature, either voluntary or enforced is very problematic. (Tong, 1998) Debate rages over whether this connection is primarily biological or primarily cultural, over whether it should be applauded or denied, over whether it should be severed or affirmed. In my consideration of characteristic features of feminisms, eco-feminism straddles several dualisms.

In the sense of Iris Marion Young, feminist theories may be classified as humanistic or gynocentric. "Humanist feminism defines women's oppression as the inhibitions and distortion of women's potential by a society that allows the self-development of men…. Gynocentric feminism defines women's oppression as the devaluation and repression of women's experience by a masculinist culture that exalts violence and individualism. It argues for the values embodied in traditionally female experience and rejects the values in traditionally male dominated institutions" (Young, 1990, pp. 73-74). Young views eco-feminism as an early example of gynocentric feminism in its unification of nature and culture and its affirmation of the connection of women to nature. (Young, 1990) Eco-feminism has diversified greatly since the early days of the second wave of feminism so that humanistic eco-feminists also exist who are mainly trying to find a place for nature in hegemony.

Oppression arises from the connection of women to nature and the continued oppression of nature. Thus, relief from oppression of women can only come when oppression of nature ceases. The main point of contention between eco-feminists lies in whether the connection of women to nature is empowering or disempowering.

Mary Bryson and Suzanne de Castell describe a taxonomy of gender and ascribe different ways of relieving oppression as related to this taxonomy. Briefly this taxonomy is gender as biological, gender as socially constructed, gender as ideological construction of a patriarchal hegemony, and gender as a post-modern non-cohesive and shifting pastiche. In eco-feminism, consideration of gender depends upon whether the attachment of women to nature is voluntary or enforced, and whether it is essential or cultural. Gender defined by the domination of males who force the attachment of women to nature in their demeaning of childbirth, lactation, and caring is one possibility. A second possibility, attributed to a social constructivist concept of gender developed by parenting, celebrates the unique ability of women to menstruate, parturiate, and lactate. This analysis keeps women stuck in oppositional dichotomies. Women's connection to nature is the central premise of eco-feminism. Viewing this connection as essentialistic and

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innate or enculturated and acquired has been a continuing rift in eco-feminism. I now look for non-dualistic ways to examine nature and its relationship to women.

<u>Nature</u>

Here, I develop some more arguments concerning essentialism. Eco-feminism tends to fall into an essentialistic trap making it less useful for pragmatism than it other wise could be. I draw on developmental systems research, etymology, a pragmatic sense of organic holism, and my knowledge of biology (particularly evolution) to examine the connection of women to nature. In doing this, I attempt to find non-essentialistic connections in order to make pragmatism useful to eco-feminism and eco-feminism useful to pragmatism.

When I talk of nature I could replace nature with environment and still be close to the meaning I seek. I am talking about the background conditions of our existence, the necessary but not sufficient things that preceded life on our planet and now maintain life. These material things are the water, the air, the sources of nourishment, the shelter, and the minimalist amount of reproduction that sustains species. These needs are stable but mutable especially with respect to Darwinism, which establishes the evolution of even basic needs.

Of critical importance to my arguments, this view of nature as mutable allows nature to be descriptive while still able to change. In this view is the result of many preceding factors, both biological and cultural. As these factors change, so does nature. Thus, my concept of nature at this moment is not the same as it was several minutes ago and certainly not the same as   of nature of in my childhood and adolescence. If I want to discuss the nature of the world (as environment) in the same way, I could make the same points. Every organism on this planet affects its environment, the nature of the world. For instance plants, often looked upon as passive inhabitants, have profound effects on the natural world. They break down their substrate, convert water and carbon dioxide to carbohydrates, and produce oxygen. We clearly need to look at our world as one in flux, one that changes constantly and continually. The only immutable thing

about our world is that it is always changing. Our descriptions of the nature of us or the nature of our environment only manage to catch an essence of truth for a moment. This is a difficult concept for many people since we often crave stability and predictability.

A feminist objection to nature stems from two uses of the concept of nature. One is an insistence upon an unmoving nature of women (and men). That nature emanates from the biological function of women to bear children. Thus, a woman's biology delimits the function of her as a woman in this world. This is an unfortunate characterization of women because it both excludes non-childbearing women from the essence of womanhood, and excludes child bearing women from "natural" pursuits outside childcare and rearing. It is also unfortunate in that the need for some women to distance themselves from this stereotype leads to a backlash where no regard accrues to the caring and child rearing activities of some women (and men).

The other objectionable application of the word nature is the identification of women with nature as opposite to the male identification with culture or reason. Dewey states: "Essence … is but a pronounced instance of meaning" (Dewey, 1925/1981, p. 144) and meaning always emerges in a social, historical, and political context. This statement of Dewey would support the social construction of gender and all its stereotypes. Sullivan's work on gender as an instance of a Deweyan habit (discussed above) further supports the stable but non-essentialistic character of gender.

In another sense the literature of developmental systems unifies biological and cultural explanations of development and explains trans-generational changes of both biology and culture. Innate and learned traits become indistinguishable in this approach and both are subject to change. "..separation of organism and environment is called into question. (p. 300)" (Griffiths & Gray, 1994). The main unit of evolution is the life cycle which interacts with many developmental resources including but not exclusive to genes, parental resources, and persistent resources such as sunlight. This expands and supports a Deweyan understanding of social construction to biology and all that this connection entails.

From a viewpoint of feminist philosophy, Young says: "The experience of menstruation, coitus, pregnancy, and lactation which challenge bodily boundaries, give women a greater experience of continuity with nature" (1990, p. 83). Establishment of continuities of human bodies with natural bodies establishes from various viewpoints (such as feminist philosophy, developmental systems, and Deweyan pragmatism) where the feminist bodily experience makes this connection more intuitive if not more true.

I see the connection of women to nature as part of the connection of all creatures to nature and which requires; one to point out the connectedness of men as well. I think that we can sever ourselves from nature as easily as we can sever ourselves from food. This is more than a rhetorical statement since our food sources emerge from nature and would not exist without nature. Except for brief periods, doing without food will serve to destroy our materiality, which includes our minds.

Furthermore, Dewey made the specific connection between mind and body:

Every "mind" that we are empirically acquainted with is found in connection with some organized body. Every such body exists in a natural medium to which it sustains some adaptive connection: plants to air, water, sun, and animals to these things and also to plants. Without such connections, animals die; the "purest" mind would not continue without them.(Dewey, 1925/1981, p. 212)

I want to expand Dewey's body-mind to a third hyphenated connection, that of body-mind-nature, because the body-mind transacts with nature, depends upon nature, and creates nature as intimately as the body and mind transact.

Carolyn Merchant has traced the evolution of a view of world as nature to view of world as mechanism influenced by the scientific revolution.(Merchant, 1980/1990) The organic view of world as nature is intimately connected to a concept of earth as mother. The domination of the earth by capitalism is then parallel to the domination of women by men. Thus, there is an easy connection between the ecological movement and the feminist movement. I do not wish to

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pursue this path and celebrate earth as woman and rescue "her" via ecology. Rather I wish to de-emphasize the essentialism of this notion and introduce a broader metaphor of nature. The reasons for de-emphasizing this essentialistic vision of the world are threefold: it is clearly contrary to a pragmatic stance, it narrows the possibilities for women, and it denies the universal effect I seek.

Pragmatism tries to unify the dualisms of nature and culture, humans and human nature, and mind and body. Eco-feminism places humans in their environment along with non-humans to form a concept of world as environment, a good place from which to examine nature. Pragmatism denies the metaphysics of presence and instead supports a close but evolving connection with nature

Etymology

The etymology of the word nature both helps and hinders my attempt to find a concept of nature more useful to my feminist project. The Oxford English Dictionary indicates that nature comes from the Latin *natura* meaning birth, constitution, character, course of things.(Oxford English Dictionary, 1992) At first look, the etymology of the Latin *natura* seems to entrap us in a feminist essentialism. (Webster, 1913) Wolfgang Schadewaldt reminds us that "*natura* …originally belonged to the language of the farmers and the breeder who used *natura* in a concrete way to designate the uterine orifice of a female quadruped".(1979, p. 160) This is not only gyno-centric but it is mammo-centric since this describes the mammalian way of giving birth as the only nascent experience. Again following Schadewaldt, I turn to the Greek *physis*, which allows nature to be an event causing growth (p. 160). When nature is growth, it is the ground material for living things, not just mammals and certainly not just women. Nature can now be necessary for life without being immutable since it is also affected by evolution. While only women can give birth, all organisms must grow.

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<u>Organic holism revisited</u>

I agree with pragmatists such as Catherine Roach who disrupt nature/culture dualisms (Roach, 1996). The pragmatic view of disrupting this dualism is to consider nature and human nature as a continuity, not a dualism. Another valued duality that remains unsettled is the human/non-human distinction. There have been long and frequent debates between those advocating deep ecology and those against it. The neo-Darwinian view that Dewey espoused makes no differentiation between human and non-human animals and thus evolutionary processes equally affect them. All animals are needful of an environment that nurtures. For some animals, the proper environment is one that provides food in the form of other animals. This does not remove humans from a responsibility as a sentient creature to make plans and implement them with the consequences of a sustainable world in view. Yet, there is an obvious tension here where many human activities could so readily be interpreted as abuse of non-renewable resources. This tension is manifest when the unequal distribution of resources among developed and emerging nations is considered. Without reducing Darwinism to social Darwinism, where brutal competition reigns, puts a definitely anthrocentric cast onto current human use of nature. Great sensitivity to the meaning and preservation of diversity is essential to understanding a concept of sustainability in a constantly changing universe.

Deep ecologists share some of the same opinions with Deweyans. They see no discontinuity between human and non-human animals and value diversity for its own sake. A biological view that Dewey supported valued diversity for its ability to provide variation in inhospitable environments, to provide a buffer for survival. Thus, while deep ecology shares the desire to unify the human/non-human dualism, it does so for the sake of diversity itself and nor for the value of diversity for survival of life. A Deweyan pragmatist would say that humans may take what resources they require precisely because they are part of nature and what benefits humans benefits nature. The problem of this view is that humans are greedy and often take more

than they require for life and health. In doing so, they are reducing worldwide diversity and reducing the safety buffer, that diversity provides. A capitalist economic and political system exaggerates the unequal and inequitable distribution of resources globally and by class.

<u>Biology</u>

Dewey's recognition of the need for diversity comes directly from this biological understanding of genetic variability in a community. When there is genetic variability, a population can withstand adverse environmental conditions. Not all individuals will be equally able to survive but the entire population is likely to survive. Dewey extends this biological principal to the social diversity of humans. In a democracy, the same kind of diversity is provided by a plurality of opinions.

I see a parallel trend between the domination of nature as women and the domination of technology as women. Carolyn Merchant advances the claim that the scientific revolution modified the view of nature to that of a mechanism. I posit that we are now undergoing a computer revolution, a modification of a worldview based on mechanism to a worldview based on a computer network. Oppression of women has followed along with varying worldviews where women were and are equated with nature, which could be subdued, to our current age, where computers are often regarded as women, also to be subdued by male hackers, programmers, and systems analysts. As secretaries and office specialists women now form a group of frequent and constant users of computers and computer networks, yet the gender technology gap strongly indicates that women are not the creators of these systems and machines. Some of the terminology of computers anthropomorphizes them as women to be dominated. Adding to this oppressive situation for women is a danger to freezing humanity into the concept of a computer. This computer, programmed and configured by people has no inherent diversity and its domination could lead to the end of life if it leads to the end of diversity. Edith Forbes explores this possibility in a layered virtual reality world (1997). In the

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world of her science fiction novel, overpopulation leads to the formation of a world where people's minds reside virtually, forever. There are no babies born and no one dies. This world is totally stagnant and unable to respond and change, thus doomed to extinction.

<u>Community</u>

The continuity of nature and human nature means that communities of humans are a continuation of communities of non-human animals. Yet, communities of non-human animals usually involve predator-prey relations and very little cooperation except between individuals of the same species and not always then. These are usually very competitive communities with very little evidence of altruism. This might be a better model for capitalism than for the democratic communities that Dewey advocated. This problem of communities creates inconsistencies with the biologism that Dewey espoused.

Creation of community is a beneficent endeavor as in community of learners and communities created in cyberspace as space where common goals and values are shared. Yet, the biological model of community while it does indicate unity does not indicate a voluntary and mutually helpful assemblage. In an ecological community, the community is the product of evolution and is beneficial only to the existence of the entire community including all species and perhaps even the inorganic stratum. This is quite a different concept than the anthropocentric community of the Internet or of the school or of the neighborhood. The difference is the organic holism of the ecological community, which creates a closely interacting, constantly changing, unity that is not sentient of its purpose, organization, or composition. A part of the change in the ecological community is due to purely random changes in chromosomes and genes which when acted upon by the environment are beneficial or not. While this community may not act in altruistic manner, it always acts for the survival of the community because indeed it cannot act any other way. This concept of community is defined in the human world to mean groups of humans that cooperate for some good known only to those composing the community although

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they may choose to act more broadly to benefit other groups of humans and rarely the non-human world.

Another difference between the ecological community (eco-community) and the anthropocentric community (anthro-community) is the consideration of affect as a necessary part of the anthro-community. Val Plumwood differentiates between an ecosystem and a reciprocal social community as having fundamentally different access to rights and values. (1996, p. 160) I argue that the reciprocal social community or anthro-community is merely a subset of the ecosystem that has been rather contrived by humans. Giving this type of community special ethical advantages and protections is indeed anthropocentric and seems unethical in its own right. This is not necessarily a rejection of deep ecology since I am not saying that one type of community should be privileged over another but rather that both types of communities need to be considered as part of the holistic assemblage of nature and culture in which we live. Plumwood also takes task with the inability to distinguish nature and self, that deep ecology promotes as being detrimental to the self and its caring for other. This indistinguisability also tends to de-emphasize the particularity and emotionality of attachment to lands by peoples who have lived there for many generations. Finally, Plumwood pleads for an ethics "which can allow for both continuity and difference and for ties with nature which are expressive of the rich, caring relationships of kinship and friendship rather than increasing abstraction and detachment from relationship." (Plumwood, 1996, p. 168)

What does pragmatism do for eco-feminism and what does eco-feminism do for pragmatism? The possibilities for mutual aid are astounding. Pragmatism helps eco-feminism avoid its issues of an essentialistic concept of nature and women. Eco-feminism helps pragmatism with its connection of humanity to nature. These two connectionist trends are mutualistic. The more intimate the connection of nature and humanity, the more important it is to keep that connection fluid and evolving. Eco-feminist-pragmatism is inclusive based on the universal connection/transaction of people with nature and the ability for this connection to

include differences based on race, class, disability, and other -isms. Reliance of a connection of nature to humanity is based on humanity's need for diversity. Humanity functions best when diversity is encouraged. With care to avoid social Darwinism and other reductionist biologisms, eco-feminism aides pragmatism and pragmatism aides eco-feminism

<u>Reviewing the whole cloth: A holistic feminism of connection</u>

Now that I have finished my feminist pragmatist stories and my weavings, I look at the whole cloth for a holistic feminism of connection. I connect nature with culture, meaning with context, mind with body, and the individual with a context, culture, and history in order to seek a cohesive, connected unity. Note, I have not considered all aspects of feminism so that I have only made another halting effort at a feminist-pragmatism. It is unerringly holistic as far as it goes. I hope it is porous enough to include black women, lesbians, those affected by classism and ablism but there is no guarantee without more testing, trying, and reflection.

Recall the strong images of technology from Chapter 1. These images included individualism, control, certainty, power, loss of body, and domination of nature. They are the foils against which I present an alternative vision of technology, that I call sustainable technology. I now review the features of holistic feminism, which I will use in the next two chapters.

In Chapter 2, I established that pragmatism must question itself. I then set out to interrogate Deweyan pragmatism for a pragmatic ethos that supported and included organic holism. In this chapter I examined pragmatism from a feminist standpoint and fortified my pragmatic ethos with the literature of feminist-pragmatism, the literature of feminism, and my own voice of experience and study. What I have created is a relatively stable but movable feminist pragmatic platform for examining WBI. I nowsummarize some of the characteristics of this platform that will provide insight into a feminist-pragmatic view of WBI.

Reification of experiences, the result of inquiry, produces habits. A feminist contribution to thinking about experience is the importance of the personal as well as the communal. For Dewey, education is composed of experiences. I am sure Dewey recognized that only personal experience would become habits, yet he still tried to dodge claims of subjectivity so stayed clear of personal experience. [46]

Personal experience drives all learning, not just for the feminist. Skillful teachers spend much energy seeking connections with their students' interests. In order to do this, a teacher often needs to know more about her/his students than in-school knowing encourages. The most effective teachers know about their students' cultures, histories, contexts (e.g., see Garrison, 1997; Rose, 1989). As noted before, schools and students' lives are implicated in complicated knots and trajectories of experience that reach far beyond the school and its setting. Paying attention to a student only in a school setting is an incomplete picture of that student.

Another feminist contribution to the concept of experience establishes the pervasiveness of gendering. Then, with reification of experience in the body as habits and outside the body as tools, gendering of habits and tools also occurs. Gendering of habits and tools contributes to the valuation of habits and tools. The valuation of habits and tools reinforces a Deweyan sense of instrumentalism. When tools have values, the means of accomplishing a task also becomes the end, reinforcing the values of the tools. For instance, if I say that bikes have the inherent value of saving natural resources, riding my bike to work both saves resources and transports me to work. My original intent was transportation but the valuation of the tool I use for transportation has another end of saving natural resources and limiting pollution. What started for me as means (bicycle as transportation) is now also part of the ends I desire (bicycle as saving natural resources). In a feminist vein, if I feel that a computer is masculine, I may avoid using it or risk weakening my female identity. The computer, as a means of organizing my web site, has this

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[46] What could be more personal than the habits that are inscribed in a particular body?

other end of afecting my identity, perhaps making me feel odd. This is, of course, a sexist viewpoint, but one that cultures inculcate and perpetuate. By accepting this particular valuation of computers, I also perpetuate sexism. The sad part is that much of sexism is institutionalized and barely visible even to those of us who seek a different viewpoint. Think of office dress codes. These differ for men and women (and are probably ridiculously restrictive for both). Both women and men are constrained by the institution as to what they may wear. Fighting these gender typical modes of dress is likely to cost one her or his job. We are so accustomed to following certain gender specific rules that we even determine the sex of a distant person by the length of their hair and are often mistaken.

Recall, also, my earlier discussion of the objectification of women's bodies by a social and economic system that benefits from women's distress at not having the "ideal" body. Despite the frequent objectification of women's bodies, I demonstrated that bodies are necessary for meaning making. Feminists have a double struggle here, to resist objectification without also resisting the body. There seems to be a great deal of confusion about these issues among young women as indicated by the large percentage of college women who have eating disorders. Eating disorders, often theorized as a way of controlling the body or making it disappear, clearly are in conflict with a positive sense of embodied meaning making (Bordo, 1993). Eating disorders persist particularly among educated and intelligent women. I hypothesize that these women are trying to evade the objectification of their bodies by starving themselves to the point of disappearance or hiding within the curve dampening folds of fat.

I demonstrated projection and reciprocation of tools. Combining this concept with the gendering of tools indicates that gendering affects tools and habits. The relative lack of female computer users further stereotypes the tool as male and may lead to adjustments in marketing to women, adjustments in design of new computers, adjustments in the teaching of computer skills.

I discussed the formation of the cyborg, expanding and balancing its definition so as not to privilege culture over nature. Schools, as with many other institutions, are a site of enforced

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cyborgization. Introduction of tools such as pencils, paper, and books occurs as soon as children enter school. Theses tool act back on the children to from children changed by their interaction with tools. In this process, it is important to keep these children attached to and aware of their natural as well as their cultural selves. This is important for a holistic educational experience and for the welfare of humanity and the natural environment.

Lastly, I discussed women's nature as stable but not essential. In all this consideration of gendering of tools and habits, we must come back to an understanding of the contextualization of this gendering. Creation of gendered identities is time and place dependent. There is little, if any essence of what must be. Feminism and pragmatism combine in theoretical agreement to throw essentialism out of sexism. You might say my biological interests should recognize the physical differences between the sexes and the different functioning that results from this. The last word I give to pragmatism. Of course, there are biological differences, both morphological and physiological. Women have the particularly unique position of incubating, birthing, and providing the first food to babies. Yet, in many other ways humanity has more similarities than differences, language being one of the most powerful things that connects humanity. The pragmatic response to this is that there are both differences and similarities between men and women. Some are physical and physiological but most arise from culturally created gender, reinforced by the power of capitalistic and colonialist interests.

Thus, I finish my weaving and my cloth is now ready to apply to the pedagogical needs of WBI. Chapter 4 applies this cloth to the current state of WBI while Chapter 5 looks to the future and an alternative vision of sustainable technology.