

Charles Sander Peirce initially formulated pragmatism as a theory of meaning.

Consider what effects which might conceivably have practical bearings we conceive the object of our conception to have. Then, our conception of these effects is the whole of our conception of that object. (1878/1992, p. 132)

Today, some recurrent features of pragmatism include 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 (Bernstein, 1992; Stuhr, 1987). Pragmatism has potentially many components but no one constituent defines it. Pragmatism is itself holistic and when decomposed, it loses meaning. Therefore, I must maintain its meaning by using circular explanations and explorations that iterate back on themselves. I enter the circle of the pragmatic ethos at contingency and contextuality.

Contingency and Contextuality

A pragmatic ethos is necessarily different for different philosophers since contingent and contextual viewpoints will not be identical for all. This may lead critics to see weakness in the ethos for its lack of fixed essence, universality, centeredness, and certainty. The ability of the pragmatic ethos to shift with context along with its attempt at including diverse viewpoints lay it open to attack and dismissal. Most adherents subscribe to its anti-foundational stance, myself included. The claim of anti-foundationalism may make readers wonder about the possibility of characterizing pragmatism at all, since the trait of anti-foundationalism is itself part of the foundation of pragmatism. I am therefore presenting you with a conundrum. If I persist in claiming that pragmatism is anti-foundational, I do not have a leg (foundation) to stand on to

establish its character. Uncertainty is counter to what the dominant image of science requires, what often gives people solace, and what philosophers more usually seek.

Then why should I pursue a philosophy that is uncertain about itself? The brief answer is that uncertainty is the state of nature, teaching, and an organically holistic world. Attempts to remove uncertainty, to eliminate contingency make transactions and change impossible, since these attempts require the examination of transacting systems as free standing, self-contained units; thus removing complexity and interconnection. Complexity, transaction, interconnection are exactly where I see strength in pragmatism and why I find it promising as a complement and enhancement to feminist theory. Pluralism allows the intricacies and complexities of feminist theory into pragmatism.

These pragmatic properties of complexity, transaction, and interconnection make it comfortable with my biologist's sense of the world and give me hope that pragmatism will support the complexities of teaching. Following Dewey, I seek stable platforms for critical, reflective, and transformative action rather than certainty. Of greatest importance, the uncertainty about itself allows pragmatism to welcome other viewpoints.

Acknowledging that the pragmatic ethos differs for different philosophers, I turn specifically to the pragmatism of John Dewey in each section of the descriptions that follow. I turn to the Deweyan pragmatism for three reasons. First, Dewey was known to encourage woman scholars and promote coeducation (Seigfried, 1996). Second, he was profoundly involved in educational issues. Third, philosophy of technology was central to his philosophy (Hickman, 1992). For these reasons, Dewey's pragmatism is an excellent place for me to launch my search for a feminist pragmatic view of DE. As I discuss the traits of the pragmatic ethos, I give Dewey the last word and the last consideration in each section.

Consequences

In addition to complexity, interconnection, and pluralism pragmatism is concerned with consequences. Cleo Cherryholmes sees Charles Sanders Peirce's pragmatic maxim as the start of pragmatism. Peirce wrote: "...pragmatism is in itself no doctrine of metaphysics, no attempt to determine any truth of things. It is merely a method of ascertaining the meanings of hard words and abstract concepts" (Peirce, 1893-1913/1998, p. 400). And Peirce later clarified as:

The method described in the [pragmatic] maxim is to trace out in the imagination the conceivable practical consequences--that is, the consequences for deliberate, self-controlled conduct--of the affirmation or denial of the concept; and the assertion of the maxim is that herein lies the *whole* of the purport of the word, the *entire* concept. (Peirce, 1905/1984, p.493, emphasis in original)

For pragmatists to be true to themselves, they must understand the consequences of pragmatism. Therefore, I call pragmatism the philosophy of philosophies. Unlike most philosophies, it must philosophize about itself. It must examine its own ethos and consequences. This is because pragmatism judges the meaning and truth of statements on what the statements accomplish in the world when acted upon. Pragmatism leaves all its premises open to examination based on their consequences. Consequences shift, they are contingent, therefore they require reevaluation or philosophical reconsideration.

Peirce's pragmatic maxim stresses consequences. Cherryholmes (1999) uses this maxim to discuss and demonstrate the consequences of action although the pragmatic maxim refers to thought. Cherryholmes unification of thought and action is an example of the pragmatic unification of dualisms, mind/body in this case.

Cherryholmes reminds us that consequences occur in natural settings (1999) and that consequences are the present looking forward as the result of past experiments. The natural setting that Cherryholmes talks about is a holistic system and our ability to survive in that system

depends upon our ability to foresee dangerous consequences. Our ability to enjoy that system depends upon our ability to foresee pleasurable consequences.

Lastly, our ability to learn from the consequences that befall others depends upon complex holistic social systems such as communities and schools. Thus, I return to organic holism, the stable yet mutable concept that cements social relationships and nature from assemblages of bacteria to colonies of ants to giant cities and much in between. Since organic holism is the positive side of anti-dualism, I must discuss them together

Organic Holism, Continuity, and Anti-dualism

Pragmatism allows functional distinctions while avoiding ontological dualism, thus preserving continuity. The mind/body dualism is one of these dualisms that pragmatists seek to disrupt. There may indeed be differences between mind and body at least in a symbolic sense, but these differences shift in context and escape being essentialistic in the pragmatic scheme. Categories that shift in context disrupt notions of eternal, immutable foundations. Later in the chapter, this leads me into the discussion of anti-foundationalism, anti-representationalism, and anti-essentialism, as well as a general discussion of the lack of self-assurance, and universality in pragmatism.

The contingencies of consequences only make sense within consideration and understanding of extant systems, also known as current conditions or current context. Thus, the pragmatic ethos continues to evolve within current conditions and is contingent upon those conditions. Furthermore, aspects of character comprising pragmatism find meaning within current context where they interact within context to form an organic functional whole. These traits or parts of the pragmatic ethos, as in any holistic system, lose clarity in isolation, since much of the meaning of pragmatism lies in the transaction of its traits with each other and with their context. The meaning of pragmatism emerges as the traits come together into a unified though dense whole.

As a biologist who views life as a contingent, contextual, constantly changing, and holistic continuum, I depend upon biological metaphors to provide me with a sense of functional and organic connection and transaction that occurs in pragmatism. As a mother, I rely on the contingent and transacting experiences of birthing and raising children to deepen my insight into the pragmatic ethos and its transactions. As an Instructional Technologist, I look for traits of educational technology that will support the complexity of pragmatic transactions. Thus, I start and end my quest for an understanding of the pragmatic ethos with pluralistic organic holism, as this concept is for me the part of pragmatism that forms the framework for the rest of emergent pragmatism. Organic holism establishes pragmatism as complex, changeable, and potentially connected, traits that suit biological systems, the complexities of motherhood, and the interconnectedness of students and teachers with schools, communities, and larger natural systems.

The organic holism I seek is the connection and transaction of organisms and their environments in a never-ending cycle of growth, death, decay, and change. Ironically, death of individual organisms assures the life of the larger holistic system since nutrients and water supplies are finite and need to be constantly recycled for reuse.¹⁵ Nature is an example of such a holistic system, and as in many holistic systems, cycling and transactions are imprecise and messy. Thus, nature is messy. When it rains after a long drought, the rain falls where it is needed and where it is not needed, filling lakes, eroding beaches, destroying the habitats of some organisms while it revives the habitats of other organisms. The life of an organism is also a messy organic system. When we human organisms take medication for one ailment, we affect

¹⁵ This may seem counter intuitive or overly broad in its generalization, yet the recycling of nutrients in the biosphere is necessary for life to continue. So much of this breakdown of dead organisms occurs at the microbial level, that we are not easily cognizant of the large and essential effects of bacteria, fungi, and microscopic algae on the cycling/recycling of the necessary pre-requisites of continuing life. If death were eliminated then life would also be eliminated since both are necessary for organic existence to continue.

other body systems for good or for ill. Education is a messy holistic system. Lesson plans often target cognitive development but may also affect the physical or emotional actions of the student.

The interconnected messiness of life and nature and education are characteristic of holistic systems wherein sub-systems can be identified for methodological purposes but cannot be removed from their existential connections with the rest of the system. Parenting is messy. Disciplining a child for misbehavior does not necessarily convey the message we wish to transmit. When we spank Suzy for biting George, we may be teaching her that physical force is okay when you can get away with it rather than the message of compassion for others that we sought. Affecting one component in a holistic system necessarily means affecting other components in that system, often in unpredictable ways. Sometimes we recognize these incidental interactions immediately and sometimes we do not recognize them for some time. This lack of predictability, this contingency is particularly true of ecological studies involving large assemblages of organisms and their environments but it is also true of educational systems. For instance, involving computers in classroom activities affects social interactions, literacy skills, fine motor skills, physical well being of students, and other factors that we have not yet learned to identify.

A classroom and the pragmatic ethos are two examples of holistically organic systems composed of sub-systems of interacting and transacting parts. Biological systems, as models for organic holism, provide intuitive inspiration in seeking a pragmatic characterization of classrooms and schools. Classrooms as well as schools are holistic sub-systems contained within other holistic systems that expand out as far as we can study and understand. By their nature, holistic systems interact both with the sub-systems they contain and with those systems, that surround them. Though we can make some distinctions, holistic systems are open. They are not strongly bounded. Thus, it is often difficult to determine where holistic systems begin and end. Even fairly discrete and self-contained holistic systems such as human bodies have leaky boundaries. Humans constantly take in substances such as food, air, and water from their

environment and give out substances such as expired air, sweat, urine, and feces. Cessation of any of these transactions with the external environment leads to the death of the human. Thus, I establish the requirement that organic systems interact, or better still, transact, with other systems. For just as it is necessary for components of an organic system to interact in order to form the organic whole, it is necessary for organic systems to interact with each other in order to form more encompassing organic wholes.

Dewey also often used biological examples to explain his philosophy. For Dewey (1925/1981),

...living as an empirical affair is not something that goes on below the skin-surface of an organism; it is always an inclusive affair involving connection, interaction of what is within the organic body and what lies outside in space and time, and with higher organisms far outside. (p. 215)

Biological examples are intrinsically holistic because biology works on systems. Think again of the complexity of the human body. For convenience, we divide the body into several systems (i.e. circulatory system, respiratory system, endocrine system, nervous system, etc.). Yet, we know that this separation is not functional. The lungs and respiratory system will not work without the circulatory system and nervous system. The oxygen we take in through our lungs is transferred to the circulatory system for distribution to all our organs and tissues. Our breathing will not occur without the nervous system, which in turn requires the stimulation of varying blood levels of carbon dioxide.

Dewey (1934/1980, p. 19) said that we not only live in our environment but we live through it. The environment flows through the body, engulfs the body, and composes the body.¹⁶ However, the complexity of interacting systems does not end here. The human body houses other

¹⁶ As an example think of the drinking of fluoridated water. In time, the fluoride becomes part of our bones and our teeth.

organisms such as bacteria and the human body both functions better when it contains some of these organisms and becomes injured and debilitated by other of these microorganisms.¹⁷ The complexity of biological systems gets ever greater when other macro-organisms, microorganisms, and environments are considered.

Dewey writes (1925/1981, p. 213), "The action called 'organic' is not just that of internal structures; it is an integration of organic-environmental connections". With this statement, Dewey connects organic holism to people as they interact with their social and cultural institutions and with nature. Just a few sentences later, Dewey cites signaling devices as the means of integrating and connecting animal behavior. In the human, this signaling is language. Thus, organic holism creates a very broad swath as it ties organisms together and includes language and other forms of communication in its transactions.

Fifteen years ago, Tom Colwell (1985) wrote about the connection of Dewey's ecological perspective to Dewey's philosophy of education. Colwell claimed that education as growth meant growth in a biophysical setting and that separation from this setting, also called nature, hinders education. I want to rejuvenate and expand this ecological perspective and the biocentrism it espouses, that Dewey proposed and Colwell revived. The centering of nature and recognition of human attachment to nature is an important part of my description of an organically holistic system.

Continuity and Anti-dualism

In the organically holistic system that I promote, interacting components are necessarily connected, contingent, and contextual. Furthermore, seeing the world as interacting holistic systems helps us avoid the Cartesian dualisms of all kinds that have plagued modern philosophy.

¹⁷ Our guts are full of bacteria that assist in the digestion of food stuffs. Anyone who has been over medicated with anti-biotics knows the misery of life without these bacteria. We are not born with these bacteria but are probably "infected" with them shortly after birth, maybe even by our benevolent care takers.

Transactions between systems, functional categories, and standpoints break down rigid boundaries creating continuity rather than dualism.

The continuity and anti-dualism of pragmatism find a model in the human organism. As I view the ethos of pragmatism, I think about the character of humans, fraught with discrepancies and conflicts yet still an entirety of existence in a single organism. The human organism is composed of mind and body, reason and emotion, and nature and culture, all existing within the human simultaneously although not necessarily harmoniously. These components exist not as dualisms but as intrinsic and transacting parts of the entity called a human. Pragmatism rejects these dualisms in favor of continuity and connection. Functional continuity is required in order to preserve the very existence of the individual. For instance, minds do not exist without bodies. In addition, reliance on emotion without reason will likely lead to the early demise of a person, for we feel our way in the world as well as think our way through it. In some sense, I might say that the task of childhood is to learn to temper emotion with reason. My once five year old son loved bananas but with time realized that it was unreasonable for him to eat as many as he craved.¹⁸ The consequences of emotion without recourse to mature reason were digestive upsets leading to less enjoyment of his beloved bananas as well as other aspects of life. At the same time rationality cannot live without emotion but entails desire, selective attention, and imagination.

John Stuhr differentiates between the practical and ontological status of dualisms. He says (1987, p.5), " Classical American philosophy does not refuse to use these terms [dualisms]; instead, their point was that these notions refer to [useful] distinctions made in thought rather than to different kinds of beings or levels of existence". This reminds us that distinctions are useful as long as they do not become instantiated as metaphysical oppositions that are mutually exclusive, hierarchical, or hostile. This discussion brings to mind Bowker and Star's work on

¹⁸ In this anecdote, I am not saying that my son lacked an semblance of reason. Reason develops gradually and requires many different experiences for its nurturance. Denying all reason to my five year old son would be dualistic and counter-productive to organic holism.

classification first discussed in chapter 1 (1999). Dualism is close to their concept of standardization where categorization gets black boxed, loses its original meaning, but maintains its authority for distinctions.

Transactive continuity extends to the attachments of systems to surrounding and included systems. Organic systems within other organic systems will not function with harsh discontinuities because they are continuous by their very structure. The flow between systems and sub-systems make an organic whole. Think of the flow of carbon in our aerobic ecosystem. This starts with a plant's fixation of carbon dioxide from the atmosphere into carbohydrates with the assistance of energy from the sun and progresses to consumption by another organism. This other organism metabolizes the carbohydrate for energy while the carbon proceeds to disperse into the air with the organism's respirations as carbon dioxide. Finally, the carbon dioxide in the air is available to photosynthetic plants for fixation as carbohydrate again. While this is only a very small example of the cycling that occurs in organic holistic systems, it demonstrates the principal of continuity that is critical to cycling systems. The blocking of carbon at any part of this cycle disrupts the cycling and continuity. The same point is relevant to the subsystems that compose the larger system. All systems involve continuities within and beyond themselves. The use of dualisms as serviceable distinctions is similar to the practical distinction of the boundaries of a system, such as the human body. We can see and use the edges of the systems or the duality just as we can see and use the edges of the human body.¹⁹ Additionally, we know that the system or duality does not exist unless allowed to continue past the borders and boundaries just as we know that the human body will not exist unless allowed to transact with things beyond its borders.

¹⁹ Even though I am fairly unathletic and uncoordinated, I "know" where my body ends and where the floor or atmosphere or computer keyboard begins well enough to carry out effective transactions with them.

Situations

In order to avoid drifting into idealism, I stop to make the point that while I promote a connected holism, the continuity is potential. Bertrand Russell made the criticism of Dewey's theory of inquiry that its holism lacked boundedness, that its continuity goes on forever. As explicated by Tom Burke, Dewey evaded choosing atomism over holism by finding a middle, evolving position he called "situations" to focus his inquiry upon (Burke, 1994). A situation is a state of disequilibrium of an organism in its environment, and it is a single concept encompassing both organism and environment.²⁰ Dewey's theory of inquiry is always melioristic (Dewey, 1938/1986,p. 108). His goal is to transform a disrupted situation of emotional distress, cognitive confusion, and embodied need into a dynamic unified whole. The degree of connectedness necessary to re-store equilibrium determines the connectivity that requires attention. In my model, research questions would establish the disequilibrium of the situation in qualitative research. Inquiry would then strive to answer the research questions and restore equilibrium. This is an example of a very complex situation and its bounds are certain to change as the research progresses. A simpler example of a situation is the problem of what to do for dinner. Perhaps hunger or the obligation to provide food for children causes disequilibrium. The boundary is initially the extent of the kitchen. Perhaps on entering the kitchen with your hungry kids in tow, you discover that some essential ingredient, perhaps milk, or bread is missing or inedible. Now the boundary expands to include the local convenience store and other factors come into consideration. Will the car start? Who will watch the kids? Is it snowing out? Still, the weather in the next county is likely to be outside the boundary of concern although it potentially

²⁰ The concept of situation has a striking similarity to the objects used in object oriented programming. Objects in the programming sense are composed of data and the procedures (or methods) that manipulate the data. An object can be inherited by another object or used to parent other objects. Of most importance, an object is a self contained unit that focuses attention on a particular entity and its functioning. In practical usage, the object may change its focus much as a situation does.

is included. When you get to the store, they have no milk because an avalanche closed the bridge to the highway upon which milk deliveries come. Again, your boundary or scope of context may change several times to solve your problem of no milk for supper and hungry kids. In this way, within Dewey's situations, contexts can extend beyond the atomic unit and still not expand without limits.

I know as a biologist that survival of an organism requires transactional coordination with its environment. This is as true of the simplest microbe as it is of *Homo sapiens*. I know that virulent microbes that kill off their hosts do not survive very long. The microbe that can co-exist with its host is much more likely to have long term survival. Similarly people must coordinate with their environment or move to another one. We have had many great migrations of humans who could not survive in their environments because of famine or disease or weather conditions. Note the Irish migrations at the turn of the last century, which resulted from famine and governmental economic policies, the famine resulted from a failure of the potato crop, and the failure of the potato crop resulted from pathologic infection of the potatoes. Thus, there is an interlocking functional unity of environments in a cascading effect from one creature's environment to another. No one is immune from the need to coordinate with one's environment. For example, studies show that students do best in an environment of natural light rather than instruction in sealed rooms with artificial lights. Similarly, students do best when they come to school adequately nourished, clothed and with their medical needs met. Student and teacher minds are always contained in bodies, which are always surrounded by and immersed in and composed of an environment. There is absolutely no way of escaping this reality.

Again, for Dewey, we live *through* an environment, a context, not in one. As a biologist I know that from conception humans are made from the building blocks of their environment. When a person is born after nine months of gestation, they have spent nine months in an environment filtered by their mother's body, via the placenta that joins mother and baby. A major task for the baby is to wean from mother's milk to other foods. This involves the removal

of the mother as filter rather than a strategic move to independence from the environment. The human is never a spectator of the environment but is always within the environment. The air we breathe, the water we drink, the quality of our foods, all have effects on us, sometimes immediately and sometimes long term. Thus, there are no spectators or observers in the environment. We all *participate* in our environment, transacting with it for what we need or we do not survive. We are not passive spectators. Dewey's insight eliminates the dualisms of subject/object, knower/known, and mind/matter. Human nature is a part of nature. For Dewey, these dualisms arise from taking a spectator view instead of acknowledging that we are all participants.

Dewey observed, "Every 'mind' that we are empirically acquainted with is found in connection with some organized body" (1925/1981, p. 212). This observation, simple as it may seem, has tremendous implications in education. There is no way to educate mind without body nor body without mind for the "body-mind" composes a continuity that is never functionally separated. The continuity mentioned above, necessary for education, is not only the continuity of knowledge but also the continuity of mind-body.

Pluralism

Our organically holistic world is porous and allows plurality. I make the stronger claim that because of the contingency and fallibility of every situation we require a fund of diversity to draw on. This is claimed in a neo-Darwinian sense where plurality is the fund we seek to draw on, when we struggle with difficult situations. Darwin established this in the genetic sense and Dewey established this for the cognitive and affective (Dewey, 1909/1965). As conditions of climate or politics change, we often need to seek new ways of being in the world. The source of these new ways comes from the diversity provided by pluralism.

Bernstein (1992, p. 335) warns us that not all pluralism is useful to the pragmatic ethos. He differentiates "engaged fallibilistic pluralism" from "defensive pluralism" which pays lip

service to others doing their own thing, and from "polemical pluralism" which uses the ruse of pluralism to advance one's own agenda, and from "flabby pluralism" which is a voyeuristic borrowing of other orientations, and from "fragmenting pluralism" which only promotes communication with those who already agree with us. For Bernstein, "engaged fallibilistic pluralism" requires responsible listening to others without denying or suppressing their otherness while admitting our own fallibility. It means allowing the possibility of change to occur through listening as well as talking. These distinctions among pluralisms are very pertinent today as schools discuss multi-culturalism and particularly how they will "teach" multi-culturalism. The teaching often inscribes a "flabby pluralism" or "defensive pluralism" rather than "engaged fallibilistic pluralism". "Christmas around the world" is one local school's attempt at multi-culturalism. The school selects and promotes certain international practices that they find amusing and suitable for children to enjoy such as the filling of wooden shoes with presents in Holland and the lighting of Chanukah candles in Israel. They borrow and conflate these entertaining but incongruent practices, pulling them out of any context that provides meaning, and then feel virtuous because they are providing a pluralistic experience. Not only is this voyeuristic and disingenuous but it diverts attention from the possibility of "engaged fallibilistic pluralism". As Garrison observes, listening is dangerous because it opens the self to change (1996). It is not likely that this school wishes to see its students change as a result of their "multi-cultural" activities.

Fallibilism and the limitation of a single person's perspectives lead pragmatists to value a plurality of viewpoints. The need for pluralism is even stronger, though for it can prevent conflict. As Stuhr (1987) writes:

Local, regional, national, and global differences and conflicts abound. We need a philosophy that centrally recognizes these differences and seeks a harmonious pluralism; intellectual attempts to deny, impose on, or transcend this plurality are no longer innocuous, if they ever were (p.7).

In the attempt to reach harmonious solutions in times of conflict, we must be part of the social realm where we hear and evaluate many viewpoints. The ability to listen to several voices requires communicative functions. Dialogical virtues such as commitment, reciprocity, and participation (Burbules, 1993) help make the social realm possible. However, pluralism is not saying that viewpoints are not ordered. Indeed perspectives are ordered, and have different degrees of trust depending upon the consequences. It is the function of a critical community of inquirers to order and value viewpoints.

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?” (1916/1980, p. 89) As Garrison (1996, p. 249) expands on this theme, “Oppressive societies eliminate diverse interests 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”.

The more plurality/diversity present in a society, the more likely that society will survive adverse conditions. As a biologist, I know that the more diverse the gene pool, the more adaptive is the population of organisms. Consider the opposite sort of situation as in highly domesticated and inbred crops or farm animals. Any disease is likely to wipe out the crop or the herd since there is no genetic variability to stop the spread of infection or to provide a genetic composition that resists the disease. Farmers have learned this. They try to break up mono-cultures of crops by rotating crops in different fields, year to year, and by interspersing one crop with another, field by field. In a democracy, a plurality of opinions provides the same kind of diversity. Dewey concluded (1916/1980):

The two elements in our criterion both point to democracy. The first signifies not only numerous and more varied points of shared common interest, but greater reliance upon the recognition of mutual interests as a factor in social control. The second means not only freer interaction between groups...But change in social habit—its continuous

readjustment through meeting with the new situations produced by varied intercourse (p. 92).

A community recognizes its plurality by negotiating meanings between members.

The negotiation of meanings requires communication. Recognizing this, Dewey had a communicative definition of democracy.

A democracy is more than a form of government; it is primarily a mode of associated living, of conjoint communicated experience. The extension in space of the number of individuals who participate in an interest so that each has to refer his [sic] own action to that of others, and to consider the action of others to give point and direction to his own, is equivalent to breaking down barriers of class, race, and national territory which kept men [sic] from perceiving the full import of their activity (Dewey, 1916/1980, p. 93).

The ideal of a democratic community that Dewey writes about is participatory, pluralistic, and communicative. Thus, a democratic community is communicating to create meanings and knowledge among its diverse members. The transactions of the members of the community serve to allow growth and adaptive change in the community. Just as communication forms the mind and self, so too is the community. To create meaning together is to become a mindful community. To become aware of the meaning one makes as a community is to become a self-aware community.

Dewey, (1939/1981) supported diversity, plurality and multi-cultural society by emphatically stating that:

To cooperate 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 persons but is a means of enriching one's own life-experience, is inherent in the democratic personal way of life (p. 228).

Thus, plurality enriches the self and other. When we put this beside the necessity of diversity suggested by neo-Darwinianism, there is reason to pay more than lip service to multi-culturalism by schools and other institutions.

Contingency

Contingency derives from the changing nature of the world, the fallibilism of the world, and the potentiality of organic holism in the world. Both the evolving nature of the holistic world and the interdependency of the holistic world promote contingency. In a sense organic holism is contingency since the interrelating and transacting systems and sub-systems of an organically holistic world make it always and ever dependent upon chance and change.

A contingent world is open to great joy and great tragedy because of its unexpectedness and its precariousness. This is not to say that humans are buffeted by chance and contingency without opportunity to respond intelligently to situations and circumstances. Humans can reflect on their circumstances and respond intelligently to what befalls them. Yet, evolving systems do, somewhat, depend upon random mutations, a source of radical contingency, for sources of variability. However, the real strength of evolving systems is not their random mutations but their continual source of diversity that provides the ability to withstand adverse conditions. A pluralistic society results when there are sources of diversity and a pluralistic society gains strength from its plurality.

Organic holism involves interaction between complex systems. Dewey wrote, "...anything changes according to the interacting field it enters"(1925/1981, p. 217). Thus, our interacting fields are contingent and changing. Biologically speaking, all organisms change and are changed by their interactions with their environments, similarly (recall projection and reciprocation in Chapter 1) as one changes and is changed by the artifacts one uses. One does not exhale without adding carbon dioxide to the environment. There are strong forces of homeostasis within the body that serve to dampen changes and strive to keep the organism stable. Similarly,

there are stabilizing forces in the larger interacting systems of the environment that serve to dampen large changes and keep conditions relatively stable.

Fallibilism

Stuhr (1987) says that "...fallibility is an irreducible dimension of the human condition; empirical belief can never be certain, exact, absolute, final. The abandoned 'quest for certainty' is replaced by piecemeal, multi-directional efforts to verify and warrant beliefs" (p. 6). With this rejection of certainty, pragmatism accepts not relativism but fallibilism. Fallibilism allows the questioning of any tenet. It takes science and technology out of the realm of the heavens and puts them on earth for examination. Yet, it allows us to accept principals that seem reasonable at the time. It gives us a resting point between absolutism and relativism, allowing us to order and judge evidence at any particular time, knowing that we may need to re-examine this evidence at a future time.

Bernstein (1992) writes

Their [the pragmatists] alternative to foundationalism was to elaborate a thoroughgoing fallibilism where we realize that although we must begin any inquiry with prejudgments and can never call everything into question at once, nevertheless there is no belief or thesis - no matter how fundamental - that is not open to further interpretation and criticism. (p. 327)

What Bernstein says here challenges many institutions including churches, schools, and government. It also challenges philosophy, including pragmatism, to examine itself.

Thus, I claim that fallibilism makes pragmatism the most empirical of philosophies because there is no foundation that is not subject to observation, experimentation, examination, criticism, reinterpretation, and revision. As Dewey (1925/1981, p. 43) says, there is also "precariousness of existence". In order to sustain some stability, Bernstein recalls Peirce's cable metaphor for knowledge rather than a chain metaphor (Bernstein, 1992, p. 327). The cable is

composed of many inter-twisted strands and can suffer losing some strands without losing its strength and integrity. The chain is only as strong as its weakest link and perishes with the loss of only one link. The cable gains its strength from its multitudes of stands, no matter how slender, as long as they are in intimate contact with one another. A strand does not even need to persist for the entire length of the cable because it is the many strands in close proximity that give the cable strength. This cable brings to mind the organic holistic system with its many interacting systems for it too gets its strength from its interactions and transactions rather than from its individual parts.

Fallibilism is a bridge from plurality to radical empiricism. If we accept the diversity of many voices then it is likely that we will, from time to time, revise our currently held beliefs to make room for plurality. Dewey says, "An empiricism which is content with repeating facts already past has no place for possibility and for liberty" (Dewey, 1925/1984, p. 12). Thus, pragmatism needs a forward looking and experiential empiricism, a gaze that looks to consequents rather than antecedents.

Continuing with the cable metaphor, if we have a multiplicity of strands dependent upon each other then they are contingent upon one another. The character of pragmatism includes contingency.

Meliorism

This dissertation is a melioristic project. Its goal is to improve web based instruction (WBI). Meliorism is the "view that human action can improve the human condition" (Stuhr, 1987, p. 9). Most of all meliorism derives from an understanding of the unfinished nature of the world. Thus, humans have a continuing role to act for the betterment of the world if they are to survive and thrive. We do not merely perceive the world but need to act to improve it. This does not insure a happy conclusion, for pragmatism has no "cosmic backup story that guarantees success" (Garrison, 1997, p. 199). For Dewey, meliorism (1920/1982)

...is the belief that the specific conditions which exist at one moment, be they comparatively bad or comparatively good, in any event may be bettered. It encourages intelligence to study the positive means of good...and to put forth endeavor for improvement of conditions. It arouses confidence and a reasonable hopefulness as optimism does not....Too readily optimism makes the men [sic] who hold it callous or blind to the sufferings of the less fortunate, or ready to find the cause of troubles of others in their personal viciousness. (pp. 181-182)

Defining learning as growth (Dewey, 1916/1980) is in keeping with meliorism since the melioristic expectation is that such growth will be lifelong and lead to the possibility of the improvement of human kind.

If we believe that human actions can improve the human condition, then we believe that human actions have consequences. Pragmatism, as we have seen, always looks to consequences. During the process of inquiry inquiry, the attempt to achieve the ends is a non-linear process of means-ends coordination. This process is non-linear for the means often become the ends of the activity. For instance, think back to the last chapter where I described the use of several tactics to secure student safety in dormitories. Two approaches to attaining the goal of safety had vastly different means. One was surveillance of entrances and locking students in dorms. The other was the encouragement of student associations so that dorm mates looked after their neighbors. In implementing these two very different plans, the means changed and I extrapolate that the ends changed as well. In the first case, what started out as the need for security transformed into the need for control. In the second case, the need for security transformed into the encouragement of social interactions and community building.

Learning as Growth

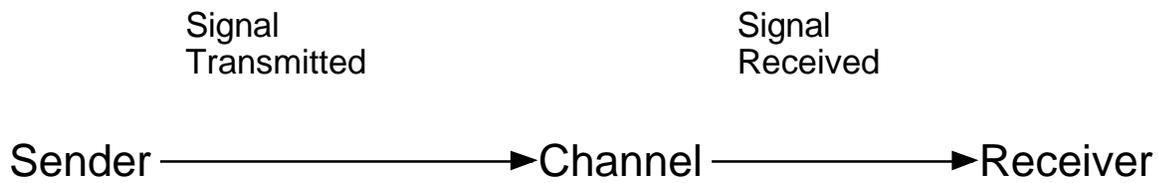
In his very terse summary of chapter 2 in Democracy and Education, Dewey makes an amazing connection between the social, the biological, and the pedagogical. He wrote (Dewey, 1916/1980),

Power to grow depends upon the need for others and plasticity....Since growth is the characteristic of life, education is all one with growing; it has no end beyond itself. The criterion of the value of school education is the extent in which it creates a desire for continued growth and supplies means for making the desire effective in fact. (pp. 57-58)

This definition of learning agrees with a sense of schools as holistic institutions. We learn within intersecting systems of nature and culture because we require both the conditions of life and the social in order to grow. We need the conditions of life because we must be alive to grow. We need the social because we derive our meaning within the semiotics of intersubjectivity.

Although I talk about the social **and** the natural, these are both parts of a linked and transacting ecosocial system (Lemke, 1997, p.40). Current work in situated cognition (Brown, Collins, & Duguid, 1989; Hutchins, 1995; Lemke, 1997) confirms Dewey's much earlier work. Of course, cognition is situated in a learning environment, but that is not all that is situated. The body, the emotions, the spirit are also situated in the educational experience. Teachers may not always consider all these parts of their students but when they do, there is more chance of success in teaching. Educational experience must be interactive and continuous (Dewey, 1938, p. 44).

Interactive and continuous experiences take place in ecosocial systems. At the least, nature provides continuity and the social provides interactivity although the transactions of education are much more intricate.



from Wertsch, M.V.
1991, p. 72

Figure 2.1 Conduit Metaphor

I put Dewey's sense of learning beside the conduit metaphor of learning (Reddy, 1979). The conduit metaphor, much like the banking metaphor of Freire (1996) proposes learning as the passive act of receiving information. The conduit metaphor presents the teacher as the active agent, dispensing information into a pipeline that transmits the information unchanged to the student who acts as the passive recipient. This metaphor disagrees in many fundamental ways with Dewey's notion of learning as growth. Perhaps the most dramatic distinction is the passivity of the student. I suggest that the student, who learns, grows, and lives, must **act** to accomplish any of these tasks. I further suggest that passive reception is the antithesis of learning in any organic sense.

Dewey has already established the continuity of living and growing and learning. As such, living for Dewey involves periods of equilibrium alternating with disequilibrium (Dewey, 1938/1986, p.34). Disequilibrium can be physical, emotional, cognitive, spiritual, or more likely a combination of several forms of discomfort, curiosity, or unease. This disequilibrium motivates one to find a solution, to learn new habits of conduct, or to remove oneself from the situation. When a person takes such **action**, restoration of equilibrium results. Do not confuse disequilibrium with pain. Disequilibrium might be painful such as when a child puts her shoes on the wrong feet. Frequently disequilibrium is excitement motivated by curiosity as in the case of

someone solving a puzzle that they enjoy. A pedagogical example of disequilibrium is the teachable moment (Garrison, 1997), when student and teacher share a moment of curiosity and the desire to create solutions.

Returning to my notice of the conduit metaphor, a very large difference between teaching as loading information into a pipeline and teaching as motivating growth is the degree of uncertainty entailed in each. While the conduit metaphor may be emotionally depauperate, cognitively sterile, and spiritually bland, it is safe and certain of what it does. In contrast, teaching for growth and action might motivate students to consider actions we would rather not deal with such as criticizing the curriculum or demanding social justice.

Anti-foundationalism, Anti-representationalism, and Anti-essentialism

Anti-foundationalism, anti-representationalism, and anti-essentialism have the common quality of allowing uncertainty to become part of pragmatism. This puts pragmatism in a double bind of approving the very traits that could undermine it. Without essences, representations, and foundations pragmatism has no certainty of its own ethos. However, certainty is not a guarantee for truth, rationality, and progress. Pragmatism uses consequentialism, warranted assertability, and fallibility to test truth claims. Pragmatism, as organic holism, does not give a view of the world that is wide enough for certainty. Cleo Cherryholmes says, "Pragmatists are interested in speaking effectively but not correctly about the world "(1999, p. 125). As people, we do not have a God's eye view of the world, the view from nowhere, or as Dewey called it, "the spectator view of knowledge". We cannot know what are the immutable foundations or essences that must be correct. From our view, we can see change and we can see relative stability. Some of the change involves our shift of focus and interest, some change involves varying interests of those people we interact with, and some of the change involves the varying conditions of the natural world. The pragmatic ethos easily embraces multi-perspectivalism and plurality when it denies essence, representation, and foundations.

Peirce's elaboration of a theory of signs, as described by Bernstein, holds interpretants always open for further "interpretation, determination, and critical correction"(see Bernstein, 1992, p. 327). We are located always and ever in a world of negotiation and reinterpretation. Partially this is because signs are cultural creations dependent upon what we see now. Moreover, as evolving creatures in an evolving world, we are likely to see those signs differently at another time or in another place.

Dewey wrote about life as experience, such that experience includes ways of experimenting with the environment. Experiments, by their nature, give results that are expected or unexpected. If we had antecedent certainty of an expected result, we would not need to do the experiment. Not only are the results uncertain but the "achieved equilibrium is precarious because we cannot keep pace with changes in the environment" (Dewey, 1917, p. 9). In this way, Dewey establishes the uncertainty of life and existence, an existence lacking certain foundations, representations, and essences.

Anti-foundationalism, anti-representationalism, and anti-essentialism do not deny rationality. Rather, they stress that we can challenge the rules. Rules, deemed warranted today, may falter at another time. Rules, principles, knowledge are then all fallible and, indeed, pragmatism is fallibilistic.

Need to Nurture a Critical Community of Inquirers

I have come to the point of considering not only the desirability but also the need for the cultivation of a critical community of inquirers so that we, as a community, may order truths in our contingent and fallibilistic world.

Bernstein (1992) says:

If we are fallible and always limited in our perspectives then 'we' individually cannot reasonably hope to attain the ultimate philosophy which we pursue; we can only seek it,

therefore, for the community of philosophers....What has come to be called the decentering of the subject is integral to the pragmatic project. (p. 328)

Meaning derives from a community context. Cherryholmes says, "Meanings are social constructs...Because they are consequences of thinking"(1999, p. 36). This makes sense in our organically holistic, contingent, and contextual world. The centrality of community leads to the social nature of self.

Dewey's interest in plurality clearly connects to the need to nurture a critical community of inquirers since community is necessary to provide a multiplicity of viewpoints. Dewey viewed schools as places for development of community practice. Along with Mead, Dewey saw the self as emergent from socio-linguistic meaning making. Clearly, the production of socio-linguistic meanings requires community.

Social Nature of the Self

Many parts of the pragmatic ethos point to the social nature of the self. If we value plurality of opinion then it follows that we will live in ways that allow others to affect the self. If we see ourselves as transacting with others to create meaning then we must see ourselves as social. Therefore, the self is a social creature, which emerges from a social context. The self is not innate, fixed, or essential. Just as the community creates the self, the self creates the community. Here we challenge dualisms such as public/private, and self/society. Neo-Darwinism plays a role since the community becomes the site for survival based on fitness to reproduce.

The social nature of self also follows from the centrality of community and the pluralism of viewpoints that pragmatism endorses as well as from a concept of organic holism. Humans, each an organic system, interact with other humans to form communities that are themselves organic systems. The social self emerges from its culture and is a continuation of its culture.

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The decentered subject acts in many intersubjective contexts, many of these involve learning in either a formal or an informal sense. The first and most intense decentering takes place as a child separates herself from her mother and other significant caregivers. As she learns she has a self, there is a continuing tension between separation and connection. The "terrible twos" are said to be a period of instability as the toddler struggles between these two poles of selfhood.

The social nature of the self and the emergence of meaning allow the passing of culture from generation to generation. Schools are very important in this process but schools are themselves very leaky and messy holistic systems (Nespor, 1997). The passing of culture from generation to generation is not necessarily a neutral act. There is the opportunity of improving the human condition as the result of human activity, a chance to be melioristic.

For Dewey the self is unrelentingly social. Meaning arises from co-designation between individuals, language is the "tool of tools" of signaling organisms, and the self arises from social contact with others. Dewey scholar Jim Garrison says:

..to have a mind means to be able to participate in some culture's social practices for making meaning by coordinating our behaviors with others; to have a self is to be able to assume the culturally assigned roles of the culture and to respond to others in their roles (1997, p. 140).

Mindfulness then requires community for its initiation and perpetuates community in its practice.

Dewey makes a point of specifying social experience as social inter-action, a continuation of natural experience. One of the primary forms of action between humans is language. In fact Dewey (1925/1981) said, “Language is always a form of action...” (p. 144). The infant learns body language, then monosyllables, followed by increasingly more complex

forms of speech. In these transactions the baby is making meaning. For “meanings do not come into being without language, and language implies two selves involved in a conjoint or shared undertaking” (Dewey, 1925/1981. p. 226). The infant learns the power of language from the response of caregivers. Screaming may elicit diaper changes, bedtime, burping, or being fed. In contrast, asking for a particular food by name is more likely to result in the desired item. The first baby words might be baa baa for banana and baa baa for bottle. The negotiated social context between baby and caregiver gives this babbling meaning. When another caregiver becomes involved, he will have to negotiate these meanings with the baby or be told the translations. In addition, Dewey (1925/1981) said:

Language is specifically a mode of interaction of at least two beings, a speaker and a hearer; it presupposes an organized group to which these creatures belong, and from whom they have acquired their speech habits. It is therefore a relationship (p. 145)

The activity of language is the maker and mediator of meaning.

The infant will acquire different speech patterns and accents in Georgia than in Tokyo or in Accra. Commonly spoken words in the local social environment will eventually make sense to that baby. Thus, meaning making and inextricably links with social activity for this baby and for all humans. The baby coordinates her behavior to meet the social expectations for making meaning in her particular environment. “To understand” [a meaning] said Dewey (1925/1981) “is to anticipate together, it is to make cross-reference which, when acted upon, brings about a partaking in a common, inclusive undertaking”(p.141). Thus meanings for Dewey are socially constructed and are the consequence of socially shared behavior. The baby will have little language if any at all, if wolves instead of speaking people raise her. In a more subtle sense, the baby that is yelled at will learn to yell and the baby that is spoken to softly will be soft spoken herself.

It is by participating in the social activities of meaning construction that individuals come to have a mind. For Dewey, especially spoken language is crucial (Dewey, 1925/1981)

Through speech, a person dramatically identifies himself [sic] with potential acts and deeds; he [sic] plays many roles, not in successive stages of life but in a contemporaneously enacted drama. Thus, mind emerges. (p. 135)

Dewey goes on to use the phrase “body-mind” to express what actually takes place when the living body participates in discourse and communication. Thoughts do not reside in the brain. The brain and nervous system are the mechanisms that coordinate the thought and the action in the body-mind. “Mind denotes the whole system of meanings as they are embodied in the working of organic life...Mind is contextual...” (Dewey, 1925/1981, p. 230). Persistent thoughts of delicious foods might irk a hungry person trying to do other tasks. Eating food will interrupt these thoughts. People in many different cultures will respond this way to hunger but the imagined foods will vary considerably due to the social system of meanings. If apples grow in our climate, we learn to crave the crisp, sweet taste of apples as the fall days progress from warmth to chill. In another climate, we may learn to crave dates or bananas when our blood sugar gets low. Ultimately mind arises from the social system of meaning we make as we adjust to our environment.

To be aware of the meaning one makes is to have a self. Garrison (1998b) says: “A being capable of symbolically mediated interaction ...has a mind and is capable of becoming consciously aware of the meanings it possesses...” (p. 54). When does the developing child have a mind? Some parents might say it is when the child learns to communicate “no” to her caregivers and gets a response from her caregiver indicating that her no has an effect. The young child must understand that her caregiver is asking something of her and she has to understand by her internal reasoning that this request is not agreeable to her. The young child finds saying no to be very powerful and will overuse that word tremendously once she understands that she can use it to control her world. How does she become aware of her meanings, thoughts, and desires?

George Herbert Mead, the famous social psychologist, and Dewey had a very long and productive relationship. They lived near each other for fifteen years and according to Dewey,

they exchanged views on a daily basis (Dewey, 1931/1985). Mead and Dewey together worked out the theories of the emergent mind and self. Of the two, I believe Mead eventually carried out the better articulation of the emergent self. Mead (1910/1964) recognized and discriminated between meaning and being self-conscious of it:

The association of one content with another is not the symbolism of meaning. In the consciousness of meaning the [sensed] symbol which is [significantly] symbolized [...] must be presented separately. Association of contents of stimulation tends to become a complete merging and loss of distinction (p. 128).

To have a self requires having a mind and being conscious of our minds and their meanings (Garrison, 1998b). “Minds emerge when agents can manipulate socio-linguistic meanings; selves emerge when the agent can take the perspective of others in interpreting their own symbolic acts, thereby becoming self-consciously aware of their minds as a system of meanings” (p.57).

Mead (1922) describes how mindful agents become self-consciously aware of the meanings they possess:

If an individual uses such a [significant] gesture and he[sic] is affected by it as another individual is affected by it, he [sic] responds or tends to respond to his [sic] own social stimulus, as another individual would respond [...]. The vocal gesture is of peculiar importance because it reacts upon the individual who makes it in the same fashion that it reacts upon another [...] the self arises in conduct when the individual assumes the attitude or uses the gesture which another individual would use and responds to it himself, or tends so to respond [...]. He [sic] acts toward himself [sic] in a manner analogous to that in which he [sic] acts toward others. Especially he [sic] talks to himself [sic] as he [sic] talks to others and in keeping up this conversation in the inner forum constitutes the field which is called that of mind (p. 243)

In addition, we have meanings, embodied habits, but we are unaware of them until there is a disruption of our habitual functioning (recall the discussion of situations). The child is perturbed

when her habit of being held by one person is disrupted by the departure of that person, and she is self-conscious of that person leaving. This can only happen when the infant has some way of recognizing her thoughts and feelings about the customary caretaker. This is different from the infant crying because the caregiver is holding her awkwardly. Then she is crying from pure physical discomfort and not because she is mindful of her caregiver departing and leaving her self [the infant] behind. The social self may attempt to improve the world, be neutral in the world, or harm the world. Dewey saw the need for the self to try to improve the world with its action.

Experience as transaction between organisms and their environments

A Deweyan concept of organic holism says that an organism must transact with its environment in order to get the materials that sustain life. The intersection of this transaction is experience.

"Experience" denotes the planted field, the sowed seeds, the reaped harvest, the changes of night and day, spring and autumn, wet and dry, heat and cold, that are observed, feared, longed for; it also denotes the one who plants and reaps, who works and rejoices, hopes, fears, plans, invokes magic or chemistry to aid him....(Dewey, 1925/1981. P. 18).

For Dewey, refined experience is education. By refined Dewey meant that which provides continuity and interaction. (Dewey, 1938/1986). Since interaction is perhaps a less powerful form of transaction, we are getting into a recursive argument where transaction between organisms and their environments may lead to continuity and interaction. This is a virtuous not a vicious circularity for it leads to more interaction/transaction and thus to more growth or a spiraling outward rather than a spiraling inward.

The fundamental intuition in understanding Dewey arises from understanding the location of people within nature and their quest to unify action. Early in his career Dewey said of activity:

In Mr. James's statement the experience is...split up into three separate parts: First comes the object or idea [hypothesis, goal, or value] that operates only as stimulus; second, the mode of behavior taken as discharged of the stimulus; third the Affect, or emotional excitation, as the repercussion of this discharge. No such seriality or separation attaches to the emotion as an experience....We are easily brought to the conclusion that the mode of behavior [activity] is the primary thing, and that the idea [object or objective] and the emotional excitation are constituted at one and the same time; that, indeed, they represent the tension of stimulus and response within the co-ordination [unification] which makes up the mode of behavior (p. 174).

The essence of this thought is that an organism must remain in dynamic balance with its environment. Disruption of this balance leads to a striving to regain equilibrium with its setting. The unity of the act unifies dualisms such as thought/feeling, rationality/irrationality, and mind/body. This is especially important for pragmatic-feminism. Again, looking at the baby unifying [coordinating] its activity with the environment, it acts to get food when it is hungry. Is the hunger cry emotion or communication, is it a mindful act or an instinctive response? Does it matter? The baby must have food to survive. The functional distinction between thoughtful communication and emotions are useful when one is teaching the child self control (and in other situations) but there is no need to keep these distinctions as either/or dualisms; the correct relation is always both/and.

The human being like any other beings must act to survive and grow. The baby that does not act to get food and warmth for itself with its cooing or screaming transactions with its caregivers will not survive. We have learned to artificially support the "failure to thrive" babies that are not communicative of their needs. In less extravagant cultures, they will not survive. Descarte's "I think therefore I am" could be translated by the pragmatist to "I act therefore I think and feel". Garrison (1998b, p.12) says, "The center of our being is the functional 'I can do'. Human nature is a part of nature that can function to continue the creation."

Experience as Experiment

Experience and experiment derive from the same etymological root of experiri, meaning to try or to put to the test.²¹ Therefore, I find it quite reasonable to make the connection of viewing experience as experimenting with the world. Dewey recognized this connection when he wrote: "Genuine intellectual integrity is found in experimental knowing. Until this lesson is fully learned, it is not safe to dissociate knowledge from experiment nor experiment from experience" (Dewey, 1925/1981, p. 366). Furthermore, in agreement with Harriet K. Cuffaro who titled one of her books "Experimenting with the World: John Dewey and the early childhood classroom" (1995), I make the connection of education with experience and experimentation. It is easier to see this connection between informal and preschool education than with the modes of education more common in secondary school and college. Yet, I believe that what ultimately makes sense to students as far as changed habits and growth are those things perceived as an experience.

Dewey suggests in "Experience and Nature" that the test of the value of philosophy is whether it makes ordinary life experiences more luminous or more opaque to us (Dewey, 1925/1981, p. 18). I suggest that the test of education (or growth) can be valued the same way as to whether it makes clearer or muddier the course taken in the performance of every day activities. Dewey also explored experience as experimentation when he wrote: "Experience, in other words, is a matter of simultaneous doings and sufferings. Our undergoings are experiments in varying the course of events..." (Dewey, 1917, p. 9). Dewey's interest in experience is a link between science, art, and life and of great interest to feminist theory. Many feminists spend much energy interjecting women's experience back into the public sphere. I see this feminist effort as an effort to restore organic holism. "...[experience] recognizes in its primary integrity no division between act and material, subject and object, but contains them both in an unanalyzed

²¹ . The etymology from the OED follows: [Fr. expérience, ad. L.experientia,f.experientem,pr.pple.Of experiri to try, put to the test.]

totality" (Dewey, 1925/1981, p. 18). I suggest that the dualism of male/female and all its related dualisms, such as reason/emotion, mind/body, and object/subject, is perhaps the most powerful impediment to holism that we suffer.

In the next chapter, I turn to weaving feminism into this pragmatic ethos. There, I focus on the specific issues of gendered experience, loss of body, control of nature, transactions of humans and tools, and organic holism. As I do this, my goal is to make whole cloth of organic holism, which I must have to launch sustainable technology.

Chapter 3

Weaving Feminist Pragmatic Tales

I am using the title "weaving feminist pragmatic tales" because the images this title evokes are useful for my project. The verb "weaving" has roots in women's endemic household crafts that then moved to largely male controlled commercial markets before their replacement by machines in the commercial market.²² In these transitions are many of the same themes that appear in educational technologies. Weaving and educational technologies share concern with changes in gendered roles, moves from private to public, removal of means of production from homes, and destruction of skilled hand trades by technology.²³

Both weaving and educational technologies started out as creative crafts that have suffered standardization, deskilling, and "ethnic cleansing" as they made the transition from the

²² The term "luddite", now understood to mean someone who dislikes technology, refers to weavers and their colleagues who destroyed English mechanical looms in the years from 1811-1816. They justifiably feared these mechanical looms would replace them as skilled hand weavers.

²³ See chapter 2 of Madeleine Grumet's Bitter milk for an interesting account of gender shifts in teaching roles. (Grumet, 1988)