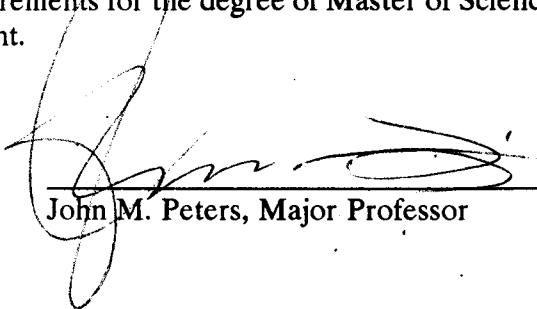


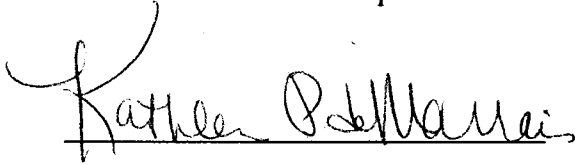
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I am submitting herewith a thesis written by Jerry D. Johnson, entitled *An Examination of the theoretical and Philosophical Foundations of Reflective Thinking and Practice*. I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Human Resource Development.



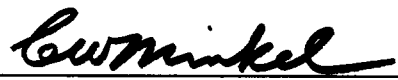
John M. Peters, Major Professor

We have read this thesis
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Accepted for the Council:



Associate Vice Chancellor
and Dean of The Graduate School

**AN EXAMINATION OF THE THEORETICAL AND PHILOSOPHICAL
FOUNDATIONS OF REFLECTIVE THINKING AND PRACTICE**

A Thesis

Presented for the

Master of Science Degree

The University of Tennessee, Knoxville

Jerry D. Johnson

December, 1995

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DEDICATION

This thesis is dedicated to my mother and daughters.

Bertha Orena Johnson

Natalie Ann Johnson

and

Jessica Marie Johnson

They unknowingly provided the reason and the inspiration.

ACKNOWLEDGEMENTS

I wish to thank Dr. John M. Peters, Dr. Ralph G. Brockett, and Dr. Kathleen Bennett deMarrais, as members of my committee, for their many invaluable suggestions. I would also like to thank Mrs. Judy Ceccucci, undoubtedly one of the world's leading typists and word processing experts. Judy showed an amazing patience in typing a seemingly endless procession of inserts and revisions.

ABSTRACT

The recent revival, especially in education, of a widespread interest in reflective thinking, has made the understanding of its theoretical and philosophical foundations of great importance. A corresponding practical application of reflective thinking, with an aspiration of achieving improvement in practice, has enunciated another aspect of the traditional connection of mind to matter. The clarification of the meaning of reflective thinking and practice involves an interdisciplinary consideration of the conceptual basis of its origins. By showing areas of agreement or apparent consensus among theorists and philosophers, some uniformity, consistency, and coherence in meaning begins to emerge. A comparison and cross-referencing of selected theory, and extensions through logical and philosophical analysis, as well as a process of inferential extrapolation, can provide a *reflective* approach for examining broad meaning.

Reflective thinking can be described, though insufficiently, by the tautological use of reflective thinking to illustrate its own meaning. As a method without method, reflective thinking cannot be categorized or defined in prescriptive terms, nor can it be reduced to some variation of the scientific method. Reflective thinking, to be recognizable, often requires deference to a flexible multi-conceptual configuration, and emphasizes free-form reasoning and the linguistic functionalism of thinking. In any attempt to say what it is, reflective thinking is plagued by paradoxical self-reference. Clarification consists largely in recognizing distinct elements in the enigmatic character of reflective thinking and practice.

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CHAPTER I

APPROACHING THE PHILOSOPHICAL AND THEORETICAL FOUNDATIONS OF REFLECTIVE THINKING AND PRACTICE

INTRODUCTION

An interaction between the world and self

All of what we are comes from two sources. In simple terms, human beings are the products of an innate or genetic character and the mediating influences of the environment. In a very broad sense, that which becomes internalized as awareness and thought is equivalent as a functional application of what we call "mind" and the environmental influences equate to "matter." The mysterious interaction that takes place between mind and matter results in what is termed "experience." As a consequence of being alive or organic, there is an ongoing interaction between the world and self. This interaction ceases only with the loss of conscious awareness. We recognize death, in part, as the irreversable or permanent loss of conscious awareness. The cessation of the interaction between the world and self is the termination of life. In the interlude between birth and death, all human beings engage in a process of sorting, ordering, and combining assimilated experiences. The multiform thought processes which are involved, often in an attempt to facilitate "changes for the better," comprise the realm of reflective thinking and practice.

✓ This investigation is aimed at achieving some understanding of the philosophical and theoretical foundations of the processes involved in reflective thinking and practice.

① ✓ Reflection is the evoking of thought that draws its force from the experiential interactions between the world and self. ^{step} The diverse elements of experience are presented to the mind and as a consequence of the natural tendency to notice differences, similarities and relationships, reflection becomes possible. ^{on} Reflective thinking is an effort to reveal new connections allowing familiar applications to be directed in creative ways. Creativity and rational innovation are at the core of reflective thinking and practice. Reflective thinking perpetuates a kind of mysterious merging of self with reality and practice emerges tainted to some degree by an "artistic mysticism." / It provides an imaginative expression of intellectual acuity that facilitates useful originality. In an interim of considered thoughtfulness reality seems to converge back upon self. For the reflective thinker, this constitutes a moment of revealing enlightenment and may be the source of new knowledge. At such times, the human mind comes close to certainty in terms of conviction and satisfaction. ✓

A method without method

✓ The study of reflective thinking and practice is about an evolving methodology that seizes upon theorizing in free-form about "method itself." Reflection can be very fruitful as an adjunct to scientific inquiry, however, as a methodology, it does not require an adherence to numerous procedural restrictions. Reflective thinking is open-ended and cannot be bound by pre-set rules without becoming something else. Creativity cannot be limited by authority and the mind must be free to range the full universe of possibilities. Such ultimate freedom of mind is a significant part of the fascination that reflective thinking holds as a method

without method. Being able to think without the artificial constraints of a prescribed methodology has much appeal. The potential for human development and unrestricted progress into completely new realms of analysis are considerable. In recent years education has seen a significant movement to advance the cause of reflective thinking and practice. The usefulness of reflection, however, as an indeterminant methodology for improving practice, is applicable in any field of endeavor. The spirit of discovery is strongest among those unbound by dogma; those able to enjoy the view in all directions.

THE PROBLEM TO BE EXAMINED

Reflection, applications, and ambiguity

The central problem to be examined involves the clarification and delineation of the character of reflective thinking, and in turn, the nature and meaning of reflective practice. A great deal has been written and expounded in recent years about the purported merits of "something" called reflection as a technique or method of learning and of continually improving practice (Mezirow & Associates, 1990; Boud, Keough, Walker, et al, 1985; Wildman and Niles, 1987). Teaching, in particular, is a practice in which reflective applications have been viewed with favor (Pultorak, 1993; Valli, 1993; Bernstein-Cotton and Sparks-Langer, 1993; Brown-Wear and Harris, 1994). Pedagogy, however, does not constitute the only "practice" in which reflective thinking has presumed appropriate applications. Industrial training, for example, might benefit significantly from the introduction of reflective thinking and practice. In the beginning the acceptability of a reflective program might be peripheral. The fear of management that uncontrolled innovation could contravene important company policies would serve to restrict adoption.

Nevertheless, reflective thinking and practice could be assigned a safety range, within the confines of approved policy, in which to operate and grow. Future corporate application of reflection, as a method for improvement, will involve convincing management that the safety-to-operations factor will not be compromised. Companies that value control above innovative improvement are unlikely to accept a concept of reflective practice. The ultimate acceptability of a corporate reflective practices program is likely to hang on the degree of trust that management has in the judgement of potential innovators. Trust will increase with a track record of innovative successes. In the corporate world, an extensive artistry on the part of the reflective practitioner is especially crucial. Only a few bad experiences will be required to convince operational management that the approach is ill-advised. Indeed, any unfavorable results may quickly be interpreted as evidence of misplaced faith in the freedom to reflect.

Industrial training is largely governed by adherence to conservative policies that regulate the power to innovate. Obvious successes can loosen the grip of conservative training policies. In the end, innovative programs are evaluated on the merits of improved profits and reduced losses. In most instances, a reflective practices program would be viewed as a double exposure to the hazards of innovation. In addition to being an innovation itself, a reflective practices program would potentially initiate an unending chain of changes. This could be very threatening to many business owners and managers. Implementation premised on reflection would most likely have to advance as a gradual accrual showing beneficial results. Even so, the power to innovate would often be subjected to an arbitrary veto. Management resistance to reflective innovations would be more likely to persist in the corporate culture than in the less authoritarian atmosphere of formal education. In a limited

way, however, reflective practices might be acceptable as a means of experimentation for change.

Despite a growing body of expressly specific literature, reflective thinking and practice remains clouded in ambiguity. For example, in his book, *Educating the Reflective Practitioner* (1987), Donald A. Schön, makes the following comments:

"---reflection-in-action is a process we can deliver without being able to say what we are doing. Skillful improvisers often become tongue-tied or give obviously inadequate accounts when asked to say what they do. Clearly, it is one thing to be able to reflect-in-action and quite another to be able to reflect *on* our reflection-in-action so as to produce a good verbal description of it; and it is still another thing to be able to reflect on the resulting description" (Schön, 1987, p.31).

In writing about *Facilitating Reflective Thought in Novice Teachers* (1993), Edward G. Pultorak cites the thinking of others and demonstrates the depths of the complexities involved.

"Reflection in teaching, however central to practice, is difficult for teachers (Reichert, 1990). At least two conditions make it a difficult task. The first is cognitive in nature. The ability to look back and learn from one's experience within a classroom environment is extremely complex and difficult to acquire (Buchmann & Schulman, 1983; Feiman-Nemser & Buchmann, 1985; Schulman, 1988). A second condition is organizational in nature. Researchers have cited teachers' lack of time (Jackson, 1968; Reichert, 1990), insufficient insight and enthusiasm from school supervisors (Killen, 1989), omission of structured opportunities to reflect (Wedman, Martin & Mahlios, 1990), and the demanding work loads of university supervisors as affecting teacher reflection (Rudney & Guillaume, 1990; Zeichner & Liston, 1987)" (Pultorak, 1993, p.288).

The cognitive problem that Pultorak refers to seems to connote the same difficulty Schön senses. The abstract complexity of systematically extracting the major essence from

one's teaching experiences and simultaneously seeing "how to do it better" is indeed a matter that raises mental pondering to new heights. Taking the level of reflection a step further, i.e.; to a dualistic level including experience, and its conclusions along with the analysis thereof, increases the variables' content considerably. Maintaining control of variables is obviously more difficult as their number and complexity increases. A self-awareness of inconsistencies in thinking becomes more unmanageable with the introduction of multiple factors. Meaningful reflection at such a level requires extreme care in the disposition of rational construction. The other problems cited by Pultorak are merely practical and derive from the consequences of problematic human interactions. These problems are as soluble as their human components allow them to be. The cognitive delima is more perplexing and involves the limits of reasoning and logic.

Agreement and consensus in theory

On the everyday level, reflection as a normal mental activity seems simple enough. Philosophically and conceptually, as one delves deeper, reflecting becomes complex. Much of the literature has been presumptive in attempting to formulate *definitive theoretical foundations*. The resulting conceptual obscurity leaves an aura of uneasy feeling that what is being discussed is somehow inanely mysterious and unintelligible. A great deal of current discourse remains stymied in meeting the need to spell out a philosophical framework or referential construction that has some apparent consensus.

It is noteworthy that the idea of establishing consensus or agreement is somewhat ambiguous in itself. This is because *all* terminology or language is subject to differing shades of meaning. The usage of words and the resulting contextual applications are multi-faceted

and varied. The variations in meaning that affect conceptual consensus are seemingly unavoidable. Even though the imperfections of linguistic expression must exclude any creation of uniform conceptual agreement, reasonable approximations can be devised. This constitutes the rational extent of achievable clarity. It would appear impossible to go beyond the limits imposed by the natural imperfections of language and the abilities of the human mind to differentiate.

Consensus means simply demonstrating common grounds of agreement among theorists in the field. Dissenting arguments may be equally crucial in adequately portraying the meaning of reflection as a concept of diverse possibilities. Agreement or consensus is no guarantee of creating some higher level of cognitive validity within the body of theory. Consensus has often been wrong in the past. At best it may be an austere indication of some commonly recognized grounds of rational and experiential evidence to justify otherwise speculative belief.

* { The unraveling of obscurities and ambiguities in theory is a complicated task. This study will involve a *limited* effort to combine readily apparent areas of consensus with divergent or differing theory (in terms of shades of meaning) in order to *inferentially* determine the conceptual directions of reflection.

Thought processing that seems to work

Many educators in colleges and universities across the nation and around the world proclaim the value of reflection to the educational process. On practical grounds alone, and disregarding any theoretical basis, reflection instills a way of thought processing that seems

to work (in facilitating learning and improved approaches based on improvised problem solving). The pragmatic results of reflective thinking emphasizes a set of normative values that exist irrespective of a *sometimes* unsubstantiable multifarious concept. Even if the conceptualized models of reflective thought processing may conjure up confusing, inconsistent and misconstrued mental images, the *value* of outcome and purpose may still be sustainable.

Reflective thinking as a *tool* for shaping practice is still changing and developing. The obscurity of reflection as a cognitive process elicits a paradigm with elastic qualities which feed conceptual flexibility. This is a distinct advantage in adapting the process to actual usage. No one has to say exactly what it is. It is a disadvantage in attempting to rationally explain the concept. Much of the conceptual meaning is or seems to be intuitive in nature and not explainable in *strictly logical* terms.

Reflective thinking and consequent practice conveys the conviction of having substance to practitioners skilled in their employment. It is an approach to educational and other incremental avocations that does appear to operate in the direction of a *verifiable* improvement in results. This is an area where specific data-based investigations can conceivably be conducted with a degree of empirical preciseness. To be meaningful, however, it must first be established that reflective thinking and practice have distinctive, if not exact conceptual meanings. The uncovering of perceived consensual agreement and the expansion of conceptual understanding through an inferential accounting for differences and similarities in theory is a major aspect of the overall approach to be here employed in examining reflection.

THE CONCEPTUAL OUTLINE

The general concept of reflection

This study will deal with the notion of reflection as a general concept of mental activity. References to "reflection," "reflective thinking," "reflective learning," "reflective practice," "critical self reflection," "critical analysis," "reflective judgment" and "reflective methodology" are all directed towards the same phylum of oblique terminology and meaning. Although such terms may not be interchangeable in any strict sense, they are very closely related. They are all blood-line relative in the same conceptual family. The emphasis will be away from undue hair-splitting. Instead, the approach to the delineation of terminology will be focused on achieving a *generalized conceptual clarity*.

The avoidance of purely artificial distinctions in terminology will provide part of the basis for clarity in logical and philosophical analysis. This is not to say that legitimate distinctions cannot be made; terminology can be and is used in special ways by theorists in a variety of fields. Whenever such usages are critical to understanding, distinctions are justifiable. Generally speaking, however, the creation of artificial dichotomies to separate closely related shades of meaning serves only to complicate and confuse. The aforementioned terms will be used to refer to a generalized concept of reflection that connotes a similar kind of mental pondering throughout.

Distinctions between thinking and practice

As David Boud, Rosemary Keogh and David Walker have observed:

"---reflection in the context of learning is a generic term for those intellectual and affective activities in which individuals engage to explore their experiences in order to lead to new understandings and appreciations. It may take place in isolation or in association with others. It can be done well or badly, successfully or unsuccessfully.---" (Boud, et al, 1985, p.19).

Keeping in mind the "general concept of mental activity" referred to previously, a fine-lined distinction must be clearly stated. Practice emanates *from* thinking. Practice, which is conditioned on reflection, is impossible unless preceded by thought. This chronological sequence is recognized as a logical necessity. The denial of a preemptive sequential relationship is irrational. One cannot possibly engage in reflective practice without first engaging in reflective thinking. Some *interpretative grounds* for an exception to this may be found in certain kinds of tacit knowledge.

Some other necessary relationships exist between reflective thinking and reflective practice. For example, "thinking" is an internal or subjective act, while "practice" is an external or objective act. Practice can be accurately characterized as the "doing aspect" that is generated by thinking. Reflective thinking does not necessarily provide any observable evidence that confirms its existence. Reflective practice, on the other hand, takes place in the common human environment and some confirmation of its existence is allowable through actions that are empirically verifiable.

Reflective thinking may be viewed as passive and personal in nature, while practice is active and social. The carrying out of thoughts or mental reflections as actions results in practice. "Reflective practice" is essentially "reflective action." Reflective thought is an

intangible personal expression and a purely subjective configuration of mind which anticipates whatever is required to produce actions (practice). Thinking involves such pre-physical articulations of mental processes as consciously deciding or making judgments and selecting among alternative possibilities. Practice is realized in the guise of actions that stem from preceding thoughts whether they be tacit or explicit, mediated or intuitive. Reflective thinking and practice are subject and object. We cannot begin to examine subjective thought except as it is evidenced and made real (or public) by practice. Practice is the practical manifestation that reflective thought has occurred.

Logical connections and clarification

Interestingly enough, the kinds of relationships mentioned above are themselves enounced by reflection. They are apparent as logical corollaries to any understanding of reflective thinking and practice. The connections mentioned are requirements for making sense out of intentional conceptualization of reflective thinking and practice. These relationships are necessary rather than merely sufficient. They simplify and organize the meanings of thinking and practice in practical terms of intelligible necessary conditions. The point of digressing into a protracted explanation of these relationships is to show how these terms (reflective thinking and practice) are intractably interdependent and make sense conceptually only when these obvious relationships hold.

Acts of clarification must be logical, i.e., they must make sense according to the rules of logic. Otherwise we cannot communicate the meaning of clarification. Some respect for syntax is essential and can never be entirely disregarded in favor of intuitive or emotive understanding. Reflective thought must also display a respect for logical procedure in order

to meet the criteria for being what it is. Making use of logic and creating an argumentative intelligibility provides consistency to distinguish actions of blind chance from actions of human intervention. Reflective thinking certainly makes use of many affective elements, but logical reasoning is the crux of its expression.

Reflection as tautological and connotative

In looking at existent relationships one begins to sense an inescapable circular meaning of reflection. A tautological nature of reflective thinking emerges from being forced by conventional necessity to think in linguistic terms. We cannot free the mind from constraints of language as the most intrusive and ingenious tool of expression. How else can we say with some degree of precision, even to ourselves in private thought, what is meant. Language must explicate meaning by using words to explain other words. This is the endless tautological chain of linguistic expression and, hence, the determinant of the circular nature of reflective thinking.

The primary import, then, is to conduct an investigation that examines reflective theorizing in the abstract, i.e., in a general sense. Connotative meaning is the object of study rather than denotative meaning. It may very well be an impossibility to seek to underscore the meaning of reflection in its entirety. The applications are too numerous. In studying a generalized concept, the "broadness" of abstracted meaning will be emphasized, while the "specificity" of incidental concrete meaning will receive far less attention. The drive is to seek out "frames of thought" about a conceptualized process mainly derived from sound reasoning and argumentation.

In examining reflection, it is probably wise to cautiously approach the adoption of theories that specifically or intentionally endorse a particular point of view. The traditional attitude of positivist methodology in avoiding the imposition of "value" in scientific endeavors is extreme. Some have steadfastly refused to recognize the indisputable empirical fact that bias itself contributes to all varieties of human experience. The conscious decisions of researchers to pursue their investigations in detached and disinterested fashion expresses the very preferential bias they seek to avoid. Seeking to eliminate the interspersing of value into research is itself an expression of an explicit value judgement. For better or worse, bias is an integral aspect of all human appreciations. The preponderance of bias or prejudice should be rationally controlled; it cannot be denied. Bias may even be useful or desirable when envisioned as a means of upholding whatever benefits humanity most. The existence of bias does not necessarily imply a bad or evil outcome.

Researchers in the various contexts of science have sought to avoid the interjection of values into their investigations. Reflective thinking, however, is not science. The free flowing methodological variations conducive to reflective thinking are distinct and separate from the many procedural restrictions to which scientific inquiries are subjected. This is a truism even though the worth of reflective thinking to scientific investigation is incontestable. Conversely, however, the methodological restrictions of science, especially those espousing disinterested detachment, may be a hinderance in studying reflective thinking. Getting into the middle of theory in a personal way may emphasize an aspect of reflective thinking at its deepest levels. This kind of theorizing and analysis cannot be automatically discounted as purely prejudicial and a negation of "truth-value." Reflective thinking is, after all, a subjective and private activity. The "value-laden" undercurrents of our subjective insights

does not diminish factual acuteness where it exists. Reflective thinking and practice are human activities, and as such, *must* convey values. It is probably best not to confuse scientific methodology or positivism with any related efforts to uncover the principles behind reflective thinking. The two dominions of methodological inculcation are vastly different though they may serve as helpmates to each other.

The provisional nature of theory

It is virtually impossible to examine any concept without adopting an implied point of view as the examination proceeds and ultimately culminates. The important consideration may be to avoid consciously assigning a prejudiced "truth" value to a preferential point of view. It can be assumed that in theorizing and in the consequent interpretation and critical analysis of theory, there is no version of absolute truth; all notions are conditional and tentative. To analyze, to discuss, to ponder or reflect and to examine involves formulating critical perspectives. Engaging in system-building or politicized metaphysics can seriously detract from aspirations to critically examine theories with logic and reason. While studying the meaning of theory requires stating interpretative conceptualizations in a declarative and assertative fashion, such statements are *always* provisional. Theory *itself* defines the non-existence and non-acceptability of certainty and finality in declarations and conclusions. The dictionary definitions of "theory" are useful in setting the boundaries of exploration.

"1. a. Systematically organized knowledge applicable in a relatively wide variety of circumstances, especially a system of assumptions, accepted principles, and rules of procedure devised to analyze, predict, or otherwise explain the nature or behavior of a specified set of phenomena. b. Such knowledge or such a system. 2. Abstract reasoning: speculation. 3. A belief that guides action or assists comprehension or judgment: *rose early, on the theory that morning efforts are best: the modern architectural theory that less is more.* 4. An

assumption based on limited information or knowledge; a conjecture" (The American Heritage Dictionary, 1992).

The words "assumption," "accepted principles," "rules of procedure," "speculation," "belief that guides action," "limited information" and "conjecture" are keys to realizing the tentative nature of *all* theory. Nevertheless, rational or logical analysis does not allow one to summarily suspend judgement; to do so is to do nothing, i.e., to remain abjectly inconclusive. To effectively examine the merits of a theory necessitates taking a point of view, albeit a tentative one. The rigors of a sustainable viewpoint may alter dramatically as logical validity and rationale begins to unfold and to be held up to question. A synthesis of rationale is the desirable end-point of all intelligent discussions and especially those about tentative theories.

A recursive reality of countless possibilities is the pattern that emerges when considering theories about reflection. Reflecting about reflection is a lot more complicated than examining theory that is less self-defining. What can be successfully verbalized is limited by the internal complexities of a broadly construed concept. In addition, peculiarities arise in any attempt to elaborate meanings that rebound from self-reference. The concept of reflection, as will be illustrated, is plagued by paradoxical self-reference and is, to a great extent, explainable or describable only in circular terms.

The comprehensible world and reflective paradoxes

In writing about the methods of science in general, Albert Einstein offered the following insights.

"--- one may say "the eternal mystery of the world is in its comprehensibility." It is one of the great realizations of Immanuel Kant that the postulation of a real external world would be senseless without this comprehensibility.

In speaking here of "comprehensibility," the expression is used in its most modest sense. It implies: the production of some sort of order among sense impressions, this order being produced by the creation of general concepts, relations between these concepts and by definite relations of some kind between the concepts and sense experience. ---

In my opinion, nothing can be said *a priori* concerning the manner in which the concepts are to be formed and connected, and how we are to coordinate them to sense experience. In guiding us in the creation of such an order of sense experience, success alone is the determining factor. All that is necessary is to fix a set of rules, since without such rules the acquisition of knowledge in the desired sense would be impossible. One may compare these rules with the rules of a game in which, while the rules themselves are arbitrary, it is their rigidity alone which makes the game possible. However, the fixation will never be final. It will have validity only for a special field of application (i.e., there are no final categories in the sense of Kant.)" (Einstein, 1936, p.292)

It is the process of reflective thinking that empowers the connectiveness between concepts and between conceptualization and sense experience. Any discussion of reflective thinking or practice must therefore *itself* be attuned to the reflective process. One cannot presume to discuss reflective theory without engaging oneself in the process which is being analyzed. In order to facilitate an investigation of reflective theory, the process must literally examine itself. In other words, one cannot analyze reflection without engaging in a reflection on reflection. This leads to some perplexing delimmas or paradoxes.

The *Harper Collins Dictionary of Philosophy* defines "paradox" in the following manner.

- "1. A statement (tenet, belief, concept, notion) that is contrary to accepted opinion, or opposed to what is regarded as common sense, but may be true.
2. A statement that on the surface appears absurd or even self-contradictory, but (a) is true or (b) may be true.
3. An apparent dichotomy (or self-contradiction) that when overcome denies something which is regarded as

true. 4. A situation in which two statements that are incongruent (contrary, exclusive of each other) both appear to be true, and both must be accepted in action. 5. A statement that when regarded as true leads to its being false and when regarded as false leads to its truth (or leads to a truth)" (Angeles, 1992, P.219).

Paradoxes of self-reference are particularly interesting and pertinent to reflection. Examples of these kinds of paradoxes provided in *The Harper Collins Dictionary of Philosophy* are listed below.

"All generalizations are false." (Since this is a generalization it must be false and if false, true; but if true, false.)

"No knowledge is possible." (Yet claiming this is knowledge).

"There are no absolutes." (Is this an absolute?)

"Everything is uncertain."

"Nothing-at-all exists."

"I do not exist" (Angeles, p.220).

Reflective thinking is demonstrative of a number of paradoxes. The enigmas of paradoxical self-reference stand out in analyzing reflection conceptually. The following questions and accompanying discussion demonstrates a quality of self-reference in reflective thinking, as well as other paradoxes and conceptual problems. The purpose in raising these points here is to illustrate the complexity of reflective thinking.

(1) Is reflecting on reflection an experientially based activity or is it a priori?

(2) Can tacit knowledge serve as the foundation for reflective action (practice)?

(How can knowing that is intuitively ingrained somehow produce action or practice that is

reflectively constituted?) It sometimes appears that "learning from experience" can become "compacted" or "ingrained" so as to produce tacit or unmediated knowledge leading to reflective actions without benefit of a clear reflective process. An example can be found in the specialized surgeon who having performed a complicated operation, gains the benefits of tacit knowledge through practice (or action). The surgeon may be able to "act" reflectively in solving the immediate and pressing problems that arise in the course of an operation. The "reflective process" is reduced to a level of intuitive performance that is virtually automatic and highly effective in a practical way.

Therefore, it seems that in at least some instances, reflective conclusions are drawn without reflecting and purely on the basis of tacit knowing. In other words, the reflective process can sometimes be bypassed by the "automatic knowing" of tacit knowledge. The mind seems to possess the talent for converting tacit knowledge into reflectively valid action without any need to engage in the reflective process. This creates a contradictory action that allows reflective conclusions to be drawn without "reflecting" or thinking about the problem first. The speed and immediacy of unmediated, intuitive or tacit knowledge far exceeds the mental derivations based on logical, reflective or mediated thought. Yet the results may be superior.

(3) Is there such a thing as a "reflective process" or does reflection occur in spontaneous and unrelated ways? What we would normally call reflective actions occur in ways that are seen to be "step-related" or "mediated." Intuitive or tacit knowledge gives rise to actions or practice that have the "value" of reflective thought but lack the necessity of any procedural requirements. Is this logically possible? Therein lies a paradox.

Does the presumption of reflective capacity apparent in action derived from tacit knowledge destroy the possibility of a reflective process? The meaning of "reflective process" has to be interpreted broadly to avoid self-destructing. The conceptual annotation of reflection must be framed to take in intuitive and tacit knowledge as well as that obtained from mediated thinking. The idea of a step-related reflective thinking process is a gross oversimplification of how most thinking occurs. The ability of the mind to grasp and manipulate thoughts and insights to arrive at conclusions is vastly more complex than what is allowed in syllogistic reasoning. Other models of thinking constrained by the limitations of language and symbols are likewise inexplicit of the variety that prevails in mental awareness. We "know" or draw conclusions in many ways that go well beyond the ordinary meaning of "process."

Freedom of thought and innovation

Reflective thinking constitutes a peculiar or special kind of mental approach to gaining insight. There are rules, but they are not binding. For example, reflective thinking as a means of improving teaching practice is open to an indeterminate amount of innovative freedom. Totally new approaches are invited without any violation or infringement upon some immutable set of principles. An unrestricted capacity for freedom in thinking is a necessary condition for reflecting.

The aim of reflection is to recognize understandings that have been hidden or unapparent prior to *this* moment. The reflective thinker is always seeking to find innovative and new ways of viewing the familiar world. Reflection as a mulling about of unlimited possibilities within the mind is infinitely rational and intentional in purpose. In education

reflection as practice is geared towards finding a path of continuous improvement that is at once theoretical and practical.

The mind/body problem

If a teleological interpretation is applied to reflective thinking, thought as process becomes directed towards methods capable of achieving ultimate knowledge germane to some species level rendering of the meaning of "human mind." In this respect, one senses the goal of the mystic, i.e., the blending of self with reality. The blending of self with reality *through thought* constitutes the interactive meaning of the reflective process. There is a sort of ineffable mystery associated with reflective thinking which is then somehow transformed into actions or practice conveying practical consequences. The illusive connection that exists between reflective thinking and practice is really another version of the mind-body problem of philosophy. The historical epistemological problem persists about how mind and matter somehow interact. The student of reflective thought and practice is in no better position to solve this problem than the philosopher. The point here is to make clear the similarity of the two dilemmas. A significant aspect of the clarification of meaning is to notice convergent conceptual notions existing in related fields of study. The congruity of the mind-body problem and reflective thinking and practice is obviously an example of such convergence. Other connections will be elaborated as the literature is reviewed.

OBJECTIVES

The objectives of this study includes the following:

- (1) To identify similarities in the thinking of important reflective theorists that may reasonably be interpreted as grounds for agreement or consensus, and to assess theoretical differences and the rationales in their formulations.
- (2) To clarify and demystify conceptual meaning and to circumscribe fundamental terms and the ways in which they are used.
- (3) To expand the grounds of agreement or consensus by "pulling together" theoretical assertions found in the literature. This may be accomplished by expansively assisting the acuity of conceptual meaning by means of reasoning based on a logical accretion. Inferential extrapolation may be a useful approach to rationally expanding or extending the grounds of *potential* theoretical agreement. Pointing out some examples of inferential extrapolation will provide a better sense of what this terminology means. Such examples will occur later in this study.
- (4) To attempt an improvement of consistency within the conceptual framework of reflective thinking and practice. By isolating and noting the "common strands" that run among theoretical notions, it may become possible to connect logical relationships and mediate apparent agreement (in clarifying the meanings of the concept).

STATEMENT OF SIGNIFICANCE

The potential value of this study lies in the possibility of contributing to the clarification of meaning by reviewing, consolidating and unifying ideas in a consistent fashion. The great natural diversity of conceptual formulations about reflective thinking and practice seem to create an unintentional discord of ambiguity. Difficulties prevail in trying to understand how the meanings emphasized or implied by one theorist relate to the ideas of another. Do they, in fact, refer to the same or dissimilar notions?

The ideas contained in reflective theories overlap with each other and with the congruent concepts of fields such as generative linguistic analysis. In some small way, it is the aim of this examination to begin to unravel and partially resolve some of the confusions that result in any effort to reflect about reflection. To begin to grasp the foundations of existing theory in the highly intimate way necessary to deep understanding is a crucial existential basis for reaching out in entirely new directions. Diverse fields of researchers and practitioners can benefit from any impetus towards order and consistency in the crazy quilt of theory. This is the first essential step in moving towards the use of reflective thinking to solve problems of its own inception.

CHAPTER II

METHODOLOGY

THE APPROACH TO METHOD

The thrust here is towards clarification and the understanding of meaning through circumscribing terminology, philosophical and logical analysis, and the discovery of consensual agreement among theorists. The perception of a diverseness of theory is also important to impelling thinking in new directions. Expanding the grounds of agreement inferentially may be accomplished by "pulling together" various components of theory. This pulling together can be accessed primarily by logical or critical analysis. Taking a critical look at theory opens the possibility for conjoining theories by implication or by a process of logical reasoning. Carrying arguments to their logical conclusions is quite obviously part of any reflective methodology. The use of logical analysis in the study of reflective theorizing effectively utilizes a reflective methodology to "look back upon itself." This is the essence of logic itself. This is the *quod erat demonstrandum* of carefully reasoned argumentation, and hence, the usefulness of critical analysis. Reflective methodology *is* critical analysis. Critical analysis, however, may not always be reflective.

The use of reflective thinking as an applied research methodology will assist the current inquiry. This approach may be somewhat controversial in view of an inherent non-specificity. However, it seems contradictory to espouse the merits of reflective thinking as an adjunct to generative practice while simultaneously denying its validity as a legitimate and

productive research tool. Indeed, the entire point of reflective thinking seems to be, in one fashion or another, to discover, create or initiate individual research leading to improved practices. In all fields of inquiry, reflective thinking is often the unspoken and undesigned method of choice for conducting the most basic of research. Very often, it is the *only* method available in completely new and evolving fields. Reflective thinking marks the place where all inquiry begins. It provides the jumping off place where other more exacting and rigid procedural methodologies originates. In a fundamental sense, reflective thinking is the parent of all specific methods of research. As such, it may be the most clearly distinctive and legitimate of all searching techniques for finding patterns and order. The use of reflective thinking as a research method (paradoxically, a method without method) will be discussed extensively. The controversy of its essential non-specificity is likely to continue unresolved.

This effort at reflective inquiry is *not* scientific, but rather an artistic endeavor. As Schön observed, the reflective practitioner has often been schooled in the tradition of positivism (1983). However, as Schön noticed, there are some apparent discrepancies between formal theory and practical application; i.e., between the formal intellectual conditioning of professionals and the realities of practice. Practice presents problematic situations that the professional must react to and deal with. The competent professional becomes adept at distilling solutions, often without any tangible knack for saying exactly how or why. The professional develops an "artistic" capacity for reflecting-in-action and knowing-in-action. In the present investigation the meaning of "practice" consists in the comprehension and understanding of what constitutes reflective thinking and practice. The tacit factor may be even greater in reflecting on reflection than in solving the many practical problems that occur, for example, in medicine or teaching.

In so far as it is possible, an effort will be made to verbalize the nature of reflective thinking and practice. The elusive artistic aspects of reflection effectively prohibits any total description or explanation in language. Much of the reflective process is ingrained, intuitive and automatic. These non-verbal cognitive elements cannot be expressed. They can only be grasped as precipitators of action. This kind of knowledge is reactively available for immediate use. Such knowledge may not, however, be easily susceptible to intellectual explanation. A great deal of what is known in reactive fashion is also ineffable. What can be linguistically expressed about reflective thinking and practice is governed by the extremes of possible verbal capacity where movement and knowing blend together. This knowledge manifests itself in an active experience that often occurs with a lightning speed. Thinking of this kind is not conducive to any common verbal expression. Thinking and action become one. The apparent rational character of such action confirms that it is knowledgeable without any requirement of an appeal to deductive logic. Assessments are made and conclusions are drawn almost immediately and then acted upon. Step-related reasoning becomes cumbersome and unnecessary. The competent medical internist, for example, may be able to bypass medical testing and correctly make an intuitive diagnosis. Testing only verifies what the doctor already knows. It is more of an evidence necessary to the patient than the physician.

The major approaches to be utilized in this study are briefly listed below. No particular significance attaches to the order of listing.

- (1) Reflective thinking congealed by logical and philosophical analysis.

(2) Circumscribing basic terminology in tentative ways by speculating about its apparent usages.

(3) Looking for areas of consensual agreement among theorists.

(4) Pursuing an inferential expansion of the grounds of agreement among theorists. This means conjoining related theories by a process of logical implication.

(5) Following an informal tact of developmental tracing based on a loose sense of historical awareness. An explanation of what this means is included later in this chapter.

(6) Logical argumentation and critical analysis.

(7) Taking notice of the interdisciplinary convergences of idea formulations relevant to reflection. The review of literature will demonstrate the variety of theory that contributes to the foundations of reflective thinking and practice. The theoretical and philosophical bases of reflection derive from many diverse sources. The bases of theory are *not* limited to philosophical thinking specifically associated with education.

(8) An interpretative adaptation of the concept of action research as an *individual* reflective stratagem. This will be elaborated in several contexts within the present study.

(9) An examination and critical analysis of the *feasibility* of using operational definitions drawn in context from the vocabulary of reflective thinking and practice.

These approaches are too indistinct to be referred to as methods in the usual sense of the word. They are not conventional, just as reflective thinking is not conventional. If it were conventional, it would be something else; perhaps nonreflective thinking. The generic identity of reflection is always intermingled with the nuances of emerging innovation and creativity. Convention is something agreed upon and associated with *developed* theory rather than the imprecision of unsubstantiated innovative insight. Reflective thinking occupies a mental frontier of changing intellectual shapes and configurations. It cannot be conventional and predetermined and retain its innovative character. Yet reflection is clearly recognizable in numerous ways. Such inescapable ambiguity is likewise an unwelcome part of the present examination.

Clarifying, sorting out, and the convergence of ideas

The clarification of meaning is a key job to be undertaken. Clarification may serve to generate inferred meanings and statements as a purely rational consequence of carrying arguments to their logical conclusions. The logic of clarification also has to do with the implicit and explicit uses of terminology. Resulting critical analysis, whether for attempting clarity or other purposes is likely to be subject to some controversy regarding interpretations of relevance and correctness. The raising of unrealistic expectations for some form of invariant agreement among theorists is apt to remain a source of frustration.

The aims of this study involve trying to sort out what reflection theory means. The "sorting out process" involves a kind of unscheduled excursion into a number of related and overlapping areas of theoretical inquiry. For example, the conceptual basis of language and its formative development in individuals is of interest. The fact that thought processes and

language seem inseparable underlines the significance of this field to reflective thinking and practice. The contents of thought are indescribable or, in some instances, perhaps non-existent without language. Few, if any, thoughts are amenable to articulated expression without the assistance of language. Some additional topics that elicit consequential relationships involve the congruence of creativity and reflection, values as inescapable determining factors, and the thought provoking uses of metaphor. The meanings of reflection has other roots in the innate conception of thoughts based on pattern recognitions. Intuitive insights, as well as deductive and inductive logic, contribute to the developing images of reflective paradigms.

An interesting array of new theories may find the possibility of inception within an interdisciplinary convergence of existing ideas. The current scope of theory can potentially find enlargement, enhancement, and extension in the examination of the aforementioned areas. Reasonable logical inferences can be made the focal points for showing connections between related theoretical categories. While the grounds of evidence for connecting these categories may seem exiguous at times, convincing elements of conceptual similarity seem to crop up unexpectedly. The drawing of worthwhile inferences in such cases is something more than blind speculation. The expansion of methodological epistemic foundations in the reflective mode glimmers in these connected ideas. In other words, by combining and associating functions related to thinking processes, it *may* become possible to uncover an emerging epistemology of reflective thinking. Examples of areas with a potential for epistemological insight are the study of value orientation, metaphor, creativity, logic, intuition, emotion, and the etiology of language development. The gaining of useful insight is intended rather than the drawing of some final conclusions. It is hoped that the

Methodology of this paper may provide, in itself, an example of operative reflective thinking and practice.

Reviewing the literature

An important aspect of the methodology in this examination centers around an analytic review of the literature. Examining the written expressions of thought conveyed by a number of theorists and philosophers provides an opportunity to relate ideas from interdisciplinary sources. The review of literature in this study, while extensive, merely scratches the surface of a vast reserve of pertinent thinking.

The review of literature will be a sampling of the many ideas and interpretations that converge in the general concept of reflection. A great deal will be arbitrarily omitted to make the sample manageable. *The primary selection criteria revolves around seeking to determine the philosophical and theoretical bases of reflective thinking and practice.* Reflective thinking and practice are not finished intellectual products. They will not be concluded today or tomorrow. The broad conceptual bases of the reflective thinking processes are evolving without any apparent end in sight.

The review of literature is necessarily long, and at the same time grossly incomplete. The emphasis has been placed on basic or foundation concepts; for example, pattern recognition, creativity, and the character of intuition. The theoretical and philosophical foundations are to be found in these kinds of concepts. The special relationships that persist in a diversity of fundamental ideas are often manifested only as suspicions. Placing ideas

side by side in a review of literature provides a beginning for coordinating interdisciplinary concepts.

There are numerous fine points that will not be mentioned or discussed. Many other points remain to be ascertained as relevant by interested philosophers and theorists. Many cannot be considered because they are not yet evident at all. Others have been omitted by accident of oversight or because the present author lacks the required perspicuity to see them as interesting or relevant. The creeping intervention of bias in picking and choosing among possible selections is inevitable. Hopefully, others pursuing similar themes will supply these missing or neglected elements.

An *analytic* review of literature refers to the sensing and imposition of interpretative design in surveying the literature. A degree of conjecture may be necessary as a means of connecting and relating ideas to reflective thinking and practice. Many such connections, however, are fairly apparent and not at all farfetched. Neither are they inordinately removed from practical experience as it relates to individual notions of reflective thinking and practice. The greatest obstacle to a common rationale may reside in the terminology of concepts divorced by varied applications in separate fields of practice.

An action research approach and developmental tracing

A vigorous delving into the subjectivity-centered meaning of reflective thinking and practice implies an action research approach. The reflective thinker cannot somehow withdraw as an active participant in the process of contemplation of which he or she is a part.

The subjectivity of reflection places the *individual* examining the concept at the epicenter of interpretative theorizing.

"In action research, a researcher works with a *group* [italics mine] to define a problem, collect data to determine whether or not this is indeed the problem, and then experiments with potential solutions to the problem. Data are then collected on the results of the experiment and fed back to the group. If it is determined that the solution was not successful, the group then works to redefine the problem, develop further experiments, and cycle again and again through this process of experimentation and reflection. The role of the action researcher is to guide data collection and analysis.---" (Brooks, and Watkins, 1994, p.8).

Someone trying to understand the processes of reflective thinking and practice may benefit enormously from mimicking the procedural methods of action research. Since reflective thought occurs within the enclosed domain of a single person, any duplication of action research must be an individual rather than a group activity. An adapted model that individually internalizes cycles of data collection, experimentation, reflections, and consequent reevaluations has the character of action research despite the lack of group dynamics. The idea that group dynamics are essential to action research is a debatable issue. For example, it has been asserted that Ludwig Wittgenstein carried on original research while conducting his philosophy classes. (Schulte, 1992, p.9). What Wittgenstein was doing had the strong appearance of a form of individualized action research. The thinking which occurred was mostly his own. The group of students served only to stimulate the inner mechanisms of reflection through their questions and comments. There is no reason to believe that the ability to conduct original research, simultaneously alone and through the interchange of dialogue with other, was a talent unique to Wittgenstein. The tremendous impact of Wittgenstein's research on contemporary philosophy is a matter of record. Much of his

research seemed to be unusual in its inception and can be traced to thinking methodology as well as outstanding genius.

These dynamics of group dialogue may be simulated and duplicated through an analysis of the written accounts of theory. Making comparisons and cross references within the body of theory may duplicate the interchanges found in dialogue to some extent. Through inference, it may be possible to conduct action research of a sort, without the necessity of dialogue within a group setting. The "group" consists of the written accounts that theorists have amply provided in articles and books. (An approach such as this is much more than simple unsubstantiated speculation or conjecture, since it is based on documented accounts and the inferential extrapolation of thinking.) It is a possible tool for the innovative gaining of insight. Consequent narrative recording of logical or philosophical analysis falls well within the schema of current qualitative research methodology (Jorgensen, 1989; Winter, 1987; Bryman, 1988; Kincheloe, 1991; Marshall and Rossman, 1989). The kind of examination intended here is qualitative in terms of overall analytic methodology.

The examination of reflection theory will lean heavily on the evidentiary establishment of consensual agreement that *may* be available through a historical awareness of the literature. Historical awareness may be taken to mean a *developmental tracing* of theory. The tracing of idea development does not necessarily conjoin a chronological sequence. It is the theory itself and the relational connectives of idea formulations that are presumed to be important. Concern with chronological dating or the association of notions with epochs or individuals is minor in consideration. Regurgitation of period- dated or

chronologically associated facts has very little to do with historical awareness as it is meant here.

Philosophical and logical analysis

As previously indicated, in addition to a historical awareness marking the evolution of theory, other investigative methodology will include what can be called philosophical and logical analysis. *By philosophical analysis is meant a critical dissection of basic notions residing within the concept of reflection.* Philosophical analysis of this kind is the reflective method familiar to philosophers. This variety of thinking has a long tradition of intellectual acceptability throughout the history of western philosophy. This tradition can be found in the thinking of Aristotle and Plato and among the earlier Greek philosophers. In more recent times, reflective thinking has played a major role in the philosophizing of John Dewey, William James, Bertrand Russell, Alfred North Whitehead, Ludwig Wittgenstein and numerous others. The documentation for this assertion runs throughout the writings of these philosophers and can be cited in numerous passages and contexts.

Logical Analysis refers to subjecting the body of accepted theory to a test of internal consistency in the drawing of inferences. In other words, logical analysis involves a carefully reasoned review of theory that projects the basic premises of arguments and the conclusions that are *implied*.

Consensus by inference

Relating consensus among theorists, must of necessity, retain some elements of conjecture and speculation resulting from individual interpretative and inferential reasoning.

The actual merits of establishing apparent consensual agreement hinges on the selection and citing of contextual documentation. The documentation of theory is deriveable through the quotation of relevant passages and serves as the justification for additional *inferred* assertions. An example of interpretative clarifying can be found in the on-going dialogue between Jack Mezirow, Mark Tennant and Michael Newman concerning the meaning of transformation theory (Mezirow, 1994; Tennant, 1994; Newman, 1994; Tennant, 1993). Dialogue of this kind is generally conducted in an atmosphere of goodwill and in the spirit of discovery and insight for the express purpose of facilitating the growth of knowledge. The examination of theory in this investigation likewise pertains to ideas, and not to personalities.

According the Benson Mates, "Logic investigates the relation of *consequence* that holds between the premises and the conclusions of a sound argument. An argument is said to be sound (correct, valid) if its conclusions *follows from* or is a *consequence of* its premises; otherwise it is unsound" (Mates, 1965, p.2). Stated another way, to be considered a valid argument, the conclusions that are drawn must be in accord with the accrued rules of logic. Logical analysis does not establish empirical truth or falsity, but only whether or not the conclusions follow from the premises. This type of analysis is useful in evaluating theories that are postulated in the creation of models having no direct link to facts; e.g., theories posited to establish a set of necessary and sufficient conditions conducive to reflective thought and practice.

Hypothesis, theory and cross-reference

In his book, *Logic and Scientific Methods* (1956), Herbert L. Searles defines a hypothesis, as "a tentative and provisional thesis put forward upon the basis of accumulated

knowledge for the guidance of further investigation and research." It is with this shade of definition in mind that an effort will be made to examine the body of assertions common to reflective thinking and practice. In considering the peculiarities of a thought process, there is little reason to distinguish between a hypothesis and a theory. The two words can be used interchangeably, since a progression in the degree of confirmation has little advantage in constituting theory as more advanced and somehow more valuable. The subject of analysis is a process, a mode, or a method of cognition rather than an empirical situation.

Cross reference is one means of establishing the appearance of consensual agreement among theorists. It means comparing theory statements for similarity in conceptual meanings. This kind of activity, which involves trying to get beyond mere words, is open to some criticism related to variations in plausible interpretations. If a wide range is allowed for shades of meaning and the unintentional existence of error, it can be a useful approach. The realization that theoretical viewpoints are tentative and based on interpretation, conjecture, and speculation as well as logic, provides a basis for inferential creativity as well as caution.

Operational Definition

Attention to the operational definition of terms is crucial to establishing empirical connections for a concept such as reflective thinking and practice. The ability to conduct a well-defined empirical investigation depends on consistency in theoretical constructions that convey logic in the use of terminology and the creation of meaning. Reflective thinking as a multi-usage concept may convey perceptual and cognitive confusion in accommodating all the many recent theoretical adaptations. The analysis conducted here is a kind of precursor

to empirical study. This is not meant to "devalue" existing empirical studies. It is rather a recognition that the relationships between theory and empirical research are close and intimate. Meaningful empirical study is made easier by congruent theory.

The criteria for operationalizing concepts is explained in the following statement by P.W. Bridgman.

"The fundamental idea back of an operational analysis is simple enough; namely that we do not know the meaning of a concept unless we can specify the operations which were used by us or our neighbor in applying the concept in any concrete situation. --- operations have a certain repeatability and identifiability and therefore 'objectivity'; this we take as a matter of observation and do not inquire how it comes about that this is true" (1952, p.p. 7-8).

Scientific research utilizing quantitative methods cannot be conducted unless conceptual meaning can be linked to some form of instrumentation. The current conceptual ambiguity of reflective thinking may hinder such linkage.

It must be kept in mind, however, that the mental nature of reflection effectively limits any profound attempt at operational definition. The thinking process itself is totally subjective. One of the distinguishing features of empiricism consists of a "public" accessibility to procedural verifiability and repeatable results. Observing common human environmental changes which are public provides the most readily apparent means to collecting some objective evidence of reflection. It is not the purpose of this examination to become entangled in trying to specify some number of proposed empirical connections.

REFLECTIVE THINKING AS A METHOD OF RESEARCH

Advocates of reflective thinking have a philosophical faith in considered thoughtfulness even though procedural effectiveness may be inexact and variant. Reflective thinking is perceived of as a natural means for finding reliable solutions. Thinking in a reflective mode presents a number of potential conflicts in any comparison with established research methodologies. As an example, conflict may arise and reflective thinking may be suspect as a method of research due to a wide range in the perceptions of validity and invalidity. In terms of wide ranging thought processes, what constitutes valid research to a given researcher may be totally unsatisfactory to another. All research, however, utilizes reflective thinking to coordinate and relate various investigative components. In thinking reflectively, flexibility is almost unlimited and controls may be anything within a reasonable extent of sensibility. *The non-specificity and malleable vagueness of reflective thinking makes it difficult to predetermine methodological correctness.* Reflective thinking may vary procedurally in approach from case to case and yet retain authenticity.

By virtue of educational background many established researchers hold a tacit and often open bias favoring a formal positivist paradigm. Prejudices supporting traditional scientific methodology may verge on irrationality at times. The popular appeal, however, of alternative methodologies is making this less and less the case. Respectability is no longer confined to experimental or statistical research. Nevertheless, thought-based innovations are often identified with philosophical rationalism and may be questioned as inappropriate on this basis. Thought-based creative innovation does not fit the mold, precisely because there is no mold. What reflective thinking most blatantly lacks is the overwhelming aura of exactness generally associated with scientific research. The present day reflective thinker may opt for qualitative analysis rather than quantitative. In some research fields this may still raise some methodological eyebrows, especially in technical areas where precise analysis is

regarded as synonymous with numerical exactitude. Factually speaking, it is generally agreed that many complex educational and social issues cannot be adequately reduced to simple quantitative statements. The efforts to operationalize terminology have proven largely inadequate for dealing with intangible social problems. The research uses of reflective thinking may help to fill a gap in the effectiveness of positivist methodology as applied to the social sciences and education.

Some attention must be given to reflective thinking as a methodology for its own self-examination. A dependence of communications and analytic activities on reflective thinking necessitates an appeal to self-usage to examine its own character. There are numerous modes of thinking, however, the *recognition* of classification and design in each of them draws existence from an artificial human construction. It is fairly apparent that as intelligent thinking beings, we linguistically determine the explanatory structures of our thinking processes. Perhaps the underlying outlines and boundaries of *possible* thinking processes are predetermined by genetic and species characteristics. It seems likely, however, that the descriptive articulations we apply to thinking modes are created individually by us. Logical and philosophical analysis are recognizable as thought modes forming subcategories of reflective thinking. Reflective thinking may also include various inarticulated intuitive and emotive insights. The utter impossibility of examining reflective thinking *without relying on reflective thinking* as the primary analytic tool hinges on the axiomatic. Any analysis of reflective thinking at more than a trivial level involves utilizing a self-extruded application of the same complex processes being analyzed. This requirement demonstrates another aspect of the self-referent nature of reflective thinking.

Faith in reflective thinking as a research method, as with any faith, is inherently unverifiable. Confirmation of conceptual or empirical validity is available only in terms of examining the results accomplished. This is likely to make anyone with homiletic positivist

leanings a little anxious. In addition, the affective and intuitive awarenesses that initially direct us towards substantiated knowledge are ambiguous in origins, direction, and purpose. Irregardless of the epistemological difficulties of verifying methodological authenticity, on the most elemental level, reflective thinking comprises the only doorway to creativity and discovery. This assertion cannot be denied without denying the efficacy of human intelligence. It is hard to imagine conducting any kind of organized research without the interpolation of a non-empirical preliminary thought process. The a priori schematic designs genetically present within our minds await the stimulations of reflective thinking to gel into creativity. These stimulations awake openings to the access routes of research.

Problem identification and selection, as well as the initial fashioning of research design, would seem to depend on reflective thinking. Also, the considered thoughtfulness of reflection forms the only known means available for ascertaining normative determinations of relevance or significance. The selection or rejection of specific criteria for analysis in matters pertaining to problematic justification rests solely on reflective thinking.

The outcome of reflective thinking can be described as a mental regurgitation of experience and conceptualization. Reflection induces enhanced understandings that unfold and extend themselves in mysterious ways. As already indicated, Studying reflective thinking represents a complex exercise in the self-study of a subject matter on itself. Reflecting on reflection forces the superimposition of a secondary thought process on to that which is already the object of research. This complicated variety of inquiry is essentially an introspective evaluation that directs thinking in counter-juxtaposition to itself. In comparison, the strict requirements of scientific methodology seem simplistic.

The introspective analysis of thought on thought is an attempt to examine the mysterious manner in which human beings are capable of utilizing thought as a distinctive

quality. In trying to research reflective thinking using reflection as the method, one is actually attempting to visualize thought as it is independently of its human source. Admittedly, this task may be beyond our grasp. The confusing amalgamation of mental imagery that seeks to direct thought processes by their own auspices is unfortunately the only means available. What else is possible?

If reflective thinking provides *any* of the support it presumably supplies in advancing creativity and discovery, then it should be considered appropriate as a basic research methodology. This would include researching the nature of reflective thinking. It is contradictory to proclaim the merits and benefits of reflective thinking and practice on the one hand, and to concurrently require some other method for its examination. Reflective thinking cannot be considered to be an obscured variation belonging to scientific methodology. Does this somehow diminish its value? As a matter of fact, scientific methodology has been wholly derived by a process of reflective thinking contiguous with human mental functioning and the blueprints of nature. Except for the powers of reflective thinking, scientific methodology would not exist.

The asking of profound philosophical questions began in the natural human capacity for wonder and curiosity. The tentative answers to fundamental questions found realization in the reflective speculations of metaphysics. This was surely the evolutionary process that led to modern science and its methodologies. Reflection and the human capacity for considered thoughtfulness are more basic to research than the exact methods of science. Science is pre-dated by reflective thinking and was conceived of through the universal cognitive talents of humanity. Reflective thinking may provide the genesis of new developments and methodologies that surpass the limitations of science. Reflective thinking is the tap root of research. It *must* examine itself.

CHAPTERS TO FOLLOW

Chapter three undertakes the task of reviewing the literature. Thinkers from a variety of fields will be included. Many of their ideas are not as discipline exclusive as they may appear at first sight. Important associative relationships often overlap from one discipline to another. Some apparently different concepts, when sheared of their cover of terminology, may actually share an identity. The review of literature will illustrate that congruent relationships may be suggested by thinkers in different fields with relevance for reflective thinking and practice.

Chapter four will be a discussion of education and reflection. The emphasis will be on selected philosophical connections linking education and the reflective process. Terms and concepts such as "information," "individualized acculturation," "solipism," and "spontaneous and deliberate reflection" will be considered. The place and significance of language in educational practice will be reemphasized as an outgrowth of some of the points established in chapter three.

Chapter five is the culmination of this examination and is an effort to reveal something of a reflective identity. The ever expanding meaning of the reflective process is perpetually confusing and enigmatic. Anything resembling a reflective identity is to be found only in generalities. The broad notion of improvement and the use of techniques predominates the reflective identity. The theorist's usage of a tautological and redundant terminology is a linguistic stencil that outlines the face of the reflective process. Any statement marked with strong conclusive certainty may be going too far in seeking to delineate reflection as definite and distinctive. Steering clear of conclusions may be the safest course to follow in view of the ineffable complexities inherent in the reflective process. The very nature of the process is antithetical to certainty in conclusions or firmly established

systems. Reflective thinking as process must remain open-ended or it automatically becomes something else. Much of the enticing charm of the reflective process inheres in a freedom to ponder without procedural restrictions and the avoidance of specific methodology. These nebulous traits within the reflective identity compound the difficulty of saying what it is.

CHAPTER III

AN ANALYTIC REVIEW OF LITERATURE

EXAMPLES OF OVERLAPPING AND INTERRELATED THEORY

In an attempt at clarification, it seems especially important to notice instances of apparently overlapping and interrelated theory. Finding such examples constitutes an important means of demonstrating the existence of consensus among theorists. The connections that are proposed may not be entirely obvious to everyone. A great deal of potentially contentious conjecture is involved in interpretation and distinguishing shades of meaning. Supporting evidence is to be found in the statements of theorists themselves and their commentators. The review of literature will contain a number of examples that are *suggestive* of interrelationships. Finding such connections will be a theme throughout. It is difficult, if not impossible, to determine with preciseness what has driven various theorists in certain directions. In many cases these influences may be unclear, even to the theorists themselves. It is possible, however, to point out similarities in conceptual applications and to identify areas of apparent agreement based on written expressions of thought.

The identification of interdisciplinary agreement may be very significant in linking together theories. Various disciplines are often not nearly as distinct and separate as their internal proponents would have us believe. Without question, there are numerous areas of mutual interest among educators, trainers, professional philosophers, linguists, computer science experts, logicians and others. It is surprising how these fields combine to contribute to the contents and principles of reflective thinking and practice. In turn, no one would

doubt that the many uses of productive reflective thought and practice extends to all fields of inquiry.

Relationships in common with critical self-reflection, philosophical method, and the "value" mindset of action research

The value and benefits deriving from one uniquely conceptualized variety of reflection are nicely summarized by Jack Mezirow in the quotation below.

"--- changing social norms reinforce our need to critically examine the very paradigms through which we have been taught by our culture to understand our experience. This process of critical self-reflection has the potential for profoundly changing the way we make sense of our experience of the world, other people, and ourselves. Such transformative learning, in turn, leads to action that can significantly affect the character of our interpersonal relationships, the organizations in which we work and socialize, and the socioeconomic system itself" (Mezirow, 1990, p.XIII).

The variety of inner-questioning peculiar to "critical self-reflection" is asserted to carry the capacity for transformation or tremendous change in personal orientation. In the context of reflection in general, it is important to ask what is meant by critical self-reflection. What are the identifying features and characteristics of this highly individualized process? How does this mysterious mechanism work to affect the changes that Mezirow envisions? Can the intense focus of a purely mental process do all that Mezirows' statements *imply*? What can be asserted to distinguish this extraordinary mode of mind from the blandness and ineffectiveness of mundanely situated thinking?

These kinds of questions have gone largely unanswered; mainly, perhaps, because they are philosophical, and *any* answers are speculative and conditional. The numerous possible answers to these questions are beyond the scope of this examination. The questions are

raised for their own sake, and to demonstrate the complexity of the potential for reflective theorizing. As Hunter Mead has observed, in the end, such questions are given preferential answers whether we will or not (Mead, 1959). We have no choice. Life requires us to formulate answers to philosophical questions.

While a distinction can be drawn between "reflective thinking" and "critical self reflection," the two are closely related. The notion of transformative learning has been associated with the reflective process. Mezirow envisions a world view of particular merit deriving from applied critical self-reflection.

In clarifying his own theorizing, Mezirow makes the following statements.

"Our meaning structures are transformed through reflection, defined here as attending to the grounds (justification) for one's beliefs. We reflect on the unexamined assumptions of our beliefs when the beliefs are not working well for us, or where old ways of thinking are no longer functional. We are confronted with a disorienting dilemma which serves as a trigger for assumptions to determine whether the belief, often remains functional for us as adults. We do this by critically examining its origins, nature and consequences" (1994, p.223).

The above comments raise a certain crucial question. *Can it be that critical self-reflection is nothing more than following the age old method of philosophy?* This question is not pointless. The arcane suggestion of the existence of a peculiar and discernable evolutionary thought methodology in the unfolding *practice of philosophy* is exceedingly important. This recognition is far more significant than the morass of temporary philosophical speculations this evolution has elicited. Popular philosophical doctrines and schools of thinking come and go according to the intellectual fashions of the times. The

intrinsic value of creative advances in the methodology of idea formulation far surpasses specific subject matter analysis. A constantly upgraded generic typology of thought styling goes way beyond the temporal limits of the current topics being discussed. What is thus advanced is vital to the evolution of knowledge itself. Analyzing methods of thinking and reflecting may serve as a means to unlock the secret channels and limits of the human mind. The complex and scholarly analysis of subject-related ideas pale in comparison to a reflective potential to manipulate thoughts apart and separately from the notions that impart their contents. This goes to the very root of understanding and the fundamental meaning of knowledge and the human ability to comprehend.

The essence of reflective thinking consists wholly in a cultivated and progressive ability to manipulate the operative mechanisms of the thought processes to create insight. The surreptitious value of philosophy inheres in the styling of thought it evokes rather than the questions it always insufficiently answers. This is the significance that the evolution of philosophical thinking and practice has for the more generic reflective thinking and practice. The long argumentative history of philosophy, in attempting to formulate profound questions and their answers, has given rise slowly to reflection as a distinct approach to *patterned inquiry*. Logic has played a strong role in the search for identifiable knowledge.

Today, however, there is an implicit recognition of the relevance that attaches to the intuitive and emotive sensing of knowledge. Knowing, if it has ever been the case, is no longer restricted to drawing conclusions based on step-related reasoning. Many obscured types of knowing may exist apart from that which is amenable to formal logical analysis. Many aspects of reflective thinking may utilize these intuitive and emotional paths to insight.

The trick is to allow these pathways as legitimate without negating intelligibility. Some common rules of evidence and rational construction extending beyond mere subjective acceptability must prevail. Otherwise knowledge may be reduced to nothing more than solipsism.

For countless generations, philosophers have questioned basic assumptions and beliefs held sacred by those less prone to think logically and consistently. Now, as well, the philosophical implications of insights stemming from intuition and feeling must be considered as instrumental sources for reflective pondering. The impact of philosophical thinking has always acted as an agent for change in those possessing the integrity for the free consideration of ideas. Can critical self-reflection be viewed, however, as a process insuring illumination to all active participants? This is doubtful because the proclivity of individuals to assimilate the consequences of logic and thinking vary greatly. The assimilation of insights derived from intuition and feelings are even more complex and resistant to analysis. Many are content to remain deluded and comfortable with feelings generated by acceptable and familiar authority-based beliefs. The ability to reflect critically requires a degree of personal courage as well as procedural changes in the thought processes.

A primary problem in understanding reflection in general, as well as critical self-reflection in particular, is underscored in seeking to know the meaning of "mind." Gazing intently into the mirror of self generally resolves into a vain attempt where we try to see inwards from outside ourselves. We hope thereby to gain a quick or fleeting view of that which makes us what we are. The mind is easily confused when trying to consider its own character. This reflection upon reflection upon reflection --- might continue on ad infinitum

except that it almost immediately begins to boggle the mind (itself) with its own innate complexities.

The brightest and best of human minds are quite easily blinded by any reflective looks inward to catch sight of the mental self. Critical self-reflection, if it is anything, must involve these inward glances. In the deepest sense, one cannot grasp the meaning of mind because mind cannot easily focus upon itself as subject. Mind is, in fact, caught in a kind of eternal darkness, unable, so to speak, to see itself. Mind (conceptually and in a very broad sense) can only look outward, not inward. This is a disability of nature that has no cure or escape. We, as human beings, are all caught in the trap of what we are and the natural limitations of what we are unable to do.

Reflective thinking going beyond the first degree cannot turn back upon itself except in an almost trivial and limited manner. Getting past the wall of the mental self is not comprehensible as a conceivable act and perhaps, therefore, forever unattainable. The only remote possibility may consist in imagining "what it would be like." But this line of fantasy does indeed go beyond experience. The question arises as to how any consideration can be given to an alluded experience that has no basis in possible experience. *One cannot begin to seize upon the meaning of mind because mind seems to be primarily capable of focusing upon experiential objects of thought.* The arguments in favor of a priori knowledge, other than logical tautologies, have always been exceedingly weak and unsustainable. Unfortunately, in the case of "mind," any and all knowledge must be a priori and extra-experiential. The basis of this complication is as follows.

"What is the mind?" is a question that has intrigued people from the earliest times—indeed, for as long as man has considered the possibility of mind at all. It is the first truly philosophical question which comes with the dawning of self-consciousness. Yet it stumbles on a vexing question: How can that which knows, know itself? Each representation of the known which lacks the knower is necessarily incomplete" (Hampden-Turner, 1981, p.8).

This aspect of profound reflection is destined to remain unapproachable. Blindness, in this regard, is our natural state. Knowing that one is blind, however, provides a kind of avenue to insight, if not sight. This is the single escape we have from ourselves in the restricted comprehension of "mind as concept." Sensing the heavy darkness of the mind's inability to access itself is a kind of non-experience that experientially may lead to understanding. Strangely, inexperience and the lack of any basis in experience are the exact prerequisites for wandering about meaningfully in the darkness of incomprehensibility. *Not* knowing where one stands in relation to what is understandable or comprehensible is a kind of negative insight. Such wandering, may in the end, reveal some hidden pathways that do not have to be viewed or understood to be utilized.

The purported originator of action-research, psychologist Kurt Lewin, clearly recognized the necessity of considering social or group attributes as the shaping components of individual constructions of thought (Lewin, 1948). Human experience cannot be washed by neutral objectivity and consequently interpreted as an independent impression of reality existing apart from what we bring to it. Our human appreciations of reality cannot be value free. Experience must be broadly construed to include the interactive aspects of human relations as well as the emotive and intuitive interpretations that our identity imposes.

"One of his concepts [Lewin] was that of action research. The researcher, he argued, has his own active life-space, as do those persons he investigates. So long as psychologists are content to observe with dispassion and passivity,

what they discover will remain a worm's-eye view, insulated from the significance of dedicated lives and unusable by those who act boldly upon a priori convictions. The challenges of real life can rarely be simulated in contrived settings and, for a whole range of problems, the only suitable 'laboratory' must be at least a section of the real world. Lewin was himself a Zionist, who had seen his mother die in a concentration camp. He knew what he stood for and what he opposed. If values were declared 'up front,' he argued, there would be less confusion between the values of the researcher and those of the researched. It was a fallacy to assume that detachment made one 'value free,' because such an attitude is communicated to the subjects of research, and tends to make all concerned valueless" (Hampden-Turner, 1981, p.130).

It must be acknowledged that any naive notion of "valueless evaluation" is itself an explicit expression of a value judgement. There is no escaping the intentional placement of subjective appraisal into the numerous ways in which we all view the world. Is it not better, therefore, to include these appraisals in our stated analysis of reality? All experience is an inherently interpretative expression of our interactions with the environment and other human beings. Supposing that such interpretations are somehow removable, what remains is an inert and empty experience devoid of any human factor. It would seem that experience totally dead to the human touch would be virtually meaningless and could not be commented upon without fear of automatic contamination by value. By considering the merits of any experience we impose an interpretative presumption on reality. Why not admit this presumptive character of experience as a conclusive determining factor to start with? Thinking then revolves around making use of our values in ways that may be initially perceived as desirable rather than based on the concealment or denial of personal belief.

The aim of traditional or positivistic science has been to achieve a state of dispassionate detachment on the part of the researcher. The purported purpose was to avoid staining the truth with one's values. Lewin and others have seen this "problem of bias" in a

different light. We cannot escape what we are. Pure objectivity is not attainable nor is it desirable. Rather, what we bring to experience as human beings must be included as a part of that experience; not excluded as though by escaping ourselves, we somehow gain access to things as they are. Things as they are includes what we bring to experience. This too, constitutes the character of experience. The acts of reflective thinking and consequent practice epitomize the imposition of mental self-expression upon experience. The same may be said to be especially true of critical self-reflection. That such experience *must* be value-laden is self evident.

Rational evidence of the connections that exist between critical self-reflection, transformative learning and the value-centered ideals of action research are sensed in the comments that follow.

"In aiming to solve practical problems, action research necessarily takes a values position. Action researchers, rather than being "value neutral" select problems to study which they hope contribute to both general knowledge and practical solutions based on democratic, humanistic values. An action researcher has some vision of how society or organizations could be improved and uses the research process to help bring this desired future state into existence. Action research is *change-oriented** [italics mine] and seeks explicitly and directly to bring about change that has positive social value, such as healthy communities and democratic organizations" (Elden; Gjersvik, 1994, p.32).

It might be argued that critical self-reflection is the manifestation of an action research approach that has been highly personalized and individualized. It may not involve *conscious* interactions with other people. The significant changes that transpire within the

* *change-oriented* expresses a commitment to transformation. The emphasis of action research is social, whereas the emphasis of critical self-reflection is individual. The conceptual basis of the separate theories has some rather distinct similarity.

model of transformative learning are undoubtedly often the consequences of one's value orientations. The initial questioning of assumptions may be traceable to the impasse of unacceptable value considerations. The driving forces behind the notion of critical self-reflection involve conflicts of reason resulting in an uncomfortable awareness of contradiction and invalidity. It should be recognized, however, that an inability to continue to accept unworkable or conflicting belief patterns is as much a matter of value judgment as logic. The individual's cognizance of value is an obvious source of motivation behind critical self-reflection, or for that matter, other reflective thinking. The connection is apparent enough to warrant some serious analysis in future study. The overlapping between the divergent concepts of action research and critical self-reflection becomes even more apparent in the similarity of commitment to an assessment of basic assumptions and beliefs.

"---In action technologies, there is no shelter in which researchers and co-researchers can hide from the deeply personal issues that force an uncomfortable element of researcher self-revelation. Action technologies open the door for researchers and co-researchers to seek insight into how their own assumptions came to be constructed. Researchers and co-researchers seek to learn to think about their own thinking---" (Brooks and Watkins, 1994, p.8).

That action researchers engage purposely in critical self-reflection while in pursuit of their investigations links the two concepts together as an integral part of the same scheme to unlock reality. Throughout this study, interrelated and overlapping elements of separate theories and concepts will be sought after as a means of understanding reflection as a process. Action research recognizes that we interact with each other and with the environment. We cannot exclude ourselves and other humans from an assessment of reality. The old notion of objectivity is deceptive and indeed is less objective in a sense than if we included our values and inner-natures as part of the overall equation.

In summary, the significance of this discussion for reflective thinking and practice is roughly as follows. Critical self-reflection, as expounded by Mezirow, seems to be an adaptation of the "method of philosophy." This method involves formulating questions and tentative answers which are later themselves subjected to questioning and reformulation. This intellectual process is ongoing and unending. The long history of philosophical thought has been a kind of perpetual dialectic that begins with a question and the framing of a position. Through the processes of logic and reflective thinking of one sort or another, various antithesis positions develop. Philosophical reasoning, as a whole, is more of an approach to thinking rather than the consideration of any distinct subject matter. Critical self-reflection, which stresses the examination and reevaluation of belief systems which may no longer work, appears to utilize the "generality" of philosophical speculation as a jumping-off place. One of the crucial elements of critical self-reflection seems to revolve around an ability to suspend judgement in perpetuity. Actual belief contents do not seem to matter so much as the flexibility in thought that derives from an agnostic attitude towards all belief. This seems a kind of unstated prerequisite to achieving the nirvana of transformative learning. The ability to retain an attitude of open-mindedness is essential to success as a transformative learner. The exact manner in which transformative learning occurs, and the exact role that critical self-reflection plays remains a consummate mystery.

Critical self-reflection, as a process leading towards transformative learning does not appear to have any point of completion. Reflective thinking is central to the process, but apparently not identical. This thinking includes syllogistic or step-related thinking. It also utilizes certain indefinable and ineffable intuitive and emotional insights. All of these ways of reflecting act as individual interpretative filters of experience. The notion of "experience"

does not refer to something that happens, but refers to something that happens to someone. Conveying a purposed description or analysis of what has happened generally amounts to a complex set of interpretative presumptions about reality. This is the crux of critical self-reflection. It may be that transformative learning occurs when one is able to accept whatever conclusions are eventually undeniable. Learning is merely the result of being inescapably convinced.

Action research may be a useful approach to facilitate reflective thinking and practice and vice-versa. The action researcher is committed to inquiry based on a cross-section of reality rather than the examination of artificial laboratory models. Perhaps more importantly, the automatic impinging effects of the researcher's value system is undeniable. The researcher must be willing to consider his or her values congruent with other facts. As human beings, values are a part of our experiential apparatus. Recognition should be accorded to the view that futility attaches to any attempt at glimpsing the world free of our interpretative selves. Such "valueless" experience, even if possible, would be meaningless or incomprehensible until someone relented and interpreted its value. *Value is central to understanding. The acceptability of this proposition as a "universal affirmative" to cognitive awareness is becoming more and more fixed as part and parcel of a post-modernist doctrinaire position.*

The thinking that has accentuated Mezirow's concept of critical self-reflection has many noticeable connections to the theoretical foundations furnished by the disciplines of traditional philosophical inquiry and more recently action research. Transformative learning is viewed as a natural outcome of critical self-reflection. These concepts are not identical

in meaning but the rational overlapping and specific interrelationships are so apparent as to cry out for notice.

DIFFICULTY AND COMPLEXITY IN THE ARTICULATION OF MEANING

Considering the analysis of reflective thought as a process, John Dewey held the following straightforward view.

"--- reflective thought is like --- [a] random coursing of things through the mind in that it consists of a succession of things thought of, but it is unlike in that the mere chance occurrence of any chance 'something or other' in an irregular sequence does not suffice. Reflection involves not simply a sequence of ideas, but a *con*-sequence—a consecutive ordering in such a way that each determines the next as its proper outcome, while each outcome in turn leans back on, or refers to, its predecessors." (Dewey, 1933, p.4).

This appears to shed some light on the process, but Dewey seems to reduce reflection to a kind of stiff mechanistic procedure. He continues in his explanation of reflection by stating:

"The successive portions of a reflective thought grow out of one another and support one another; they do not come and go in a medley. Each phase is a step from something to something—technically speaking, it is a *term* of thought. Each term leaves a deposit that is utilized in the next term. The stream or flow becomes a train or chain. There are in any reflective thought definite units that are linked together so that there is a sustained movement to a common end" (1933, p.p. 4-5).

Dewey states that "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further

conclusions to which it tends constitutes reflective thought" (1933). Undoubtedly, thinking of ways to substantiate beliefs and knowledge and noticing suggestive intimations of additional relationships forms the basis of any description or explanation. No one is likely to dispute Dewey's definitive idea of what reflection does. Once said, however, it says very little. Dewey's definitive statement, while verbally concise, is basically non-informative. It leaves one with an empty feeling devoid of any deep significance. The capture of an engrossing insight into reflective thinking requires something more. Successfully nailing down the inclusive characteristics of reflective thinking in a single definition seems improbable. The disturbing result of concise definition is the unintentional trivializing of meaning.

Dewey's contribution may be in making us aware of the inherent futility of trying to reduce reflection to definition. Concise definitions, at best, are prone to be conceptually incomplete and unsatisfying in a number of respects. The vastness of possible meaning that attaches to reflection is at once too much and too many. An uncontrollable excess of conceptual meaning and multiple configurations in usage and design acts to make the explaining or describing of reflective thinking linguistically unmanageable. As a practical matter, reflection, as a concept, is ill-suited for concise definition. Nevertheless, it is unlikely that philosophers and theorists will cease trying. Categorical descriptions and explanations, couched in the certainty of definitive terms, forms the fulfillment of the theorist's dream of perfection. The certainty of concise definition is appealing until one considers the reductionist maleficence of such simplistic efforts.

Dewey can be credited with saying exactly what he means by reflective thinking. The criticism may be leveled that his explanation does not adequately account for the degree of

abstract complexity that is intuitively recognizable in the concept. Mezirow and others have been able to overcome this particular problem, but have created new ones in trying to say what they mean. The insufficient verbalization of meaning or the limitations of language often stand in the way of clarity.

The abstract complexity of reflection as a concept is sensed in the following words of John Peters.

"Reflective practice involves more than simply thinking about what one is doing and what one should do next. It involves identifying one's assumptions and feelings associated with practice, theorizing about how these assumptions and feelings are functionally or dysfunctionally associated with practice, and acting on the basis of the resulting theory of practice. In this sense, reflective practice involves critical thinking and learning, both of which are processes that can lead to significant self-development" (Peters, 1991, p.89).

Peters also says that:

"Reflective practice is a special kind of practice. It involves a systematic inquiry into the practice itself, even as the practice is underway. It also requires that the practitioner be open to a scrutiny of beliefs, values, and feelings ---" (1991, p.95).

Considering the implications of purified abstraction in the modeling of thinking concepts can lead to an area of theorizing that becomes strangely detached from the contents of thought itself. The next section is illustrative of a theoretical way in which thinking can be separated from its sum and substance.

THE DEEP WELL OF THEORY

Stellan Ohlsson talks about something called "Abstract Schemas" in an article published in the *Educational Psychologist* in 1993. In summarizing what is meant, Ohlsson gives the following explanation.

"Thinking that goes beyond immediate experience is regulated by knowledge structures called *abstract schemas*. Analysis of three such schemas [Genealogical Tree, the Darwinian Explanation Pattern, and the Election Schema] reveals that they are not theory-like: They do not consist of general propositions, they are neither true or false, and failure of fit between schema and reality does not cause rejection of the schema. Abstract schemas encode the structure of discourse rather than its content. This allows cross-domain transfer to be attempted but does not guarantee that it will succeed. The repertoire of abstract schemas is small enough to be a reasonable target for instruction" (Ohlsson, 1993, p.51).

--- mature thinkers --- are characterized by their ability to go beyond the stimulus and to think about aspects of reality that are not present in the immediately given situation and which might even transcend human experience entirely" (1993, p.51).

What Ohlsson is discussing seems almost mystical in nature. Thinking that "transcends human experience entirely" seems oddly contradictory since it is a human being that must experience the thinking.

This appears to get at the earlier enigma recognized and posed by Schön and Pultorak concerning reflecting on reflection and then reflecting in turn on that reflection. This kind of thinking is detached from any connection to direct experience by the imposition of a kind of "thought traveling process". Such a revolutionary idea provides the interesting possibility of a rational escape mechanism to get beyond experiential boundaries. A curious involvement of fascination with the unknown exists in the notion of "transcending experience." The unlikely idea of gaining knowledge beyond "what is possible" draws one

into a tantalizing emotional journey of fantasy. The unpredictable play of mental aberrations from natural imbalances or drug induced sources may trigger insights on occasion. Any specific connections to reality are variable and uncertain. The reliability of extra-experiential insights are questionable.

If a rationally induced variety of this kind of mental aberration is an actual possibility, it opens an area of "mental exploration" that has "territory" in much the same sense as the physical universe. The ability to "reflect" at this level displays an abstract conceptualization that escapes space and time and contains itself within an inner universe of the mind. This approach digs a deep well of theory that easily reaches a depth beyond intelligibility.

Some semblance of an inner universe has been accomplished in varying degree by drug induced states-of-mind, the delusions produced in various forms of insanity, and through the practice of mysticism. We shall discuss the latter first.

Mystical insight

The practice of mysticism is reputed to produce knowledge of a sort that requires no other confirmation outside the experience itself. The mystical experience is "self-contained" in the sense that it is revealing only to the mystic. Mystical knowledge apparently cannot be translated into linguistic expression independent of the experience.

"The mystical experience alludes to some immediate revelation of truth or unity with reality. It involves an undeniable insight that is convincing to the point of absolute certainty. Besides the removal of all doubt, the experience is characterized by an emotional grasp of a form of knowledge that requires no clarification by the understanding and is independent of ordinary sensory

perception. How the process of enlightenment occurs is unknown, even to the mystic. The epistemological character of the experience is purely subjective. Obviously, the experience itself is not open to any objective verification. Since the mystical experience is, in its totality, a kind of internal awareness or awakening, it is exceedingly difficult to perform any meaningful experimental or scientific analysis. The closed subjective nature of mysticism precludes any attempt at verification through observation or other purely public means. Likewise, there can be no possibility of some second party exactly duplicating the experience in a test for validity or authenticity. The precise experience remains, for all time, a private state of mind that is inaccessible and unavailable for impartial review. Because of the emotional aspects of the experience, it cannot be accurately described in "objective terms of feeling" either by the person having the experience or by anyone else" (Johnson, 1993, p.3).

A subjective mystical experience represents special talents capable of a very specialized kind of reflection. Whether or not such unique experience can be categorized in terms of any regular thought processes is highly debatable. The individualized outcome and significance of the mystical experience makes it suspect as a reliable source of reflective insight.

Drugs as a source of insight

The question of mental enhancement and the often reputed inducement of expansive creative insight through drug use is considered in a narrow category below.

"---many, many creative jazz and rock musicians have used narcotics regularly. Because of this and because music is so temporally focused and modern music sometimes quite spontaneous, I tend to believe that the time distortions and the sedative and inhibition-releasing properties of narcotics and alcohol could have some facilitative role. Although no scientific evaluation has yet been made, it would appear that these substances help composer/performers to produce innovative and interesting temporal and rhythmic patterns. Also, as jazz especially involves composition during a performance, the use of sedatives may help in dealing with the intense anxiety of spontaneous creation. As for direct effects on content, certain rock song

lyrics concerning the practice of using drugs have aroused interest, if not any lasting aesthetic appeal, among some groups (Rothenberg, 1990, p.157).

A close examination of drug-induced performances may reveal a great deal of illusory results. Also, a large amount of current musical expertise reduces to a fashionable expression of equally current styles. What seems like an exceptional achievement may hinge indirectly on purposely dulling the wits rather than enlightening the inner discovery apparatus. A great mass of musical expression (not all or most) is, in reality, little more than a human form of the courting dances found among the lower animals. Can we really categorize this kind of instinctual animal expression as indicative of creative or reflective insight? Achievements based on movement, rhythm and timing *may* be creative or the results of reflective insight. Athletic talent utilizes these same motor skills and abilities to coordinate body movements; albeit with somewhat different applications. Undoubtedly, some of these expressions are genuinely creative and stem from some sort of reflective thought processes. Others may be little more than an effort to mate. Research in this area is incomplete and any current conclusions are likely to be badly drawn.

Insanity as a source of insight

In *Creativity and Madness* (1990), Albert Rothenberg relates the following considerations.

"--- Poetic creativity especially has usually been linked with schizophrenia. This is in part because primary process cognition has often been thought to operate prominently in both schizophrenia and the composing of poetry. The primary process mechanism of condensation (combining multiple diverse elements) has been considered the basis of metaphor creation, and the mechanism of displacement (shifting onto something smaller) has been credited with producing various features of poetry ranging from rhyming and alliteration to symbolization. Cited in support of these assumptions are the apparent paranoid schizophrenic illnesses of great poets such as Ezra Pound,

Author Rimbaud, and William Blake." [Rothenberg does not appear to agree with this theory] (Rothenberg, 1990, p.153)

Rothenberg continues in this line of inquiry by noting:

"--- Although poetry may not provide a special edge for the schizophrenic condition, science and other abstract fields may, curiously enough, be a special outlet and allure. In the fields of physics, mathematics, and to some extent chemistry and biology, highly abstract material is often organized into elaborated systems of information and knowledge which attract the interest and activity of persons suffering from schizoid and schizophrenic disorders. --- as thought processes go markedly awry and there is difficulty in maintaining coherence and logic in schizophrenia, immersion in a scientific system can help organize thinking. Intelligence is not lost, and manipulation of a coherent but impersonal symbol system provides a structure that substitutes for chaotic thoughts. Schizophrenic persons often are attracted to highly scientific systems and also to abstract philosophies." (1990, p.p. 154-55).

The intuitive adaptations of reflective thinking in highly creative endeavors is noteworthy. Those exceptional individuals best able to concoct new version concepts *must* employ creative insights that display a psychological disparity to the general population. The ability to reflect at the deepest levels undoubtedly requires a sort of abnormal talent. When one is gauged by the surface appearance of mediocrity which inheres in the notion of "average," any substantial advance is depicted as an expression of abnormality. It seems excessive, however, to characterize a proclivity towards creative insight as insanity because of the rarity that attaches to its occurrence.

The lack of such abilities might be more akin to mental illness when viewed as a deficiency in insight potential. The ordinary individual has very little talent for unusual conceptualizing or original thinking. The number of individuals possessing strong qualities of creativity seems relatively small. Being devoid of the characteristics essential to creativity

may more readily qualify one as demented than the ownership of such qualities. The lonely genius blessed (or cursed) by insight may be thought of as odd only by those unfortunate enough to be lacking in similar cognitive powers. The ability to think creatively may indeed give the impression of mental illness. Often those possessing a high degree of creative talent are locked outside of society by the reflective depths of their minds. They are forced by the circumstances of existence to attempt to communicate with less talented people who cannot fathom the complexities of their personal symbol systems; i.e., their non-expressible, non-linguistic thoughts.

Rothenberg, in considering the impact of creativity upon the mind, offers the following analysis.

"In ordinary thinking based on logic and experience, contradictions must by definition always cancel each other out, and multiple elements surely never can occupy the same space all at once. Hence, defying such definitions and experiences, the creative thinker comes up with unthinkable and unimaginable ideas. Conceiving that an accepted proposition or fact continues to be *valid or true* [italics mine] and, simultaneously, its opposite or contradiction is also valid or true produces tension and anxiety. Imagine the feelings and thoughts involved in formulating, for the first time, the following ideas within the janusian* process: time moves forward and backward simultaneously (Richard Feynman); the sun rises and at the same time does not rise (Ernest Hemingway); a body moves and is simultaneously stationary (Albert Einstein); and sex and violence are concomitant (Richard Wilbur). Regularly having such ideas and tolerating the accompanying strain require a good deal of mental health and strength. Otherwise, working would be difficult. If one already suffered from intense mental and emotional anxiety, such thoughts might be impossible to pursue.

Using the homospatial* process similarly engenders a good deal of mental and emotional tension and anxiety. Although transitory and fleeting, the conception of multiple, discrete elements occupying the same space produces strain. A hand and bandage are mentally superimposed in the same space to create the metaphor "my hand was a bandage to his hurt"; a tarantula and lamp are similarly superimposed for the creation of "the tarantula rays of the lamp spread across the conference room." Stability and rationality are required in order to develop such conceptions into metaphors rather than disturbing images of bandages with actual finger-like appendages or lamps that move like tarantulas. On a more everyday level, anyone can get some idea of the strain involved by trying to bring chairs and tables into the same mental space, or else arms and faces, or colors and smells.

Tension and anxiety are also engendered because of the psycho-dynamic structure and function of the homospatial and janusian processes. Both are responsible for a progressive unearthing of unconscious material during the course of the creative process—an unearthing that in turn produces anxiety. Despite the discomfort and risk, this progressive uncovering leads to self-revelation, an intrinsic goal of the creative process in diverse types of fields---" (1990, p.p. 161-162).

Another reference to Mezirow

In considering Rothenberg's interpretation of creativity as "progressive uncovering [leading to] self-revelation," it is worth comparing this assessment to Mezirow's notion of critical self-reflection as the pathway to something called transformative learning. There seems to be a great kinship or similarity between the descriptive impulses of creativity and the congruent ideas of revolutionary self-change brought about by critical self-reflection. Perhaps, in reality, Mezirow and Rothenberg are talking about much the same things. Certainly, transformative learning, if indeed such an animal exists, must be greatly imbued with the spirit of creativity, which in turn involves both of Rothenberg's janusian and homospatial processes. The self-same critical self-reflection that holds the reliability and

* For the sake of accuracy and using his exact words, Rothenberg defines the "janusian process" as "multiple opposites or antitheses [which are] conceived simultaneously, either as existing side by side or as equally, operative, valid, or true." His use of the term "homospatial process" refers to "conceiving two or more discrete entities occupying the same space, a conception leading to the articulation of new identities."

uncertainty of belief to closer examination, is likely to lead simultaneously to some creative exposure in the reevaluating and reassessing of belief-based theses. The resulting positions or antitheses that are likely to develop exemplify a profound form of transformative learning.

This particular comparison provides an outstanding example of what was called "inferential extrapolation" in the objectives listed in Chapter I. In many instances, theorists and researchers may be using very different terminology in referring to similar conceptual approaches. By uncovering these similarities, it may become possible to clarify exactly what is meant by reflective thinking and practice, as well as many of the sub-categories such as critical self-reflection. The apparent complexities may be more a problem of *being able* to say what is meant rather than inherent difficulties in the concepts themselves.

TODD SILER'S SPECULATIONS ABOUT THE BRAIN AND NATURE

Todd Siler has written a book called *Breaking the Mind Barrier: the Artscience of Neurocosmology* (1990). A number of the ideas presented in Siler's work have particular significance for theory formulation and the creation of a pliable foundational structure for reflective thinking and practice.

The range of questioning and possibilities

Siler asks some primary level questions relating to the presumption of a connection between the phenomena of physical experience and consequent thoughts about and stemming from that experience. These broadly-based questions are just another return to the age old philosophical inquiry mentioned earlier, i.e., trying to fathom the nature of the interaction

and relationship existing between mind and matter. This relationship, in the largest of terms, includes efforts at uncovering primal connections between the human species and the cosmos as the exemplification of some universal creative force. Siler's questions are quoted below.

"Can we learn anything about the functioning of the brain through the physical descriptions of the Universe?

Can the logic and the ideas that come out of our analyses of the behavior of stars, galaxies, and clusters contribute to the ideas needed to understand the behavior or evolution of nerve cells, nuclei, and nervous systems?

Can the brain be thought of as a "biological star"—an energy-burning star of consciousness—whose systems have a dynamic resemblance to the fusion and fission processes that form and shape our universe?

Could there be a merging of brain functions ("cerebral fusion") at the instant of intuition and a splitting of these functions ("cerebral fission") in moments of reasoning?

In what ways do the physical laws of nature exist independently of the brain? How does the brain influence these laws through its interpretation?

How is our sense of nature-reality-life influenced by these physical laws? *Does every detail of nature detail our nature?*" (Siler, 1990, p.p. 20-21).

The answers to these kinds of questions are, and perhaps will always be, highly speculative and non-verifiable. Their value is in the asking and in the range of possibilities elicited. New perspectives on theory formulations providing original approaches to this oldest of philosophical problems is about the best we can expect. This, however, is more than enough and is, as an expanding compendium, a prime example of reflective thought methodology revealing a glimpse of itself.

Siler continues by asking the following provocative questions.

"--- what are *we* that *it* (the universe) is not? Are we both the mirrors and the mirrors' reflections of the universe? Or is "the mirror" one of the mind's mythic creations? Do patterns of matter *reflect* patterns of mind? Or are these patterns one and the same thing—both physical and non-physical in nature?---" (1990, p.21).

These profound questions go to the heart of what it means to think about the meaning of experience and to learn from it. They bring to mind Plato's notion that learning is recollection. Can it be that what we acquire as knowledge is a sudden recognition of the patterns that exist within us? The tentative answers to these kinds of questions are less important than the directions of theoretical inquiry they provoke. In this respect they can be very useful.

The uses of metaphor

Siler's use of the term "metaphorm" is of significance in alluding to the variety of thought processes involving reflection.

"--- a metaphorm is an object, image, concept, or process that we compare to something else. For example, when we say that the mind is a machine, the machine becomes a metaphorm which represents the mechanical aspects of the human mind. And vice versa: mind becomes a metaphorm representing the organic or biological aspects of machines. Both concepts are expanded by this new association.

--- They [metaphorms] are the ways and means of implying likeness between things. In metaphorming something, we can traverse the constraints of logic and verbal thought, transferring or relating from one object to another a new meaning, pattern, or set of associations. Like the language of pure mathematics, which can describe *n*th-dimensional processes and forms, the symbolic language of metaphorms is also multidimensional. It operates simultaneously on many planes of associations, nuances, and meanings. Metaphorms invoke the idea of forming, connecting, shaping *some thing* (or information) in our mind's eyes and hands" (1990, p.p.30-31).

Metaphorical usages in the tendering of reflective thought are essential. One simply cannot conceive of reflective thinking that is conscious and lacks the involvements of some metaphorical form. This is the essence of reflective thinking in common terms of generic definition, typification, and phylum. The congealing revelations of insights deriving from any examination of experiential knowledge makes an application of metaphorical comparisons. This basic tool of thought is the mind's way of generating intentional reflection. The metaphor is a prompter which acts to stimulate the mind to make conclusive determinations in a growing awareness of the different factors that comprise our grasp of reality.

As an aside, in a momentary revisit to Mezirow's concept of transformative learning, it is interesting to read and ponder Siler's comments and contemplate how they may "metaphorm" to learning.

"Transformation in all systems is a universal creative process. I define "creativity" as any *unconditioned response* by one system towards itself or its environment. "Conditioned responses" represent systems that operate near equilibrium (as in *linear systems*), whereas "unconditioned responses" relates to those systems that radically depart from these harmonious conditions. Instead they can operate within the fuzzy state of non-equilibrium (as in *nonlinear systems*). Human beings are about as nonlinear a system as nature makes.----" (1990, p.104).

Many of the ideas discussed by Siler go far astray from the subject of this study. The inclusion of his work in the review of literature is for the suggestive value that his speculations have for reflective thinking and practice. Anyone interested in theorizing about reflective thinking and practice would be well advised to read Siler. His insights are a source of inspiration in making connections between seemingly unrelated entities. As such, the dual function is served of being about reflection and also an example. Siler's work is antithetical

to the "controlled" and "restricted" variety of research conducted within the confines of the positivist paradigm.

The following comments are made with the caution attached that they are an *interpretation* of Siler's approach. No guarantee is offered that Siler would view this interpretation as entirely accurate. Siler makes a strong case for the use of "metaphorms" to connect mind with matter and vice-versa. He seems to visualize intuition as a kind of natural facilitator that unites or pulls together bits of experience and information that are potential pieces for design patterns the mind is *capable* of "constructing." On the other hand, these cognitive pattern formulations are "reflections" drawn from the mirror that is nature. The mind is a recognizing and organizing device. The mind and universe are "pattern compatible" in their parallel accommodation of the same operative designs.

Intuitive revelation

Siler's words below explain his view of the function and character of intuition.

"There seems to be at least two sides to the plane of reasoning, just as there are conscious and unconscious types of logic that we conveniently associate with states of wakefulness and dreaming. Intuition is the edge of this plane, connecting the two sides. What has come to be known as dichotomous, left-right, major-minor cerebral processes, neuroscientists now understand to be complementary processes. They are contrasting cognitive and affective modes of thought, information processing, and coding. Moreover, these processes, which involve everything from arithmetical, logical operations to abstract, perceptual operations, may be unified during moments of intuition. I use the word *intuition* as one of many aspects of creativity --- (1990, p.168).

--- an intuition seems to vanish before you've had a chance to trace its call. It concludes its message the instant you realize that an important thought has just slipped into consciousness, unannounced. The moment you recognize the experience—relishing its occurrence with exclamatory remarks or enthusiastic

notations—it's over. We all know what we mean when we loosely describe this fleeting event. The properties of intuition are as familiar to each of us as our own names, and yet we can't quite name them. They often defy all classifying words and belie images that attempt to explain this phenomenon.--" (1990, p.170).

The interplay of intuition is crucial to reflective thought. A sudden ability to recognize, separate, and possibly recombine cognitive understandings forms the central function of intuition. Without these brief moments of convincing enlightenment, and the accompanying convictions of logical and emotional certainty, productive reflective thought could not occur. Intuitive insights enable us to derive completely new meanings from conceptual comparisons suggested by metaphor. Dissimilar associations of thought become the means whereby understanding is enunciated. The unsuspected relationships that diverse ideas and mental images may suddenly convey are the basis of the phenomenon we call intuition. How this happens is a mystery of the mind's construction. All creativity and discovery is enigmatically premised on a fleeting process we know occurs, but which we do not pretend to understand.

REFLECTIVE JUDGMENT

Patricia King and Karen Kitchener have authored a book entitled *Developing Reflective Judgment: Understanding and Promoting Intellectual Growth and Critical Thinking in Adolescents and Adults* (1994). This investigation, which is empirically grounded, presents an interesting and comprehensive stage theory of reflective development. Seven stages of reflective judgment are posited as developmental progressions. These stages range from a simplistic acceptance of givenness and certainty in knowledge (pre-reflective stages) to an

abstract realization of knowledgeable uncertainty. The highest stage of development is drawn from an analysis of evidentiary conditions and premised on contextual and relativistic assessments. This theory represents an adaptation of stage theory similar to that presented by William R. Perry. The adaptation of these stages to a model of reflective judgement represents a different application of some old ideas.

King and Kitchener explain their approach in the following way.

"--- We now think of reflective judgments as beginning with an awareness of uncertainty. Such judgments involve integrating and evaluating data, relating those data to theory and well-formed opinions, and ultimately creating a solution to the problem that can be defended as reasonable or plausible" (1994, p.xvi).

In categorizing problems, King and Kitchener distinguish between well-structured problems and ill-structured problems (1994, p.p.76-77). Well-structured problems are amenable to step-related or mediated logic and have right and wrong answers. Problems of this sort are typical of those encountered by students in formal schooling. Ill-structured problems, on the other hand, are often based on incomplete information and are complicated by ambiguities. These kinds of problems must be evaluated on the available evidence. The derivable answers are most often tentative and inconclusive in terms of right or wrong and correct or incorrect. Ill-structured problems do not present the opportunity to develop an "absolute" answer in any convincing manner. A great number of the problems encountered in life are ill-structured and the answers must be contrived on the basis of rationally evaluating whatever data is available. These types of problems are best solved by using well developed reflective judgment. This variety of judgment does not look to authority for assurance and confirmation nor does it elicit expectations of certainty. Instead, the answer

sought is "best" in terms of the availability of evidence and the mental weighing of such evidence. This is the "stuff" that reflective judgment is "constructed" out of.

PATTERNS IN THOUGHT

L. Andrew Coward presents some very interesting and relevant ideas in his book entitled *Pattern Thinking* (1990). Coward's approach to understanding the human brain as a system has some important implications for reflective thinking and practice.

Coward's point is well taken in stating that:

"--- pattern recognition is not just something the brain does well, but in a sense it is the brain's only function, and the very concept of pattern is a result of the construction of our brains. Every neuron firing can be interpreted as a pattern recognition, and the process of thinking visualized as a cascade of pattern extraction, or many cascades in parallel across the brain" (Coward, 1990, p.3).

Coward elaborates the basis for his model in the following manner.

"The brain can thus be visualized as a pattern extraction template, in which successive layers are able to extract more and more complex patterns from relatively simple input. The template forms a hierarchy in a "connectivity space," although some consecutive layers may, for example, be physically on adjacent areas of the cortex.

Early layers (i.e., close to sensory input) can be interpreted as extracting patterns from simple sensory input. The output of later layers can also be interpreted as action recommendations and later still selecting actions, all within the same pattern extraction paradigm. In other words, the firing of a neuron at these points can be interpreted on a system level both as pattern recognition and action recommendation. The term *action* includes instructions to muscles, but can also include the release of neurochemicals. A mechanism for self-regulation of the pattern template thus exists.

The on going process of thinking can be visualized as a series of cascades on neuron firing through the template, reaching through to the point of becoming action recommendations, and actions if they reach muscle control. Different regions generate different types of action recommendations (food seeking, fear, aggression, sexual arousal, etc.) which then compete for control

of action. The likelihood of a cascade developing through a region with a given combination of active inputs (i.e., incoming cascade) depends on the region's arousal level, which is determined by the concentration of the neurochemicals to which the region is sensitive. ---

When a region of the cortex receives large amounts of input, but no output, the state can be visualized as cascades reaching partially through the region, but not to the output level. This happens when an initially strong cascade (i.e., one with much sensory input) peters out and is eventually blocked by lack of appropriate pattern nodes. This condition leads to the postulate of a population of previously unused neurons that are equipped with rich connectivity drawn from the same sources as their neighbors. In a blocking situation, the model assumes that the arousal level of a set of the previously unused neurons rises. Some of these fire for the first time and become permanently imprinted with the pattern that triggered them. This firing of neurons fills gaps in the template and allows the cascade to reach the output stage. These neurons become the engram of declarative memory, distributed over many brain regions. The existence of this type of connection sensitivity imprinting is a critical physiological prediction of the model.

The process of memory and learning is thus the extension of existing regions or the creation of new regions, augmenting the potential repertoire of action recommendations for a given combination of sensory inputs. Both new and old templates can participate together in creating future cascades" (1990, p.p. 3-5).

Coward defines a pattern as "something that repeats." In applying this definition, he sees creativity as "the ability to take a range of sub-patterns, perhaps from areas of experience not previously linked, and see a new pattern. That pattern has repeated unnoticed in the past or can be made to repeat in the future" (1990, p.14).

The manner in which Coward has taken the simple definition of "pattern" and applied it to a whole range of mental functions is significant. The application that Coward makes of the term "pattern" pertains directly to what is generally meant by reflective thinking. Reflection as a mental activity is most certainly rational, and is usually an intentional combining of various patterns that have been previously imprinted. Intuitive and feeling-

based reflections would provide no necessary exceptions. A sense of pattern allows us to make connections between previously unrelated entities.

Coward's model makes a great deal of sense as a systematized approach to explaining reflective thinking. Whether or not this model constitutes a valid physical assessment of what takes place in the brain is largely irrelevant. What seems especially important is the possibility that this model provides a foundation for explaining and extending the range of reflective thought. It is a model whereby we have a logical "picture" of what may occur in the articulation of the reflective process. This paradigm lays out a means of giving a simple definition (i.e., of pattern) status as a cognitive interpretative tool. The complex enumeration of untold rational possibilities is conceptually simplified by using the idea of "pattern" to tie together the loose ends of experiential diversity. Coward's model may open the door to one avenue of understanding what we do when we reflect. Reflective thinking results in astute pattern recognitions and the unique combinations of imprints to produce entirely new "cascades." The corollary notion of creativity is intimately intertwined in the reflective process. Combining patterns based on the assimilation of experiential imprints is a useful way to annotate the procedural meaning of the reflective thinking process.

PATTERNS OF THOUGHT AND LANGUAGE

Ray Jackendoff has written another recent book called *Patterns in the Mind: Language and Human Nature* (1993). The possibility of the innateness of language knowledge has been widely considered. This idea did not originate with Jackendoff, but he offers a cogent analysis. It goes as follows:

"--- according to the Genetic Hypothesis, this knowledge is determined by brain structure, so it is present only when the supporting brain structures are present. Now development of the physical structure of the body, including the neural structure of the brain, is by no means completed at birth. Among other things, in the newborn's brain the myelin sheaths that serve to electrically insulate the neurons from each other are not yet fully developed. Further, as suggested earlier, the physical growth of various parts of the body follow a fairly predictable timetable: think of the developmental sequence of baby teeth followed by adult teeth, or the body changes of puberty, not to mention more dramatic developments in other species such as tadpoles turning into frogs. There is no reason why the development of the particular brain structures that support innate knowledge about language couldn't be like that. In other words, gradual development of innate knowledge over several years of life is very much in line with other developmental phenomena (Jackendoff, 1993, p.p. 30-31).

Jackendoff continues this line of reasoning in the following statements.

"--- all children can unconsciously "pick up" a mental grammar on their own, while linguists as a community can't figure out completely how the mental grammar works. That is, the paradox shows how difficult the task is that children accomplish. Innate knowledge of some aspects of language would give children a head start on learning the language spoken in the environment (1993, p.31).

--- children mostly don't learn language by being taught. Rather, they must be unconsciously figuring out a mental grammar that gives them the patterns for forming sentences. --- How do we know that children must be figuring out an unconscious mental grammar? Because that's what they have to end up with as adults, in order to account for their ability to speak and understand an unlimited range of sentences they have never heard before" (1993, p.31).

King, Kitchener and Jackendoff are all concerned with interrelated aspects of human developmental theory. Coward's approach is an adaptation of a computer paradigm imagined to be analogous to the workings of the human brain. The abstract schemas that Ohlsson theorizes about possess obvious similarities to the implied conclusions of the Genetic Hypothesis of language development. These theories all have shortcomings but the object

of fascination inheres in the elements of human nature and behavior for which they seem to account. The progressive stages for developing reflective judgement and the consequent ability to devise solutions to ill-structured problems suggests an inborn talent congruent with the development of an innate knowledge of language. Likewise, the notion of abstract schemas fits in nicely with both theories. The supposition of connections that these theories have are in no way clear-cut or certain. In any case, theories are not like that. They are only *suggestive*. It seems reasonable to attempt to tie these ideas together whenever imaginative interrelationships are envisaged as conceptually synonymic or impression-correlated. A stretch is always involved in seeing connections between theories.

The impetus to original thought is most often realized, however, in seeing the possibility of new adaptations and relationships among old ideas. This is much more likely than the possibility of concocting an entirely new theory. New insights are generally born of an ability to successfully manipulate thoughts and thinking patterns. Recall the words of Einstein that "success alone is the determining factor." This is perhaps the single most  defining characteristic of reflective thinking and practice.

CONNECTING THEORIES BY INFERENCE

King and Kitchener note that "John Dewey's (1933) work on reflective thinking was especially influential in our own work in this area" (King and Kitchener, p.xvi)

"He [Dewey] described a type of thinking that focuses on problems for which no clear-cut solutions can be identified by using only inductive or deductive logic; solutions to these problems involve other characteristics of reasoning.

As we studied these ideas and people's responses to such problems, we began to see that the "other characteristics" involved epistemic assumptions. We found that people's assumptions about what and how something can be known provides a lens that shapes how individuals frame a problem and how they justify their beliefs about it in the face of uncertainty.---" (King and Kitchener, 1994, p.xvi)

These statements provide a vivid example of how the work of one theorist can be used to intensify and elaborate the thinking of another. This seems the shortest route to progress in the creation of theory. The tools are logical and philosophical analysis construed in a reflective sense. The comments of King and Kitchener are indicative of an avenue to "developing" theories by the careful analysis of existing thought. The suggestibility of "consensus" and "agreement" by inferential analysis is undeniable.

REFLECTIVE THINKING AND WITTGENSTEIN

The philosophy of Ludwig Wittgenstein is relevant to any study espousing to uncover the theoretical foundations relating to reflection. Wittgenstein has generally been categorized as a language philosopher. The many obscured relationships of language to the world comprise the central thesis of his thinking. Wittgenstein's philosophizing is extremely difficult to comprehend in its entirety and multiple interpretations are often the outcome of the ambiguity attaching to the complex problems he broaches (Geach, Shah, and Jackson, 1988). In defense of Wittgenstein's overall lack of clarity, it must be kept in mind that he was dealing with problems of enormous complexity in trying to gain solutions to puzzles on the outer fringes of the human capacity to experience. The concise intensity of his logic and insight is a ground breaking accomplishment. This is especially true if consideration is given to the vast difficulties of the subject matter. The greatest perplexities Wittgenstein presents

are his far reaching disagreements with himself. He had a strong aptitude for reaching into the bottomless pit of the ineffable. This resulted in a necessity for embracing inconsistency and thereafter chasing philosophical problems until they disappeared into an inevitable metaphysical abyss. In this regard, Wittgenstein's approach to philosophical solution represented the severest criticism of his thesis. As Wittgenstein himself recognized, his philosophy culminated in a self-reflexive paradox (Lawson and Appignanesi, 1989, p. xxiii). As previously indicated, this is a problem one also encounters in attempting to analyze reflective thinking. Perhaps this points symptomatically to the kinship of the subject matters being considered.

Wittgenstein did not waste words. This may be said in spite of his philosophical writing being repetitious. His style of writing is concise. It requires many readings to begin to gain any approximation of the full import of his words. What Wittgenstein writes is seldom clear to some point of certainty. His personal struggles to grasp the essentials of the problems he tackled are evident. In the *Last Writings on the Philosophy of Psychology* (1982), Wittgenstein recognized that "The greatest difficulty in these investigations is to find a way of representing vagueness" (347)*. The same might be said of any efforts to uncover the foundations of reflection. Wittgenstein's unusual methods of analyzing problems are as important as his thinking. Together they serve as a kind of adjunctive postscript that may be utilized to elucidate reflective thinking. The problems that Wittgenstein wrestled with were perhaps more fundamental and profoundly difficult than what we call reflective

* The numbers that appear at the end of some quoted statements are part of the internal referencing system Wittgenstein used to indicate a proposed degree of logical significance. These numbers are usually included, because they represent, to some limited extent, Wittgenstein's assessment of relative importance (Schulte, 1992, p.39).

thinking. His unquestionable success in achieving an intensity of insight and his notable failures at the hands of inconsistency, as well as the eventual fall into mysticism, can make Wittgenstein a source of guidance. Many of the parallels of Wittgenstein's philosophy to reflective thinking theory are to be found in the commonality of similar analytic difficulties.

The importance of language

In common to all forms of meaningful cognition is a dependence on language. Thinking without the assistance of language may be possible in limited ways, but cannot be very useful. In addition to sustained meaning difficulties, thoughts without language cannot be easily communicated. Vague affective notions may be conveyed through movements, gestures and facial expressions (Messer, 1994). The passing along of any mutually agreeable meanings from person to person is an extremely formidable task under such circumstances. It must be recognized, however, that the converse situation is not the case. In collusion with language, movements, gestures, and facial expressions are not only useful, but essential to establishing meaning. The clarity of meaning often depends (perhaps always) on the contexts of personal intent. Intent can often be manifested only through the non-verbal physical mannerisms that accompany language.

The importance of language to our role as intelligent beings becomes apparent if even a remote consideration is given to the difficulty of thinking and communicating without it. The ability to speak, read, and write language is a distinctly human gift that *anticipates* the capacity to interpret and expand upon experiential exposure. The intentional and unintentional combining of the many experiences occurring within the conceptual framework of "the possible" defines the ultimate thinking capacities of the species. It is obvious that on

a basic level, Wittgenstein closely associated language with any possibility we have of gaining knowledge. The two (language and knowledge) are intermingled within the construction of the human mind. Therein, as Wittgenstein understood, lies the opportunity for much confusion and error as well as the potential for enlightenment.

Simple objects

Norman Malcolm, P.M.S. Hacker and Joachim Schulte, as commentators and analysts, are sources of invaluable assistance in coordinating the many profound aspects of Wittgenstein's philosophy. Many of the comments to follow are drawn from reading their interpretations of Wittgenstein. The particular variations in the shadings of conclusions are my own. Errors are likely to be committed in trying to link Wittgenstein's thought to an area of study only incidentally associated with his philosophical interests and speculations. Nevertheless, the philosophy of Wittgenstein has obvious and significant ramifications for reflective thinking and practice.

To begin, Wittgenstein believed in something called 'simple objects'. He was unable to provide any examples (Malcolm, 1986, P.7). The 'objects' seem to correspond roughly to the traditional notion of substance. In some respects there is a resemblance to the forms of Plato. It is difficult, however, to be sure of what Wittgenstein intended. He seemed unsure of what he meant. The unidentifiable and ineffable simple objects were portrayed as unalterable and unchanging in themselves. They were represented, however, as being capable of combining with other objects. These ephemeral combinations and configurations provided a changing face of reality occurring in time. They constitute the world (Malcolm, 1986, P.1). Wittgenstein's rather vague notion of the simple objects, which somehow serve as the building

blocks of the universe, seem the epitome of the metaphysical speculation he sought to avoid.

Consider the explanation by way of Malcolm's commentary below.

"--- The boundaries of both [possible experience and language] are fixed by the *totality of simple objects*. The objects are the substance of the world. They are the substratum of both the possible and the actual. This is the sense in which they are 'form and content' (2.025). Their possibilities of combinations are the substratum of all *possible* states of affairs. Their actual combinations are the substratum of all *facts*. They are the substratum of *thought* — for all thoughts are pictures of their possible combinations. They are the substratum of *language* — for every meaningful sentence has an analysis into an arrangement of names, each name *meaning* an object. Without the objects language would have no meaning, and so would not be language" (Malcolm, 1986, p.6).

The importance and justification for Wittgenstein's simple objects seems to reside in a need to provide a "fixed" basis for language, and consequently, for experience (Malcolm, 1986, p.5). The simple objects are a logical prerequisite to gaining a concept of reality. Whether or not they *actually* exist is essentially unimportant. Something *must* hold up our images of thought as found in linguistic expression. That "something," for Wittgenstein falls to the concept of simple objects. Wittgenstein, like his philosophical predecessors, was forced to make use of unknowns and unknowables in order to provide a grounding for logic, thought, and language. Try as we might to go outside of experience to catch a glimpse of it and ourselves, we cannot. Wittgenstein, in his failure, carried logical philosophical speculation to the outermost edges of "possible" experience. The effort itself was a valuable contribution to thinking methodology. The relevance of Wittgenstein to reflective thinking is not only in the contents of his philosophizing, but more pointedly in his *approach* to thought as speculation. Perhaps, with only a limited awareness of what he accomplished,

Wittgenstein demonstrated an expansive method for thinking and reflecting, as well as an unusual grasp of philosophy.

Thought, language, and the world

The basic criteria that exist for connecting thought, language, and the world resides in the natural state of interdependence that these factors have for one another.

"--- According to the *Tractatus*, *language just is* the totality of elementary propositions and of the non-elementary propositions that can be constructed out of them. What can be said in language coincides with what can be thought. ---" (Malcolm, 1986, p.8).

As an additional elaboration, it may be said that:

"---one cannot think at all without catching on the form of the World—the totality of *a priori* possibilities" (Malcolm, 1986, p.12).

The conterminous relationships that hold between thought, language, and the world are envisioned in the following comments. Language is portrayed as enabling us to depict the world through propositional pictures. These pictures produced by thought, whether linguistic or not, comprise the contents or composition of thought.

"Let us remember that *thoughts*, whether expressed in language or not, are conceived of as pictures. A *proposition* in language is a thought expressed in a sentence (3.1). 'We use the perceptible sign of a proposition (spoken or written, etc.) as a projection of a possible situation. Thinking the sense of the proposition is the method of projection (3.11). *Every* thought is a picture. *Every* proposition is a picture. A picture presents a possible situation (2.202), and the possible situation that it presents is the *sense* of the picture (2.221). Thus, all thought, all thinking, consists in depicting some possibility or other that belongs to the totality of possibilities, which is the fixed unalterable form of the world'" (Malcolm, 1986, p.61).

Method, description and explanation

It is of particular interest to consider the methodology that Wittgenstein used in analyzing philosophical problems. This methodology is appropriate to reflective thinking in general.

- 1 Giving descriptions of the circumstances in which a philosophical puzzling expression is actually used in everyday language
- 2 Inventing simple language-games as objects of comparison
- 3 Imagining fictitious natural history
- 4 Giving a 'psychologically exact account' of the philosophical temptation to use a certain expression (PI254)" (Malcolm, 1986, p.107).

Wittgenstein came to endorse description as opposed to explanation. The basis of this distinction seems to be that describing something is straightforward and clear, whereas explaining something involves a certain amount of mysterious supposition. Wittgenstein identified explanation as an activity associated with the ambiguity of metaphysical speculation. Description, on the other hand, simply said what was the case. Explaining something exemplifies an effort to reveal something else that is hidden from view. Wittgenstein seemed to think that our inclinations are persistent in speculating about unseen essences as the quest of explanation. The functional capacity of language is descriptive, rather than explanatory. Purely descriptive analysis avoids delving into the obscurity of areas that are beyond our experiential grasp and understanding. When we attempt to reach beyond experiential intelligibility through explanation, we digress into nonsense. Philosophy errs when an attempt is made to reach for some explanation which is beyond and inaccessible to the *a priori* functions of language and experiential possibility. This all coalesces with Wittgenstein's idea that we are equipped *a priori* with a mental construction that makes

available to us *all that language is capable of doing*. There can be no future discovery of some aspect of linguistic grammar or expressive capacities that are not currently available to us (Malcolm, 1986, p. 116).

Language games, a form of action research, and dispelling errors

Wittgenstein speaks of 'language games.' He visualizes language as an *activity* in which we prescribe a construction of rules and moves that can be compared to the concept of "game." Learning language is game-like as is language itself. In connection with a commonality of similarity to be found in all games, Wittgenstein uses the inexacting expression 'family resemblances.' There are many games, but they all express a kind of kinship which their purposeful actively symbolizes under the understood heading of "game." Language is to be understood as a 'form of life.' In other words, language is natural, automatic and habitual (Schulte, 1992, p.p. 97-128). The actual practices of linguistic expression results *in* and *from* language games.

Wittgenstein had a powerful and intrusive intellect that struggled violently to escape the constraints that the limits of possible experience imposes. He was adept at using conversation and dialogue to stimulate his own mind in grasping for the elusive solutions to difficult philosophical problems (Schulte, 1992, p.9). Although Wittgenstein did not give his reflective approach a name, it resembled what many have termed action research. His level of inquiry dealt with the most basic fundamentals of epistemology. In this respect, his "action research" was extremely unusual. Although Wittgenstein's philosophical methods have roots in traditions going back to Socrates and Plato, his adaptations of "thinking through dialogue" were developed differently. Language was not only *the* tool of inquiry, but also the object.

Wittgenstein's personality and intellect were so overpowering that he psychologically *marked* his devotees with certain characteristics of his demeanor and outlook. This *imprinting on the psyche* was so intense that those he influenced in this fashion were noticeably affected even years later (Schulte, 1992, p.10). The strenuous efforts that were directed through a conversational exploration of philosophical problems hardly seems surprising in view of Wittgenstein's convictions about the place and significance of language. He considered the misuses and misapplications of language to be the source of many of our confusions in philosophy. The task of the philosopher is not to find the solutions to philosophical problems, but to dispel and dissolve the problems by clearing up linguistic confusions (Hacker, 1993, p. xiv). Wittgenstein's insistence on language as the source of confusion and his concurrent reliance on it to abrogate the problems it caused, resulted in an inconsistency which logic is powerless to remedy. To do so it would be necessary to step outside of language and outside of experience. The intellectual tools for accomplishing this feat are both non-existent and incomprehensible. As Wittgenstein demonstrated in considering the feasibility of a private language, the boundaries of logical possibility blocked any realization (Hacker, 1993, p.p. 1-16). The shape of logical space, it seems, acts as the experiential configuration to determine the limits to which we may go, regardless of the styling of symbolism employed. Wittgenstein's inherently tautological use of language to study itself was another exposure of the self-reflexive nature of his position. The dramatic results, however, were to give some entirely new directions to philosophical inquiry, and to indirectly benefit the expansion of the theoretical base for reflective thinking.

The significance of Wittgenstein

In summation, the significance of Wittgenstein's philosophizing for reflective thinking and practice includes the following. Wittgenstein recognized that the traditional problems of philosophy are deeply rooted in conceptual confusions related to the misuses of language. These misapplications are unintended, but result from our natural inclinations for confusing shadings of linguistic discriminations and meanings with suppositions and overlays of reality. On a purely practical level, the role of language in thought, including reflective thought, excludes all other factors in terms of central importance. The innovative creation of productive solutions (found in actions and practice) without the assistance of language is unimaginable. A crucial function of language is the habitual and automatic availability of a common human symbolism for thought. While often imprecise, language facilitates the articulated manipulation of ideas and the conscious management of rationales leading to conclusions and decision-making. Problems arise whenever language produces convincing conceptual illusions in the form of metaphysical assertions. The complex mind/matter problem of traditional philosophy is an amenable example to show how the appearance and appeal of inappropriate linguistic applications can lead to all kinds of outlandish notions. Statements that reject common sense such as "all we can ever know are our own sensations" and "I alone exist" are derived from complex metaphysical arguments supported by questionable linguistic applications.

It may be convincingly argued that many of the problems of philosophy cannot be reduced to problems of language. It seems a gross overstatement to hold language responsible for the enigmatic puzzles of philosophy. Numerous philosophers would strongly dispute the basic premises of Wittgenstein. Indeed, Wittgenstein himself disagreed with and

disputed many of his own ideas. At any rate, what is being stressed here are not Wittgenstein's positions, but the implications of those positions.

Reflective thinking and Wittgenstein's philosophical methodology evinced a similarity of conceptual configuration. Thinking reflectively can be associated procedurally with the style of intense concentration utilized by Wittgenstein. His personal methods of conversation and dialogue have indirectly contributed to a growing base of theory for innovative reflective thinking. Wittgenstein's influence is widespread among educators who, in many instances, may be unaware of the source of their philosophical orientation. A major consideration resides in the commonality shared by Wittgenstein's philosophical position and the characteristics of reflective thinking. As previously indicated, the usage of language to sort out the confusions created by language results in a tautology of application. Unfortunately, without language, human beings lack a means of thinking consistently and comprehensively or communicating meanings. Some would insist that the absence of language implies the absence of thought. Wittgenstein might agree with this assertion. His singular approaches to thinking are apparent in his conceptualizations of language games, family resemblances and thoughts as pictures. The invention of simple objects as the unknowable substances of reality contradicts Wittgenstein's intentions of avoiding the pitfalls of metaphysical mysticism.

Either fortunately or unfortunately Wittgenstein, in common with numerous other philosophers, found exigent necessity in lending support to the physically empty symbolic images of language and thought. The concept of simple objects served the purpose of a philosophical theoretical construct. Wittgenstein's major contribution to the philosophical and theoretical foundation of reflective thinking are side-effects of his philosophical position.

The new level of profound questioning he initiated is perhaps more significant than the inconsistent contents of his philosophy. His refinements of traditional philosophical thought methodology represents an advancement with special relevance to reflective thinking.

CATEGORIES FOR PURELY RATIONAL THOUGHT

In eliciting a descriptive analysis of the thinking process, Gordon Hullfish and Philip Smith reiterate an often observed dual classification of the reasoning functions.

"--- It is said that some assertions are about *matters of fact* and that other assertions are about *a relation of meanings or ideas*. This appears to be a straightforward way of classification. Statements which are about *matters of fact* are called *synthetic* statements, while statements which set forth *a relation of meaning* are said to be *analytic*" (Hullfish and Smith, 1961, p.64).

This dual classification is useful, but fails to take into account normative statements that do not fall into either of the aforementioned classes. Therefore:

"It may be argued that it would be advantageous to use a threeway classification, as, for example, synthetic statements, analytic statements, and value statements. The criteria for judging warranted assertibility for the first class would then be known as principles of scientific control or *methodological* principles; those for the second class, *logical* principles; and for the third class, *axiological*" (Hullfish and Smith, 1961, p.p. 64-65).

This threeway classification takes in every *easily discernable* way of rational thought known to exist. The exceptions to this system of classification may reside in mystical, intuitive, emotive or possibly *many* variations of individualized non-verbal thinking. Reflective thought may involve all these distinctions in varieties of thinking and others yet

to be comprehended. To reduce all thinking to three classes or sets seems a gross oversimplification of how thinking actually occurs. Nevertheless, these dichotomies, in separating apparent "ways of thinking" can serve as one starting place.

THOUGHT PROCESSES AND VALIDITY

Reflective thinking, most often, although by no means always, makes use of logic or step-related reasoning in profiling problem situations and drawing conclusions. The efforts of human beings to think logically and consistently are at best open to many unintentional errors. The unconscious interjection of prejudices of one kind or another extract a heavy toll of unintentional invalidity. The more or less natural tendency to reason on the basis of wishful thinking rather than logical principles leads to myriad invalid conclusions. Reflective thinking stemming from the predetermined acceptability of inaccuracies in the thought processes are likely to conclude in even larger and more tragic errors.

Thoughts that are premised on intuitive insights and feelings are likely to be even more clouded by vagaries and uncertainties relating to questionable validity. Reflective thought, regardless of its foundational sources, is worthwhile only if it allows one to draw valid or true conclusions. It may be duly noted that extensive arguments could be conducted about what constitutes valid or true. Nevertheless, the happy creation of psychologically satisfying fairy tales accords the individual little reliable grounds for action or practice. Consequently, even the most rebellious or cynical of reflective thinkers would prefer to base their thoughts on prior information and methods of drawing conclusions which they presume

will produce valid answers. Anything else is merely self-deception of neither intrinsic or practical value.

In the quest for validity, even more serious are our runaway natural inclinations to instill order and pattern recognition into the midst of randomness and chaos. This primal "urge" found to exist in the dark corners of our mental apparatus is the joint means to seeming validity and gross error. Controlling and channeling the natural compulsion to find order is an axiomatic behavior for drawing valid conclusions. This natural requirement is prior to and goes beyond the rules of logic. It would seem that quasi-logical methods dependent on intuition or emotion would be bound by the same requirement.

Errors arising from the construction of mind

Thomas Gilovich has attempted to tackle the erroneous thinking problems that human beings face in drawing valid conclusions. His work is aptly titled *How We Know What Isn't So* (1991). Gilovich has much to offer reflective theorizing in practical terms. Especially noteworthy is Gilovich's analysis of the basis for problems in the human ability to reach valid conclusions.

"The tendency to impute order to ambiguous stimuli is simply built into the cognitive machinery we use to apprehend the world. It may have been bred into us through evolution because of its general adaptiveness: We can capitalize on ordered phenomena in ways that we cannot on those that are random. The predisposition to detect patterns and make connections is what leads to discovery and advance. The problem, however, is that the tendency is so strong and so automatic that we sometimes detect coherence even when it does not exist.

---many of the mechanisms that distort our judgements stem from basic cognitive processes that are usually quite helpful in accurately perceiving and

understanding the world. The structuring and ordering of stimuli is no exception---

Clearly, the tendency to look for order and to spot patterns is enormously helpful, particularly when we subject whatever hunches it generates to further, more rigorous test---. Many times, however, we treat the products of this tendency not as hypotheses, but as established facts. The predisposition to impose order can be so automatic and so unchecked that we often end up believing in the existence of phenomena that just aren't there" (Gilovich, 1991, p.10).

The crux of Gilovich's analysis of this "ordering" tendency is the natural impetus to rush into committing errors in judgement to satisfy an innate urge. The comments below illustrate this point.

"--- many questionable and erroneous beliefs have purely cognitive origins and can be traced to imperfections in our capacities to process information and draw conclusions. We hold many dubious beliefs, in other words, not because they satisfy some important psychological need, but because they seem to be the most sensible conclusions consistent with the available evidence. [It may be argued that the *act* of drawing such conclusions does satisfy an important psychological need]. People hold such beliefs because they seem, in the words of Robert Merton, to be the "irresistible products of their own experience." They are the products, not of irrationality, but of flawed rationality" (1991, p.2).

Reasoning and logic (deductive or inductive) as interpreted and practiced by fallible human beings provides far less than a certain path to the drawing of valid conclusions. Deductive reasoning depends on one's ability to follow the various assertions made in arguments in such a way as to derive a conclusion which is implied. This can be a very complicated process. Besides the complicity of argument, the drawing of invalid conclusions is made easy by the usual willingness to accept original premises without much question, and by a natural propensity to preferences. The evidence of experience is always limited, because experience is limited. This is the source of the famous problem of inductive logic which

prevents absolute certainty in the formulation of generalizations. Valid generalizations are based on examining a sufficient number of applicable occurrences to enable the inference of some degree of probability. Since it is impossible to ever examine every single instance of a particular type of occurrence (except in an artificial universe), it is therefore impossible to state conclusively that a negative instance doesn't exist somewhere.

Productive reflective thought (i.e., thought applicable to improving practice) is dependent on a number of contingent factors. Among these factors are relevant experiences, intuitive insight, emotion, and the ability to apply deductive logic and inductive analysis. None or all of these are representative of the totality of the reflective thought processes. The various components that comprise reflective thought are subtle, complex and variable.

CONTRASTING LEARNING AS REFLECTIVE OR NONREFLECTIVE

Peter Jarvis espouses an interesting interdependent black and white dichotomy of learning. Jarvis classifies learning as either reflective or nonreflective. The following analysis should *not* be construed as a statement of his position, but rather as a logical expansion that follows his assumptions. The attempt in this section is to try to see where Jarvis' ideas might lead as a consequence of analysis.

The occurrence of learning premised on questioning or reflection presupposes an earlier and more fundamental learning that is simply accepted. A socially instilled accumulation of nonreflective or assumed learning serves as the foundational basis of the more complex and dynamic reflective learning. Reflective learning emanates gradually from

the reasoned consideration and amplification of learning that is acquired passively and in an unquestioning manner. Nonreflective learning is received learning. It is assertively imposed. This kind of learning is grounded in authority rather than reason or thought. It forms the mental structural foundation that later initiates reflective thinking and learning. The asking of probing questions and the development of a tacit mistrust of given assumptions creates the intellectual atmosphere that generates reflective learning. Jarvis believes that the concepts of mind and self are learned through experiential exposure to social interaction. Mind and self are unintentional conceptual creations obtrusively designed and imposed by the multi-dynamics of society acting on the individual.

---"It is with the development of mind, and therefore the self, that the essential human characteristics emerge. --- consciousness initially arises in children's reaction to [social] experiences and later develops through social interaction, since they memorize their perceptions of the experiences. Learning is nonreflective at first, but as the store of memories grows, a basis for reflective learning emerges"--- (Jarvis, 1992, p.37).

Jarvis continues this line of thought in the following words.

"People gain the necessary tools to develop the ability to think through the acquisition of language, though this does not mean that thought and language are synonymous. However, very young children have no language and only a rudimentary way of understanding their primary experiences of other people's actions. The fact that human actions tend to be repetitive and patterned makes it possible for children to learn nonreflectively the patterns of behavior that occur and the physical rewards that accompany those actions. In addition, children learn to give meaning to those experiences. Hence, both subjective meaning and emotive reaction become associated with certain behavioral patterns. These impressions may be carried in the brain; the beginnings of mind can be found in this store of memories of previous experiences. Memories of other's responses to the actions that people themselves initiate are also retained. Those actions gradually change from being experimental to repetitive to presumptive as people gradually learn what is acceptable and what is not" (1992, p.p.37-38).

Jarvis seems to equate reflective learning, and therefore, reflectively derived action or practice with a gradual and cumulative process of thinking and learning. Nonreflective thinking takes the form of a categorical (all or none) imperative while providing the conceptual basis for engaging in reflection. Reflective practice is distinct from the foundational nonreflective thinking and learning that precedes it and which rests on an implied acceptance of authority. Nonreflective learning (or thought) as it is stored in memory gives rise to the essential manipulative tools of mental life required to engage in reflective considerations. These exact opposites (reflective and nonreflective) complement and sustain one another. Specifically, without the development of reflective thinking, nonreflective learning stagnates while becoming useless and meaningless in a hermeneutic sense. The perpetual nonreflective thinker occupies a less than human status and exists as a social automaton. Nevertheless, nonreflective thinking and learning are conditional prerequisites for being able to reflect. Nonreflective learning must be acquired, more or less on faith, and then procedurally thrown away, in part, as the rational consequence of learning to reflect.

Reflective thinking and learning are separated from the nonreflective on a logical basis of relative versus absolute. The assumed fundamentals comprising nonreflective thinking and learning are presumed as self-evident. These fundamentals provide the starting place for reflective thought and learning.

Apparently, the developmental implementation of reflective learning stimulates the involuntary creation of a mind and self. Jarvis proposes that "mind develops through learning." He also asserts that "the self is learned and formed in the context of social

interaction" (1992). Mind and self are actually the expanded products of nonreflective learning. They are restricted in the sense that no one can become more than what is provided by the social experience into which the developing individual is thrust. What we are and what we are capable of becoming is fundamentally a manifestation of a static social phenomenon that evolves as dynamic and individual through reflective learning. The distinctive peculiarities of mind and self belong exclusively to the emerging individual, but are created wholly within the predefined social context of nonreflective thinking. Reflective learning cannot go beyond the rational constructive apparatus imposed by the nonreflective foundations of experience. If true, this is the epitome of paradox.

"---the culture within which the self develops is not value free but is biased towards those who exercise power and influence. Since initially mind is formed through nonreflective learning processes, those biases are built into the learning. The same biases occur in the language used by those with whom people interact. Consequently, the self develops with built-in biases. And if biases exist in the formation of mind and self through this initial learning, then they will affect future action and learning"--- (1992, p.47).

"Transformative learning is clearly important to the process of becoming a self. People of all ages and backgrounds can have transformative experiences, which change their understanding of the world, their understanding of themselves, and their self-identity. In pluralistic societies, such experiences are especially common, since people often exchange the meaning perspectives of one group for that of another. This underscores the importance of being critical. Learners should always be skeptical about the position they hold, recognizing that all positions are to some extent ideological (1992, p.97).

"---experimental action is clearly associated with rational thought and reflective learning, for both during the action and after it, actors might begin to reflect on the situation and learn from it. Significantly, in seeking to achieve another's development, individuals are themselves engaged in the highest forms of reflective learning, and they themselves grow and develop. Paradoxically, in not seeking to be themselves, they continue to learn to be and to become. In authentic action, human essence always emerges from existence and individuals grow and develop as person" (1992, p.115).

What Jarvis means by "human essence" is unclear. It may be that he is referring to some species potential for absorbing and assimilating "biography" in ways effective and progressive to the extent of human capacity.

Jarvis also recognizes the dangers of chaos that inhere in uncontrolled reflective thinking and learning. Reflective thinking implies a disregard for convention and rules in the quest for open creativity.

"We can pose an intriguing question at this point: if everyone tried to be an authentic person, to learn reflectively and interact in such a way as to encourage the growth and development of other people, would society exist? ---this points up a paradox: reflective learning is considered the highest form of learning and the achievement of personhood, however it is phrased, is deemed an end of education and even of life itself — but the achievement of these goals in the present form of society is curtailed" (1992, p.117).

Acknowledging the obvious necessity of conformity and convention to maintaining social order, Jarvis recognizes the utility of compliant nonreflective learning. He also sees the equal necessity of innovative changes brought about by reflective thinking.

↙"the state apparently needs unreflective learners to achieve stability but reflective learners if it is to survive without some form of revolution. In other words, for a government to achieve stability, it requires a compliant population that will learn unreflectively and conform. Learning, however, is more complex than that — people are free to learn reflectively and arrive at conclusions that are not conformist. This process is potentially subversive to those who exercise the powers of the state. At the same time, for the democratic state to survive, it must always have the potential to be influenced and changed by its citizens. Reflective learning and experimental action are the ways they can engage in these activities. ↘Thus reflective learning is both a democratic undertaking and a potentially subversive activity" (1992, p.234).

As a kind of underlying secondary theme, Jarvis uses his notions of reflective and nonreflective learning to support other evidences and conjectures about learning in various contexts. As previously discussed, Jarvis perceives nonreflective learning as preliminary to the more advanced reflective learning. Nonreflective learning is prior to, and provides the intellectual mechanisms for more complex and articulated reflective learning. The nonreflective learner is conformist, while the reflective learner is the opposite. Nonreflective learning is supportive of political stability within the power structure of the state. Reflective learning is creative and the means to improving and changing social and governmental structures. Without the agitation of reflective thinkers, the grasping of innovative and creative nuances essential to progress would be impossible. However, reflective thinking and learning may be threatening and destabilizing. In the extreme it can produce social and political upheavals, including violent changes. Reflective thinking and learning represents the ultimate in freedom of self and will.

There is a major conflict of ideals and purposes inherent in nonreflective and reflective learning. The former represents civilized contentment, while the latter envisions unsettled advancement and the raw potential for discovery and enlightenment. The distinction between nonreflective and reflective learning is a distinction between conservative and liberal learning ideals; between established and radicalized learning. The nonreflective learner is not a critical thinker; he or she does not question, but simply absorbs predetermined and already approved answers. The reflective learners questions everything. The attitude of reflective learning is one of agnosticism. All answers are tentative and none are sacred.

Reflection is an unconditional acquiescence to the right to question and institute change. It is a rejection of absolutism and a confirmation of relativism and contextualism. Yet its philosophical foundation rests on an acceptance of authority and social tradition. Reflective thinkers and learners are dangerous to themselves and others, yet without their initiatives in formulating bold new approaches, stagnation and decay becomes inevitable. Civilization without innovation dies a slow but certain death. The dichotomy between reflective and nonreflective seems stark and overly simplistic. Nevertheless, the contrast of these opposing ideals of mind appear as convincingly explanatory and descriptive of experiential reality.

Jarvis may be on to something in his assessment of nonreflective and reflective learning, but another alternative may exist. Namely, the idea that the individual is reflective in all instances, but sometimes lacks the motivation or means to express insights. This approach would deny that *any* learning is nonreflective. To be learned at all, the assimilation of knowledge would involve reflection. Jarvis may be mistaken in relegating some elementary learning to the status of the nonreflective. To learn at any level of intellectual difficulty or complexity may imply the use of a reflective mode of thinking. In this event, learning at any level whatsoever involves utilizing reflective capacities. The variation is only one of a degree of willingness to accept or reject without question. The existence of extreme poles of nonreflective and reflective are far from obvious.

THE CONGRUENCE OF REFLECTING AND ACTING

It is difficult to overstate the influence of Donald Schön on the popular movement that has revitalized the *artistry of reflective thinking* and its uses in professional practices. Schön's writing has generated a growing reflection about reflection and its value as the design agent of purposeful action. Schön demonstrated, in logical fashion, how the reflective elements of thinking coalesced theoretical presumptions and practical procedures. He expressed this synthesis of mind and movement in explanatory terminology such as reflection-in-action and knowing-in-action. Schön's rational explanations, as expressed in such terminology, constitutes a *reflective* analysis of what seems to occur.

Schön contends that by examining reflection-in-action in varied professions, it may be possible "to discover a fundamental structure of professional inquiry." (Schön, 1983). The artistry of the professional is evident in "his selective management of large amounts of information, his ability to spin out long lines of invention and inference, and his capacity to hold several ways of looking at things at once without disrupting the flow of inquiry" (1983).

The Reflective Practitioner (1983) is largely an exposé of the creeping insufficiencies of the academic applications of positivism. A credible attempt is made by Schön to show the apparent gap that exists between the idealist perfectionism of academic modeling and actual practice. Upon examination, divergence often manifests itself between practical applications of knowledge and the theoretical paradigms on which practice is supposedly based. This appears to be a distinction between the formal exactness of knowledge and the applicable impreciseness of knowing and acting in the real world. On an extreme level, this divergence

is perceptible as an unspecifiable variance between the formalism of a positivist ideal and the fluctuating reality of everyday practice. An identifiable dichotomy between the "rigors" of scientific traditionalism and the "relevance" of actual practice can be found to exist in a number of professions.

Schön's ideas as expressed in *The Reflective Practitioner* gravitate towards the utilization of reflective thinking as an individual methodology of inquiry. Schön pointed out the *methodological validity* of reflection as a means to taking practical action. Such action need not always be based on implicit or mediated conclusions. Often the actions of practice are virtually automatic and based on tacit knowledge. The cumulative workings of acquired knowledge may assume the form of a reflex action. Knowledgeable practice can take place without the necessity of any prolonged or deliberate thinking. The practitioner is somehow able to perform intricate movements and make practical applications of acquired knowledge without exerting any obvious mental efforts. One would assume that this is possible because consequential learning and reflective thinking have coalesced at some earlier point in time. It appears that practice-related acquired knowledge converts to a tacit form that the skilled practitioner is able to draw on whenever an appropriate occasion arises. In this sense, the reflective practitioner is someone who has developed an innate capacity to make decisions and act on the basis of knowing that remains below the surface of an explicit verbal awareness. Hence, Schön's notion that professionals often know more than they are able to say.

The ability of the practitioner to produce workable solutions on demand are a residual effect of reflective thinking and its procedural adaptations to practice. A process

of reflective thinking translates, over time, to a high level of perspicuity and competence in practice. How this takes place is unclear. That it does take place is certain. The reflective recall and manipulation of relevant information in ways useful to practice is a marvel of the human mind.

Schön's words in the preface to *The Reflective Practitioner* reveal his perceptions of a peculiar problem related to our educational practices.

---"I have become convinced that universities are not devoted to the production and distribution of fundamental knowledge in general. They are institutions committed, for the most part, to a *particular* epistemology, a view of knowledge that fosters selective inattention to practical competence and professional artistry" (Schön, 1983, p.vii).

Professional knowing seems plagued by an *inarticulation of means* problem that is excessively complex because its multiple origins cannot be easily described or verbalized. The professional is privileged to an acquired knowledge that has the power to *suggest* solutions to problems. The great mystery inheres in the creative workings of suggestive mechanisms by which professional knowledge activates the means to solving problems.

---"Professionals have been disturbed to find that they cannot account for processes they have come to see as central to professional competence. It is difficult for them to imagine how to describe and teach what might be meant by making sense of uncertainty, performing artistically, setting problems, and choosing among competing professional paradigms, when these processes seem mysterious in the light of the prevailing model of professional knowledge" (1983, p.19).

Schön recognizes that the professional has an artistic grasp of relevant knowledge. This grasp goes beyond the manipulative symbolism of technical rationality and extends into

a gray area of intuitive insights. The professionally competent practitioner is able to formulate on-the-spot innovations. These formulations of one-on-one solutions originate as the generative outcomes of previously acquired knowledge. Reflecting-in-action represents an immediate combining of acquired knowledge with the uncertain requirements of a current problematic situation. The process of reflecting-in-action combines the determinacy of past experience or knowledge with the intervening indeterminacy of a present enigma. Through the merging of knowledge, intellect, and the patterns of the emerging problem, the professional is able to find appropriate answers consistently. A high level of consistency in coming up with suitable answers suggests a *hidden* command of adaptable expertise. It is this mysterious hidden and often inexplicable expertise that seems to distinguish the competent professional. In a word — professionals are *talented* at what they do within their chosen fields. The understanding and performance of the true professional is impressive in terms of practical results drawn intuitively and instinctively from the unique adaptations of acquired knowledge.

"---the problems of real-world practice do not present themselves to practitioners as well-formed structures. Indeed, they tend not to present themselves as problems at all but as messy, indeterminant situations. ---If they [practitioners] are to get a well-formed problem matched to their familiar theories and techniques, they must *construct* it from the materials of a situation that is, to use John Dewey's (1938) term, "problematic." And the problem of problem setting is not well formed" (1987, p.4).

"Depending on our disciplinary backgrounds, organizational roles, past histories, interests, and political/economic perspectives, we frame problematic situations in different ways. ---Debates involve conflicting frames, not easily resolvable — if resolvable at all — by appeal to data. Those who hold conflicting frames pay attention to different facts and make different sense of the facts they notice. It is not by technical problem solving that we convert problematic situations to well-formed problems; rather, it is through naming and framing that technical problem solving becomes possible" (1987, p.5).

It is through "naming and framing" that the competent professional utilizes acquired knowledge for problematic solutions via reflective thought. This mental innovating is virtually inexplicable except in terms of artistry and personal talent. An educational exposure to accepted theory and academic modeling may be important to instigating the development of artistry, but cannot explain how it works or why it works.

The competent professional practices mainly on the basis of talented insight rather than picking and choosing among the theoretical alternatives provided through formal education. A major controversy resides in the question of whether or not individuals can be educated to become artists in their professional fields. Can reflective practice be taught? As Schön realized, artistry stems in part from participation in coaching and dialogue. Novices and those who already possess the powers of artistry must interact to pass on the necessary understandings. In this manner, the inarticulated learning becomes transferable. Reflective thinking is a natural process that facilitates the connection of disjointed theory and the confusions of problematic situations in ways leading to answers. Reflection is exceedingly important because it activates the capacity to make meaningful sense out of unapparent relationships. Reflective thinking unlocks artistry.

EXPLORING THE GENERAL NATURE OF REFLECTIVE THOUGHT

David Boud, Rosemary Keogh and David Walker, in *Reflection: Turning Experience into Learning* (1985), have developed some perceptive and useful insights into the general nature of reflection. For example:

---"First, and self-evidently, only learners themselves can learn and only they can reflect on their own experiences. Teachers can intervene in various ways to assist, but they only have access to individuals' thoughts and feelings through what individuals choose to reveal about themselves. At this basic level the learner is in total control.

Second, reflection as we have described it is pursued with intent. It is not idle meanderings or day-dreaming, but purposive activity directed towards a goal. This is not to say that it may not be helpful to have periods of reverie and meditations associated with conscious reflection, but in themselves these activities are not what we are referring to when we discuss goal-directed critical reflection.

Third, the reflective process is a complex one in which both feelings and cognition are closely interrelated and interactive. Negative feelings, particularly about oneself, can form major barriers towards learning. They can distort perceptions, lead to false interpretations of events, and can undermine the will to persist. Positive feelings and emotions can greatly enhance the learning process; they can keep the learner on the task and can provide a stimulus for new learning. The affective dimension has to be taken into account when we are engaged in our own learning activities, and when we are assisting others in this process. External influences to validate the worth of individual learners and groups of learners are often needed" (Boud, et al, 1985, p.11).

It is this third point, perhaps, which is most ambiguous in the set of components that allows reflective thoughts to occur. The motivation, it seems, to think reflectively must be created internally in ways which are far from clear. The prohibitive effects of negative feelings upon the ability to reflect are readily apparent. Reflective thinking, in all its elusive aspects, is a tentative process dependent on mood and emotional atmosphere to enhance and elevate motivation. The stimulating effects of positive feelings are crucial to strengthening the will and desire for sorting through the vast array of experiences. The perpetuation of reflective thinking draws strongly from the emotional life of the individual. The only evidence necessary to support this contention is self-examination. It is a self-verifying proposition.

Another important, yet somewhat inobvious aspect of the reflective process has to do with our natural and psychologically automated procedural intermingling of assimilated experience; thinking about it, and learning from it. This purposeful mental synthesis of our experiential impressions combined with the interpretative capacities of the specific individual account for the creative results which reflection produces. In the words of Boud, et al:

---"Reflection is an important human activity in which people recapture their experience, think about it, mull it over and evaluate it. It is this working with experience that is important in learning. The capacity to reflect is developed to different stages in different people and it may be this ability which characterizes those who learn effectively from experience"--- (1985, p. 19).

These observations are not earth-shaking. From the level of common sense they provide strong satisfaction that reflection is an activity of some substance. This unique proclivity of the mind accelerates new understandings by way of individual conceptualizing deriving from selective sorting among many experiential combinations. This is what reflective thinking is all about. Without an impetus to such human thoughts, progress and discovery would be unknown except as accidental occurrences. Understanding what it is that reflective thinkers do is a matter of great interest as a mechanism to advancement in all fields. This importance may supersede subject matter. In a sense, the method may be more valuable than the specific knowledge it enables to be unearthed.

It is perplexing that reflective thinking is virtually open-ended as a method. As such it cannot be defined, limited or restricted. The vast scope of conceptual acceptability presents a problem. Identification becomes very difficult. Reflective thought [as a concept] is a little like a dog without tail, nose, ears, four legs, or characteristic animal shape and behavior. Yet we are still able to recognize the dog in the dog. Reflective thought is

recognizable despite its indefinable characteristics. It has boundaries; these boundaries, however, are sometimes impossible to ascertain or pinpoint. They are unavailable to exact specification. If the boundaries of reflection as methodology are precisely a methodology specified, it becomes self-contradictory. Limiting, defining, or otherwise restricting methodology constitutes the antithesis of reflective thinking. Yet to do so is to reflect.

Peter Silcock has written a very revealing and insightful article that deals with *The Process of Reflective Teaching* (1994). Silcock points out correctly that the terms 'reflection' and 'reflective thinking' have been borrowed from philosophy and psychology. The converted usages of these terms in education has resulted in changed conceptual meaning. The purposes of the current study being undertaken here are reenforced when Silcock states that "although discussed extensively it [the reflective process] is still not well analyzed or defined" (1994, p.273). As a possible solution the following approach is recommended.

"What is proposed is that all forms of reflection are identified by a few generic principles. By applying these to single cases, we can resolve contradictions found in related studies and make epistemic progress. Reflection will be defined as a ubiquitous, cognitive process, not only reworking tacit knowledge into skill, but providing, through symbolic transformations, a means for linking social and knowledge contexts, and for translating one sort of experience (e.g., academic) into another (e.g., practical). On this definition, competing models of reflective teaching can be justified---" (1994, p.274).

What Silcock seems to be noticing is the vast potential for reducing the onslaught of apparent contradictions by allowing a broad based conceptual construction. An omnipresent flexibility of meaning decreases the needless inconsistencies that are born of rigid interpretations conjoined to multi-applications. According to Silcock, the functional tasks

of reflection are bridging and transformation. This is accomplished by stressing the reflective process as a general concept to establish linkage between non-identical ideas. Silcock's vision is structured around 'purpose and context' as the determining factors of how the reflective process is to be conceived.

This view of the reflective process seems an expedient and sensible yielding to an obvious multiplicity of workable approaches. Silcock's facilitative point of view not only serves to reconcile theoretical differences, but comes to grips with distinguishing the needs born of situational diversity. Silcock recognizes that "helping teachers make professional judgments will, therefore, mean encouraging very different types of reflection for different ends" (1994, p.282). The recognition of the natural need for many reflective methodologies within a broad definitive umbrella applies to all fields. One should notice, however, that a major problem in construing a very broad definition (as Silcock suggests) is a diminishment in exact meaning. Broad definitions are often too general to be useful. On the other hand *any* definition, to the extent that alternative possibilities are excluded, is restrictive and limiting. Furthermore, the scope of restrictiveness in a definition may not be readily apparent. It is safe to say that any arbitrary exclusion of methodological adaptation is necessarily antithetical to the common meaning of reflective thinking. The whole idea of definition seems to pose a problem of contradiction in reference to keeping the meaning of reflection open-ended. Also, Silcock's definitive effort may be viewed as similar to that of John Dewey, in-so-much as its meaning is essentially empty and unsatisfying. A definition devoid of specifics is also devoid of meaningful content. The open-ended meaning of reflective thinking as conceptual entity may also be criticized as devoid of meaningful content. This particular problem of meaning delineation seems insolvable. The reflective

process cannot be restrictive or narrow to any considerable extent in defining itself and retain an essence for utility and improvement. It may, however, be construed so broadly that meaning disappears into generality.

Just how complicated all of this can become is evidenced in the words of Mezirow.

---"I have identified the central function of reflection as that of validating what is known. Reflection, in the context of problem solving, commonly focuses on procedures or methods. It may also focus on premises. Reflection on premises involves a critical review of distorted presuppositions that may be epistemic, sociocultural, or psychic. Meaning schemes and perspectives that are not viable are transformed through reflection. Uncritically assimilated meaning perspectives, which determine what, how, and why we learn, may be transformed through critical reflection. Reflection on one's own premises can lead to transformative learning" (1990, p.18).

Whether one is enamored with Mezirow's ideas or not, his notion of critical self-reflection as a sub-category of reflective thinking can give some direction to considering the scope of the subject matter. Agreement with the conceptual design of critical self-reflection and transformative learning is beside the point. The *value*, as perceived here, resides in connecting theories and sensing how they relate. Such examination is one path to understanding that can be pursued irrespective of theoretical perspective or preference. Cross-referencing of similarities in theorizing is a useful method for uncovering implied meanings throughout the wide variety of theory that currently exists in the field. This is a useful approach in the cases of Mezirow, Dewey, Siler, King and Kitchener, Coward, Jackendoff and others. The common threads of thought which link these diverse approaches are found to be amazingly apparent.

Reflection can serve the purpose of "validating what is known" in the sense that "comprehensibility" is confirmed through thought. The emphasis on "procedures or methods" and "critical review" stems from an inner urge to gear the understanding to achieving some comprehension of that which remains puzzling to the mind. Learning does result whenever thinking enables the resolution of puzzling situations. Resolving mental conflict (in the form of unsolved or unresolved problems) can no doubt produce transformation in varying degrees. What is most puzzling is how this occurs.

CHAPTER IV

EDUCATION AND REFLECTION

REFLECTION AND INFORMATION

Reflective thinking is a natural assistance to becoming educated. Cultivating an ability to reflect produces an evolutionary frame of mind that encourages new learning. The freedom of mind associated with reflective thinking creates an open attitude conducive to innovation and adaptation. On the other hand, absorbing vast amounts of information is perhaps the least important activity on the pathway to becoming educated. Most of the information that we are exposed to is time-sensitive in some respect. Only a vestigial portion of the underlying principles and methodologies of learning and developing knowledge are timeless. A tremendous amount of information and, therefore, the *contents* of education become dated within a few months or years. Perhaps the only worthwhile function of the information deluge is to provide an access of verbal and conceptual tools for the individual's application of reinterpretative assessments.

When the informed individual begins to consider tentative knowledge in terms of relationships, logical and intuitive connectives, and various implied associations, then reflective thinking occurs. Education seems to be something quite apart from the acquiring and collecting of information. A deep-seated variety of learning takes place when information is digested in its original form and then either consciously or unconsciously

reformulated through reflective thought. This amalgamated process is the source of creative discovery and the way in which learning becomes a meaningful discernment steeped in personal uniqueness. Significant learning results from an individualizing of otherwise impersonal information through associative reflective thought.

The magnitude of anyone's education is a framing or intensifying of rational possibilities within the range of experience. Educated individuals are noticeably characterized by the acquisition of an attitude of forethought that preempts adaptation and change. An orientation in this direction is the basis of transformative learning.

Adjusting one's viewpoints in order to adapt draws upon a cultivated talent in balancing existing ideas with the need to create and develop new insights. An impetus towards creative discovery is realized whenever the components of education (learned information and ideas) are reflectively translated into some unique interpretative application. The active uses of education are inseparable from the ability and inclination to think reflectively. Furthermore, in a very real sense, the regular translation of reflective thoughts into actions or practice comprises the practical value of education and learning.

Inventing problems and solving puzzles

One cannot meet the highest levels of criteria for becoming educated merely by absorbing accumulations of information. Interpretative efforts must be applied in such a way as to not only solve problems, but to also concurrently invite and invent new ones. An unintentional generation of entirely new problems is often the outcome of reflecting about something else. A developing contemplative awareness of problem-solving approaches is a

beneficial result that comes from the dissatisfying feeling of being puzzled. This is especially true in science.

"In hundreds of different ways scientists have expressed their amazement when, on determining the right question, they discover that they can see how the puzzle fits together. In this sense, science is like a two-partner game in which we have to guess the behavior of a reality unrelated to our beliefs, our ambitions, or our hopes. Nature cannot be forced to say anything we want it to. Scientific investigation is not a monologue. It is precisely the risk involved that makes this game exciting.

But the uniqueness of western science is far from being exhausted by such methodological considerations. When Karl Popper discussed the normative description of scientific rationality, he was forced to admit that in the final analysis rational science owes its existence to its successes; the scientific method is applicable only by virtue of the astonishing points of agreement between preconceived models and experimental results. Science is a risky game, but it seems to have discovered questions to which nature provides consistent answers" (Prigogine and Stengers, 1984, p.5).

Being uncertain or confused about how to proceed towards a solution is a necessary first step towards gaining new insight. Puzzlement and the distress of its anxiety spurs reflection and the development of *anticipated* alternative solutions. Possessing a working grasp of the more or less indefinable methodology of thought association and construction (of which reflective thinking is a part) is the essence of being educated, and the means for removing puzzlement. The greatest merits of reflective thinking for education lie in the individualizing and redirecting of informational concepts so that they consequently become organized and comparable.

INDIVIDUALIZED ACCULTURATION

The conceptual variations resulting from reflective thinking accentuates gradual changes amounting to an acculturation within the individual. The learned meanings of experience, as they are assimilated and combined through reflective thought, come to differ in individuals perhaps more than they agree. Linguistic difficulties aside, this wide contrast of reasonable viewpoints provides the basis for the controversies found in philosophical and social disputations. This may be the most substantive grounds for construing "truth" as contextual and relativistic. Our thoughts, reflective and otherwise, are drawn from many dissimilar sets and combinations of experiences. It should not be surprising, therefore, that human perspectives are diverse, and interpretations of the same events often worlds apart. The contingent grounds for mutual agreement in our reflections are more random and disconnected from any factual truth than common sense might suppose. As the traditional dichotomy between mind and matter has stressed, there is a distinct conceptual area in which each and every individual remains forever trapped in a separate universe.

Solipsism and the reflective experience

Solipsism has certain convincing points in which all of our experiences agree.* For example, *any* assertion of knowledge is inescapably an individual matter of understanding. Collective knowing or comparative knowing in the perception of whatever we believe reality to be is an impossibility. We are each constructed as separate and discrete mental units. Our individual perceptions, experiences, and the ideas that we conceive of are permanently

* As a technical point Solipsism would not recognize any possibility for confirming or checking such agreement.

restricted to the confines of our own minds. This *aloneness* of each human being, caught up in a particular variety of experiential and genetic interpretative capacity, is a condition of mental life. It partitions each individual, willing or unwilling, into a separate and totally unique world. In this respect, I can *never* see or know in identical fashion with someone else. Worse yet, if it were possible to have identical knowledge, the *verification* of such knowledge would be impossible. It is a condition of life, that we see and know as individuals *only*. Whatever we know historically and collectively, we can still only know as individuals. Any form of historical or social knowledge is nothing more than the testimonial assertions of innumerable separate individuals. Our massive accumulations of historical information amounts to creating vast fictions of linguistically abstracted individual testimony. This documented individual testimony is itself a further abstracted fiction of collective and generalized belief. Our history, indeed *all* of our collective data and knowledge become, in any experiential sense, the sole experience of only a single individual, i.e., one's self. The ensuing variations which only individuals can perceive or conceptualize may be a basis of conflict more so than the clearly artificial political and social conventions that human beings argue about. This idea is interesting. The myriad ways that we see things differently may constitute a "*real*" set of divergent facts for each and every human being. The points of reality in conflict, in such an eventuality, would be totally genuine and totally irresolvable. The diverse interpretative realities invented by separate individuals have no common grounds available for mitigating conflicts.

Reflective thinking is the thinking of a single individual. Groups cannot think; only individuals are given that capacity. In addition, the thoughts that one has which are specifically learning related stem from a person being exposed to a set of circumstances and

then creating an interpretation. Individual interpretative efforts determine the meaning and ultimate significance of education as an experience. Education and learning are bounded not only by the limits of experience, but also by the interpretative discoveries that the individual mind initiates. Such individual discoveries are the results of reflective thought.

What may seem like a common education for a whole society or culture actually (if you subscribe to this view) consists of many individual perspectives developed from a multitude of interpretations. Reflective thinking does not generally sustain any absolute guarantees of agreement or continuity in viewpoints. The multiplicity of perspectives that results may be advantageous. The differences in experiences and the variances of individual interpretations produces an increased probability of finding viable solutions. The downside of such a view is in the unlimited and unrestrained potential for conflict coming from mind variances alone. Any presumed variances existing in some supposed reality are extra troubles to confound us.

SPONTANEOUS AND DELIBERATE REFLECTION

It may be said that "---reflection is a normal activity, often mentioned as one form of metacognition (Clark & Peterson, 1986; Peterson & Comeaux, 1988), that occurs both spontaneously and deliberately in adults and children (Houston and Clift, 1990)." The idea that reflection can be either spontaneous or deliberate call attention to the natural intellectual inclinations and capacities of human beings. As a practical matter, whenever someone engages in any attempt to overcome an obstacle or initiate some change, the resulting thought processes are likely to become reflective. This process may be started

intentionally or it may slide unassisted into the consciousness as a means of adjusting one's self to some perceived reality. The instances of spontaneous reflective thinking that occur probably outnumber those that are deliberate. Any confusing, puzzling, or troubling situation may give rise to thinking efforts directed at discovering and weighing alternatives to the intrusive conditions of a problem.

One of the main functions of education is to provide the individual with a readily available means for analyzing and understanding the origins, compositions, and varied solutions to problems. The educated individual presumably develops a progressive familiarity with a highly generalized methodology for identifying and solving problems. In this sense, the whole point of education and learning is to develop a conditioned aptitude for applied reflective thinking. It matters little whether that thinking comes into existence spontaneously or deliberately. Being able to draw upon certain latent principles of effective thinking establishes the character of the educated person. This cohesive trait of personality and intellectual persistence is one of the most salient indicators that education has taken place. The established ability to utilize reflective thinking is so central to the purpose of education that the two concepts merge in meaning. This merging of terminology into common categories of conceptual similarity crosses other lines as well. Certain of these areas of apparent consensus and theoretical agreement have already been indicated. The mention and explicit detailing of each and every conceivable example is an impossible task. There are numerous examples, however, of the merging of terminology and concepts throughout the philosophical superstructure of education. Some of these cases relate specifically to reflective thinking and practice.

MERGING TERMINOLOGY AND CONCEPTS

A distinction might be made between reflective thinking and critical thinking. There is little doubt that both are essential to the educational process. While these two modes of thought can be delineated into nonidentical classifications, each conceptually involves the other. There is a fair amount of definitive overlapping between these closely related thinking processes. As is the case between reflective thinking and critical self-reflection, there is also an overlapping between critical thinking and critical self-reflection. The nuances of making meaningful distinctions between these concepts is very finely shaded. The distinctions may be mostly verbal rather than conceptual. These terms can be seen to refer to *nearly* identical ideas and their usages suggest that various theorists may be fishing in the same philosophical waters. For example, if a comparison is made between Mezirow's "Critical self-reflection" as discussed earlier, and Brookfield's "Critical Thinking" an overwhelming conceptual similarity emerges.

"Learning to think critically is one of the most significant activities of adult life. When we become critical thinkers we develop an awareness of the assumptions under which we, and others, think and act" (Brookfield, 1987, p.ix).

"---critical thinking is not seen as a wholly rational, mechanical activity. Emotive aspects, feelings, emotional responses, intuitions, sensing—are central to critical thinking in adult life. In particular, the ability to imagine alternative to one's current ways of thinking and living is one that often entails a deliberate break with rational modes of thought in order to prompt forward leaps in creativity" (Brookfield, 1987, p.12).

"Being a critical thinker involves more than cognitive activities such as logical reasoning or scrutinizing arguments for assertions unsupported by empirical evidence. Thinking critically involves our recognizing the assumptions underlying our beliefs and behaviors. It means we can give justification for

our ideas and actions. Most important, perhaps, it means we try to judge the rationality of these justifications---" (Brookfield, 1987, p.13).

"Skilled critical questioning is one of the most effective means through which ingrained assumptions can be externalized---" (Brookfield, 1987, p.92).

"Critical questioning—that is, questions designed to elicit the assumptions underlying our thoughts and actions— is a specific form of questioning. It is concerned not so much with eliciting information as with prompting reflective analysis---" (Brookfield, 1987, p.93).

"---Taking a critical look at the assumptions by which we live is not an easy task, either cognitively or emotionally. It requires hard intellectual work for us to suspend our conventional beliefs and look for the taken-for-granted assumptions influencing our relationships, work behavior, and political conduct. It also takes considerable emotional strength and psychological courage to admit to ourselves that our familiar explanations and allegiances might need to be rethought and revised" (Brookfield, 1987, p.112).

Hints of Mezirow are found throughout the preceding passages. Comparing Brookfield's statements with the earlier quotes from Mezirow reveals a mutual subscription to similar concepts.

The philosophical and theoretical literature of education in general, adult education is particular, and many related interdisciplinary fields contain references to similar ideas that masquerade under a variety of common names. There are, to be sure, certain differences in the use of terms by different theorists, but the congruence of many concepts in reflective thinking and practice is often remarkable. The congruences and concomitant relationships are frequent enough and obvious enough to manifest the difficulty all theorists face in escaping the tautological nature of reflective thinking. The usual terms used to discuss reflective thinking and related topics follow expressively in a large conceptual circle and return eventually to a small number of basic ideas. It is fairly unusual for anyone to offer

a contribution that breaks entirely new ground. To do so unintentionally is even more unusual.

LANGUAGE, EDUCATION, AND PRACTICE

We may discount the fact that Wittgenstein was mainly engrossed with how language relates to the posing and solution of philosophical problems. His contributions to theory affecting reflective thinking and practice are incidental and indirect, and relate largely to a personal methodological orientation. Nevertheless, though degree may be disputed, there is little doubt that Wittgenstein's thinking has been expansive to the conceptual base of reflective theorizing. Many theorists and philosophers have made worthy contributions. The unusual contribution and the uniqueness of Wittgenstein for reflective thinking inheres in the parallel difficulties of working within a linguistically determined frame of tautological reference.

Others, who are closely associated with current efforts endorsing reflective thinking and practice in education, have found the facilitative functions of language pervasive. Robert J. Yinger, for example, finds a wide interpretative use of language vital to practice. Language is the consummate tool for formulating and communicating the many mechanisms of practice.

"The foundation of learning practice is to learn to think and act in appropriate ways, that is, to learn the language of effective practice. When I use the term *language*, I use it broadly. It includes words and sayings practitioners use within a profession. More importantly, language of practice refers to modes of thinking and acting. A spoken language includes a syntax, a semantics, and a pragmatics. Likewise, a language of practice includes a

logic or grammar for thought and action, a system of meaning, and criteria and guidelines for effective practice" (Yinger, 1990, p.89).

Yinger emphasizes that language is something more than words. A very broadly construed notion of language includes thoughts, actions, and the distinctive aura that comprises and compels a practice.

"A language of practice is not primarily a verbal matter; it also includes embodied structures of meaning that are a part of orientation, movement, and manipulation (Johnson, 1987). It is not limited to speaking about or representing practice to oneself or others. Rather, a language of practice is a set of integrated patterns of thought and action. These patterns themselves constitute a kind of syntax and semantics for action. The words and phrases in this language are behaviors, activities, and routines. As such, a language of practice is found in the practitioner's action rather than speech. It is rarely heard, but it is seen and felt" (Yinger, 1990, p.89).

Along these same lines, the usefulness of language to practice is both creative and contextual.

"A language of practice consists of patterns of thought and action useful for both contemplation and performance. For instance, when one faces a problem, one does not usually try to solve it from scratch. The problem activates stored patterns, which become the foundation for creative thought. The use of a pattern language, then, is responsive and sensitive to context. Goals and means are intimately connected. Standard processes are adapted to produce unique forms. The use of a pattern language builds upon the existing state of affairs to make it more whole, more unified, more complete. Problem solving becomes a process of differentiation, beginning with the wholes and proceeding through a step-by-step unfolding of the parts" (Yinger, 1990, p.90).

A clear distinction can be drawn between routine actions (practice) which require little thought beyond initial learning, and more complicated situations that demand innovation. Actions undertaken in these latter types of situations are of necessity freshly creative and based on immediate needs. Often, a clear process of intentional reflective thinking *creates* the contents of action that carries practice into new regions. The stale and familiar actions of routine practice, over time, are virtually automatic and require a minimum

of conscious thought. Tacit knowledge is the ready source for the performance of routine actions. The thinking processes leading to the rules, procedures, and direction of familiar actions have already taken place. The results of previous thoughts have been carefully overlearned until they become ingrained in an inarticulated understanding belonging to a pre-linguistic mental reservoir of potential thought. Therefore, the thoughts and language that permeates new or unfamiliar situations require a conscious effort, and the approach is more complex. In this environment thoughts and language must be inventive in trying plausible solutions beyond the simple intuitive awareness of how to act. Successful practice adapted to entirely new situations strives towards originality and is directed by manipulative reflective thought that imaginatively combines and adjusts past associations and patterns.

"---to the degree that patterns are organized in repeated ways, the action is called routine or scripted. When patterns are organized newly each time, the action is improvisational or creative. Regardless of the form taken by the conversation or practice, it is grounded in a basic repertoire, a language of practice" (Yinger, 1990, p.90).

Language is of paramount importance to any implicit concept of educational practice. Education *is*, to a significant degree, conversation. It is a growing and changing dialogue between authorities purporting to have an acquaintance with knowledge, and the developing thought processes of student novices. Speaking, reading, and writing comprise only the most obvious linguistic elements associated with the practice of education. Also included are many unspoken attitudes, emotions, implied perspectives, and indiscrete values. The language of educational practice includes not only special words and sentences that compound into ideas, but also many conceptual leanings relating to social mores. Popular values such as fairness, honesty, and truthfulness are considered significant parts of educational practice. Certainly

one could be educated without absorbing any of these values. Education of this sort might not be very productive of attitudes and activities oriented towards the social good. Technically, however, it might be equal or superior to education saturated with presumably worthwhile values. Some of these leanings are socially inspired suppositions of morality and are drawn from tradition without any evidence of validity beyond cultural acceptability. Partially because of such factors, the language of practice as applied to education has a distinct and recognizable flavor and character. The practitioners of education are fairly sure of when they subscribe to principles of action that result in an educational inception. The growing language of practice assists practitioners in drawing the knowledgeable boundaries that constitutes the concepts of education. With an intrusive and subtle complexity that is often inobvious, many social, cultural, and moral elements are inserted into these always changing and developing concepts. The language of practice often carries with it the unnoticed ghosts of social and cultural innuendo hidden in the contexts of application.

The reflective capacity of education depends almost entirely on the expressive qualities of the language employed by its practitioners. In this sense, language is an uncontained conceptually limiting or expanding device. The language of educational practice clearly conscripts its scope as a profession and as an experience. The range of research and content is largely, if not entirely, determined by the language of practice. The popular meaning of education cannot find much expression beyond the experiential limitations imposed by the prescribed language of its' practice. This exemplifies an automatic factoring of the educational experience based upon a measurement explicit in the expressive limits of language. It is difficult to imagine any element of greater significance in delineating the *possible* impact of reflective thinking and practice, either within education or elsewhere.

CHAPTER V

THE REFLECTIVE IDENTITY: IMPROVEMENT, TECHNIQUE, TERMINOLOGY AND APHORISMS

IMPROVEMENT AS THE AIM OF REFLECTIVE THINKING

It is fairly self-evident that *rational* human beings are unlikely to knowingly engage in actions that are not somehow viewed as desirable or beneficial. The usual observance of this tenet of human nature may be as simplistic as an overt expression of seeking pleasure and avoiding pain. On a more complex social level, government sponsored social engineering provides an example of a magnified effort to create improvements and benefits for large numbers of people. Many examples can be found, throughout the history of human existence, to illustrate that rational people, under normal circumstances, base their actions on a perception of benefit. There is room for disagreement and controversy about what may be considered beneficial. The driving incentive to act, however, seems to be motivated by a belief in some impending good or favorable outcome.

This maxim may hold true even in cases as extreme as murder and mayhem. The beneficial results of criminal acts are wholly elusive to normally socialized people, but from the warped perspective of the habitual criminal may seem to hold great promise. The selfish benefits of ill-gotten gains or the inner satisfactions of lust or greed may be consciously weighed against the risks of getting caught and punished. This arena of deviant thought

processing constitutes the hostile domain of the reflective criminal mind. It cannot be asserted that reflective thinking is always directed towards the social good. It is a fact of life that human beings sometimes base their actions on negative emotions such as fear, anger, or hate. Despite the eventual outcome, even these negative agents for action may *seem* beneficial in terms of the satisfying feelings that may be elicited. The unfortunate results of these actions may fall far short of an improved situation. Mistakes in judgment are common and outcome may not match intent. The basis of a rationale towards improvement remains just the same.

The narrow view that the criminal holds of reality is interesting and may contain some insights applicable to the actions of other people. It may be argued that criminals do not adequately consider the consequences of their actions. They are not really reflective thinkers, or their reflections are grossly mistaken or incomplete. Others would argue that criminal actions are irrational and do not involve any reflective thought. The fact remains, however, that the successful criminal thinks ahead and carefully. His or her actions are in accord with some rationale or purpose. Perhaps the actions deriving from the erratic foundations for reasoning within the criminal mind are reflective; merely flawed or not reflective enough.

This line of reasoning can be extended, as a kind of analogy, to include the practice of education. The effectiveness and enduring rationale of an educational program may depend largely on the degree of reflective thought that goes into formulating practice. The need for reflective planning seems obvious and yet is often ignored as a means of facilitating improvement and avoiding problems in education. The increased awareness of a need for reflective thinking and practice may be a reaction to some of the mistakes of the past. If

indeed reflective thinking can bring about improvements in direct proportion to its intensity and focus, then its use in education and teaching should be augmented on a daily basis. There is a great deal of evidence of a non-empirical variety that a reflective approach to education will produce outstanding results. This *educated suspicion* may be well worth the additional time and effort that reflective thinking and practice entails.

What are the benefits of reflective thought that can be translated into practice? The reflective educator is motivated by the promise of some benefit or improvement stemming from disconnected variables joined in new desirable associative relationships by the reflective process. This is a natural motivational and inspirational basis for inciting to purposeful human activity. The strongest evidence for this assertion depends on an appeal to reflective thought. There is small need to go outside the mind in search of empirical proof. This kind of universal human knowledge is indeed both innate and self-evident. The striving for some inductive proof in the form of specifiable probability has led to numerous trivial conclusions based on trivial research. On certain unmistakable occasions, what we know as human beings might be profitably utilized without meeting the requirements of verification. As reflective human beings we often know without any real need for evidence. The convincing evidence may be found later in the results. This kind of approach may be criticized as unscientific, but it is certainly simpler, more expedient, and clearly rational. To a certain extent, the post-modernist movement may be a correct reaction against the rigid excesses of methodology found in science.

Reflective thinking represents work, even in those instances where the foundations for action are based on tacit knowledge. At some earlier point in time, tacit knowledge has

been acquired and ingrained by involvement in an educational process. Learning situations are rarely effortless. They involve hard mental work and a conscious focusing of attention. It may be reasonably inferred that virtually all reflective thinking, tacitly contained or otherwise, has a beginning deriving from conscious intellectual learning efforts of some kind. Reflective thinking is predisposed by learning first in order to facilitate instrumental changes. Practice is, or should be, the end of reflective thought. Without the culminating influx of an active practice, reflective thought is totally pointless and seems to represent wasted effort. In turn, the consummate goal of all reflective practice is constant improvement.

Learning provides the experiential rationale that each individual builds on as a means of subjectively justifying actions. Reflective thinking begins by considering and revising the state of current knowledge in conjunction with relevant past experiences. Whether explicitly stated or not, improvement gages the success of reflective thought. Additionally, in the production of an evolving successful practice, there is little doubt of the enhancing role that a *desire* for improvement plays. A desire to do a better job motivates the individual through an urge towards emotional satisfaction. Concentrated reflective thinking is unlikely to occur unless a significant amount of intellectual and emotional discomfort is associated with previous results. Finding a better approach or a more efficient way to increase desirable outcome drives the reflective effort.

While reflective thoughts can be either spontaneous or deliberate, the impetus towards action or practice is nearly always deliberate. Therefore, thinking that may begin with unbridled spontaneity enters the action phase as purely deliberate. It is an apparent fact of professional life that responsibility, as a corollary of outcome, attaches to action or

practice. Practice actualizes the passive thinking stage and has consequences. At the point when reflective thoughts are acted on, they must be considered intentional rather than informative or theoretical. When reflective thoughts become practice, to be considered rational, they must be categorized as deliberate rather than spontaneous. The impulsiveness of spontaneity implies that the *application* of reflective thought has been limited. Deliberate actions, on the other hand, imply that the intentional process of reflective thought has been thoroughgoing. Perhaps the strongest objection to spontaneity in practice can be found in our inability to reflectively associate randomness and accidental consequences with *responsible* actions.

Improvement and the notion of benefit comprises the motivational aspect of reflective thinking and practice. This statement is based on the force of valid reasoning and argumentation rather than the submission of inductive evidence. It is a matter to reflectively consider. The natural human impulses to think and plan can serve us well in education and in other areas of life as well. This is especially true if viewed as an extension of what we are. In this light, the important goal of reflective improvement supersedes any trivial need to verify the mental steps necessary to progress. Empiricism is out of place. Often, verification can be safely bypassed without serious consequences. Some profound reflective thinkers have called this approach an application of common sense.

PRACTICAL TECHNIQUES FOR ACHIEVING A REFLECTIVE PRACTICE

Techniques can be viewed as valuable in establishing the practical connections of theory to practice. In an abstract sense, the unspecified general processes attributable to

techniques are the epitome of those mysterious and ineffable links existing between mind and matter. Language is the common bridge, i.e., the communicative mode by which these connections are expressed and made intelligible. It is the natural expressive vehicle that effectively transports theory to practice. The procedural and often tacit conversions of thoughts to actions utilizes various techniques to bring out and exemplify the crucial aspects of individual experiences. Widely used techniques such as journal writing enables the reflective thinker to organize his or her thoughts and to distill the essential points. Other useful techniques may be known only to the particular individual and may elicit a reflective process because of special associations.

Various assistive techniques which are operationalized through the automatic medium of language facilitates the movement and manipulation of personal conceptualizations leading to transformation. Free-wheeling reflective thought is an indeterminent and non-specific expeditor that coordinates the separate and often conflicting factors that orient the individual toward change and adaptation.

Technique can be anything that assists one towards the realization of presumably desirable change. Improvement is usually a predominate theme implied within the mechanisms of technique. In common with reflective thought itself, the techniques to achieve it cannot be prescriptively predetermined. They must remain flexible and subject to adjustment and change. Technique, in general, is a linguistically definable tool which may be specific on non-specific. The *contingent scope* of effective technique is *always* non-specific and non-prescriptive. This is in keeping to a conformity with free-form in reasoning and action. Reflective thought is capable of incorporating many techniques. Techniques can be

especially designed to fit the purposes of reflective thought. It is this freedom of mind in designing practice that produces innovation and interpretative mixes leading to creativity and discovery.

Potential techniques applicable to facilitating reflective thoughts seem almost infinite in number. They include an analysis of critical incidents, educational biographies, journal writing, repertory grids, the use of metaphor, conceptual mapping, and the Action-Reason-Thematic Technique (Brookfield; Dominicé; Lukinsky; Candy; Deshler; Peters; 1990). These formal techniques have been extensively developed by their proponents. Some, such as critical incident analysis, educational biographies, and journal writing have been widely utilized by educators and others in hundreds of diverse settings. The possibilities for additional and even more effective techniques are wide open. In the broad sense, technique is meant to be a knowledgeable facilitating device that assures a maximization of reflective potential. Various techniques may be used alone or in combination. To the end of achieving the ultimate in reflective potential, the development of useful techniques deserves greater attention. Expansive techniques assist reflective thinkers to focus their organizing and comparative efforts in systemic fashions and to become productive innovators.

The value to education and society in developing and expanding reflective techniques is obvious. Perhaps, over a period of time, it may become possible to assemble a technology of human reflective capacity. Expansive technique would be a central concern. This kind of development would most likely not be a science, but rather a distinctive art-styling of semiformal psychologized insights. Reflective thinkers, educated in the use of existing techniques, and free to develop their own, may become adept at creating innovative

interpretations of the basic reflective process. The sometimes antithetical cross-purposes of reflective thinking and traditional scientific methodology limits efforts to design techniques as exclusive empirical paradigms. The more liberally construed and much less restrictive procedural designs of reflective thinking are inclined towards a disdain of any time-honored preferential deference to scientific method. Instead, techniques can be modeled after the pliant nature of the human mind, and its language and symbolism. If a reflective technology ever comes to fruition, it will require a drastic revision in thinking by professionals schooled in the procedural rigidity of scientific and statistical thought. The unsubstantial merits of clever randomness and undirected thought patterns will have to become more appreciated. Innovative discovery is hidden in the entangled masses of disassociated and ephemeral random possibility lurking within thought. A human reflective technology might provide the means of converting randomness and stray thoughts to a recognition of pattern and discrete probability.

Reflective thinking is akin to a delicate bird with markings that change rapidly and unpredictably while in flight. The synthesis and convergence of ideas that are mysteriously sorted, ordered and recombined through the process of reflective thought is analogous to such a bird. In anticipating the unfolding of the reflective process, the only clear rule is found in the recognition that no given rule is always appropriate. Reflective thought loses its identity when subjected to prescriptively generated rules. A relative consistency and intelligibility within the framework of the human psyche are the only requirements in devising techniques. A prescriptive methodology and the corresponding psychological attachment to some number of authority-approved or time-honored techniques is inherently undesirable.

Reflective thinking is unlikely to be accentuated by emphasizing anything that contradicts the major principle of free-form reasoning.

THE TERMINOLOGY OF REFLECTIVE THINKING AND PRACTICE AND THE DIFFICULT TASK OF OPERATIONAL DEFINITION

The technical terminology of reflective thinking and practice is extensive. Conceptualized jargon permeates its study. Many of the words and word combinations used by theorists are meant to create special authentic meanings. Some usages are clear and specific, while many others are confusingly vague. The ongoing list of specialized terms appears endless. Each philosopher or theorist seems intent on contributing his or her exacting variations of terminology. This gross tendency towards verbal hair-splitting is a significant source of the ambiguity that confronts the job of clarification.

The following sample list, though extensive in terms of central importance, does not come close to being inclusive of the entire set of words pertaining to reflective thinking and practice. Many more currently exist and the possibilities for new verbal creations are infinite. This is but another example of the inherent excesses of language in explaining, while simultaneously complicating and compounding, the rational delineation of conceptualization. The fact that the words listed are free standing and outside the contextual shaping provided by discussion *within* theory makes meaning less apparent. In themselves, these words and word combinations are rather common and readily understandable. It is in their specialized usages and in the consequent attempts to formulate and verbalize obscurity-laden concepts that difficulties arise in clarity and comprehension. However, there is some advantage to be

gained from looking at a list of key terms in isolation from context. To a certain extent the purely linguistic etiology behind the verbal expression of related ideas is revealed. This list is illustrative of the excess in variety that often overwhelms the mind's capacity to control the influx and intermingling of variable notions. Also, the overzealous temptation to give a word some slightly different twist is strengthened in the effort to suggest the origination of new contexts among established ideas. Consider the list.

Think	reflection-on-action	beliefs
Reflection	reflection-in-action	transformation
experience	reflection-for-action	transformative learning
mind/matter	reflection-for-practice	action
subjective	knowing-in-action	practice
objective	artistry	practical action
reflective thinking	reflective learning	action research
reflective process	reflecting-on-reflection	action learning
reflective engagement	self-assessment	meaning structure
moral reflection	improvement	meaning perspective
deliberative reflection	tacit knowledge	reflective judgment
relational reflection	implicit knowledge	personal construct
critical reflection	procedural knowledge	metaphor
critical self-reflection	theory	interpretation
critical analysis	theories-in-use	consciousness raising
critical thinking	espoused theories	habits of expectation
reflective practitioner	assumptions	ill-structured problem

creativity	analytic statement	dialogue
language	value statement	monologue
methodology	metacognition	description
value	intuition	explanation
patterns of mind	mediated thought	speculation
pattern recognition	mental grammar	imprinting.
synthetic statement	conversation	
implicit epistemic assumption		

In analyzing this list of words it is possible to demonstrate a serious problem already mentioned. This problem involves the limited effectiveness and scope of meaning contained in tautological definitions, explanations, and descriptions. A tautology is a sentence or proposition in which the subject and predicate define each other. A tautology is a declarative verbal equivalency in which the only reference is a self-reference. Consider the implications of the following sentence which is a statement *about* the list above. "The list of seventy-two words above illustrates the kind of *terms* used in *explaining* and *describing reflection*." Notice that the sentence you have just read contains "words" and "terms" (plural synonyms for language), "explaining," "describing," and "reflection." This sentence makes a point. *We cannot discuss the concept of reflection or the language by which the concept is enunciated without making use of the same language either in identical terms or in synonyms for those terms.* Try a simple experiment. Attempt to write about or discuss reflective thinking and practice *without* using any of the words listed or a synonym. The evidence of the tautological and self-referent nature of reflection is inescapable. Two examples of verbal tautologies familiar to students of philosophy are found in the following sentences. "A bachelor is an unmarried

man." and "a bald-headed man is a man with no hair on his head." Attempts to explain reflection, though more complex, are like these two examples. Discussing reflection places one in the midst of the self-defining trap. Tautological explanation tells us little beyond a circular verbal exchange involving the use of meaning synonyms. We are left with extensive discussions consisting of words defining or repeating other words of identical or nearly identical meaning. To say that "X is X" is to say nothing beyond identity. What insights can we possibly gain from enclosed definitions and circular verbal expositions? The understanding to be gained is that this is the case.

Guessing at guessing.

It is interesting to take some of the words and word combinations contained in the list and guess at what they mean apart from context. This simple approach may be about as efficient as any other in establishing a general meaning. Some possibilities are listed below.

1. *Reflection-on-action*. This may mean that someone thinks about something in advance of doing it. Reflection-on-action is a kind of hypothetical account of what will happen if a certain course of action is followed. Reflection-on-action is a mental anticipation of what seems likely to occur if certain things are done; i.e., certain actions are taken. Schön visualized reflection-on-action as thinking about something *after* having acted (Schön, 1983). Either way, reflection-on-action seems to refer to a mechanism of the thought processes directed towards an intentional styling or designing of competent performance. Reflection-on-action is a considered thoughtfulness about the consequential effects of acting in some presumably purposeful manner.

2. *Reflections-in-action*. This combination of words seems to refer to thinking about actions at the same time, or very close to the same time, as they are being performed. The thoughts and corresponding actions appear to coincide chronologically. Thoughts and actions are *almost* simultaneous, with thoughts occurring only slightly before.
3. *Reflection-for-action*. This combination of words may mean trying to think of something to do as an action to bring about certain results. Reflection-for-action appears to mean ✱ reflective planning or planning ahead to make something specific happen.
4. *Reflection-for-practice*. This appears to have the same meaning as reflection-for-action.
5. *Knowing-in-action*. These words seem to mean that at the same moment one is acting, he or she is doing so on the basis of knowledge, i.e., some degree of certainty is assumed in taking particular actions.
6. *Reflecting on reflection*. These words seem to refer to thinking about something already thought about in order to consider the results of the former in the light of the cognitive revelations of the latter.
7. *Critical thinking*. A questioning mental assessment directed at determining what may be incorrect or in error about an anticipated course of action. On another level, critical thinking may mean carefully examining theories, beliefs, and assumptions amid the social and cultural life of self and others as a way of saving that which is best and revising that which is lacking.

8. *Relational reflection*. Thinking about the plausible consequences of one event or action in relation to another event or action. Relational reflection may also involve the resolution of conflicting or contradictory ideas by a mental process of comparing, ordering, and sorting.
9. *Tacit knowledge*. Knowledge that is ingrained and automatic. Knowledge that produces action without much, if any, conscious effort. Tacit knowing involves overlearning or a familiarity with practice to the point of becoming a reflex action.
10. *Moral reflection*. An effort to rationally determine a right course of action by considering obligations, imperatives, and consequences. Trying to ascertain, by a process of thought, that which is right or good, or that which ought to be the case.
11. *Improvement*. Means making something better, i.e., producing better results or creating a benefit or advancement.
12. *Critical self-reflection*. Refers to examining one's assumptions and beliefs by a sometimes painful process of deep and questioning thought. The object of such thought is to plot courses of action leading to improvement. The end result may be transformative learning.
13. *Deliberative reflection*. This involves thinking about something intentionally for the express purpose of arriving at a correct conclusion that brings about an improvement.
14. *Assumptions*. Assumptions are those fundamental beliefs that are accepted without question and held to be true or valid as supporting premises for other lesser beliefs.

15. *Transformative learning.* A radical change in outlook and attitudes, which in turn produces a revision in actions. Transformative learning comes about as a consequence of questioning assumptions.
16. *Creativity.* The production of unusual combinations of thoughts that generates entirely new ideas or else results in new associative relationships among old ideas.
17. *Patterns of mind.* The natural human construction of mind that allows us to have a range of experiences and prohibits knowing beyond that range.
18. *Pattern recognition.* The ability of the mind to see order and reason within the configurations and shapes of allowable experience.

The preceding list of proposed general meanings are guesses at what these isolated terms *might* refer to. Reflective thinking *is* guessing about meaning. It may be useful for anyone engaged in reflective thinking to devise such a list. This is a suggested technique, i.e., one minor proposed beginning for a technology of human reflective capacity. Reflective thinking and acting are the ultimate manifestation of respect for originality in technique. Anyone who chooses to do so can initiate an effort.

The possibility of operational definition

For many years it was the pervasive dream of educators and social scientists to achieve a level of generalization and predictability comparable to the physical sciences. In that endless quest, educators and social scientists have borrowed heavily from the conceptual

models and terminology of fields such as physics and chemistry. Unfortunately, the linear models of the physical sciences have proven largely unadaptable and inappropriate to the study of human actions and behavior. The hoped for discovery of some distinct concepts of general law and predictability have failed to materialize. The efforts to imitate the physical sciences to gain a measure of their respectability and success is becoming passe. In the post-modernist era, the dream has largely vanished. The ever erratic and changeable patterns of human behavior in the face of scientific determinism has given the enduring advocates of free will new life. The limited success of scientific control has also been plagued by ethical questions. Potential mechanisms of control are scathingly criticized. Genetic research is an example of a field where real control and prediction may become an objective possibility. This possibility has been unwelcome in many quarters because such control is viewed as an exercise of power interfering with human moral choice.

Other uses of scientific methodology to explain and manipulate the mechanisms of human actions have been successful only in some very limited areas. The well developed science of political polling is one example of a field where social scientists have been successful in making accurate predictions. However, most attempts to generalize, predict, and control human behavior have proven unsuccessful, as well as ill-advised. The solid accomplishments of the physical sciences have often escaped education and the social sciences. One very popular adaptation from the physical sciences has been drawn from the concept of operationalism. The basics of this concept were originated by the physicist, P.W. Bridgman.

The idea behind operationalism is to give meaning to the terms of science by specifying how they are used. The operational meaning of a term is to be found in its mode of application. Length, for example, means the physical numerical operation whereby comparative measuring is used to provide an answer. According to operationalism, the meaning, and the only meaning of a term, resides in whatever measurable and clearly specifiable physical applications can be made under that name. The presumed appeal of operationalism to education and the social sciences has been in forcing the examination and reevaluation of terms having no specifiable concrete meaning. If no specific operation can be performed, a term may be said to have no meaning. Unfortunately, once again, the borrowing of this concept (operationalism) from the physical sciences has been largely a misapplied effort.

The greatest difficulty lies in the vastly different nature of the subject matters that the social sciences deal with. Educators and social scientists are most often concerned with non-discrete and qualitative entities that are value-laden, mental, or spiritual in nature. As such, the vain attempts to seriously operationalize terms has been difficult. Nevertheless, the concept of operationalism has been very helpful in forcing social scientists to think about the meaning of terminology. It might even be said that operationalism has been instrumental in producing quality-level reflective thought about the conceptual foundations of meaning within the social sciences and education. Totally meaningless jargon is less likely to find a secure hiding place within the contents of social research.

Reflective thinking and practice possesses all the characteristics of qualitative ambiguity and indiscreetness found in other human studies. As such, the benefits of

operationalism are limited. The direct conversion of reflective thought terminology to operational meaning may be impossible. Thought, as such, is totally subjective and ways of specifying any operations by which mental processes are revealed are tentative at best. All attempts to operationalize the terminology of "thought as process" must be indirect. The measurement of intelligence quotient, for example, is actually the quantifying of a contrived psychological construct rather than a physical reality. Anyone who would operationalize *directly* the meaning of intelligence is in the precarious position of trying to show how a made-up concept can be *physically* measured. In addition to this problem, anyone who would attempt to operationalize terms such as "reflective engagement" or "meaning perspective" faces the prospects of specifying the concrete operations of processes that are obscured and not well understood. We know fully well that reflective thoughts occur, but we really have no comprehension of what actually takes place. The imposing artistic and philosophical milieu of reflective thinking is most apparent in any speculative efforts to drag it kicking and screaming into the realm of scientific investigation.

It was stated near the beginning of this examination that attention to the operational definition of terms is especially crucial to establishing empirical connections for a concept such as reflective thinking and practice. It was also stated that the mental nature of reflection effectively limits any profound attempt at operational definition. With this latter statement in mind, it seems likely that operational definition must be reserved to the study of practice rather than thought. It is quite conceivable that effective measurement techniques can be established through statistical mediums for the discrete actions of practice. Indeed, this is already the case. On the other hand, the operationalizing of terms referring to the obscured mental processes that direct thought mechanisms seems unlikely. Any reasonably

successful operationalizing efforts will probably have to be restricted to movements within practice. The contingent values of reflective thinking are apt to remain expressions of the intangible and unspecifiable. Philosophy and undocumented speculation will continue to rule the day. Metaphysics is not a dead issue. New approaches superior to science are not out of the question.

APHORISMS ABOUT REFLECTION

It is difficult if not impossible to frame definite conclusions as to the definitive nature and identity of reflective thinking and practice. The many conceptual patterns that are formulated under the name of reflection are as diverse and varied as individual imaginations and perspectives. It is intellectually presumptuous and logically dangerous to draw definitive conclusions about a notion as pliable and adaptable as reflection. Instead of stating anything as definite as conclusions it seems more appropriate to create aphorisms. Aphorisms lack the logical force of conclusions. Sayings are much safer than conclusions. The use of aphorisms allows one to present a weaker version of what is perceived as descriptive and explanatory. An aphorism portrays a personal version of some reality. In this instance, aphorisms are meant to convey some general traits of reflective thinking and practice. It is not intended here to categorically deny that evidence exists to support definitive conclusions. It seems, however, an unlikely proposition. An abundance of argumentative logic can be produced to support various points of view. However, an insurmountable problem of inconsistency presides in trying to apply the evidence of conceptual form equally to all conceivable variations of reflection. Using aphorisms seems a reasonable compromise between indecision and the application of an overzealous presumption of insight. The

following statements are meant in the spirit of conveying an image of true identity, but not too strongly or without exception.

1. The analysis of reflective thinking *must* be reflective.
2. Reflective thinking is useful in doing science. Scientific methodology (procedural restrictions), however, is antithetical to studying reflective thinking.
3. Paradoxical self-reference is a condition and characteristic of reflective thinking.
4. Reflective practice or action may sometimes manifest itself without being preceded by any clear evidence of something resembling a reflective thinking process. Tacit knowing seems to operate in these instances.
5. It is clearly an easier matter to create operational definitions that apply to practice rather than thinking.
6. Some sense of pattern recognition is a prerequisite for reflective thinking.
7. We are unable to say *how* tacit knowledge produces the sudden and *apparently* unmediated appearance of reflective practice.

8. Conceptual overlapping exists between critical thinking, critical self-reflection, and reflective thinking. Numerous other examples of conceptual overlapping appear in considering the related concepts and terminologies of reflective thinking and practice.
9. The impingements of value and prejudice are inescapable in reflective thinking.
10. Any attempt to say what reflective thinking is suffers from the limitations of tautological argument.
11. Creativity is inseparable from reflective thinking.
12. The character of reflective thinking is passive, personal, and subjective. Practice is active, social, and objective.
13. The conceptual character of reflective thinking is flexible. The identity of reflective thinking assumes a variety of recognizable shapes and configurations.
14. Reflective thinking has a mystical aspect. Subjective interpretations are the presumed results of an interaction with some reality through an unknown and unknowable process. This is the source of the traditional philosophical problem involving the connection of mind to matter.
15. Reflective thought can be either spontaneous or deliberate.

16. Any attempt at defining or categorizing reflective thinking is likely to show symptoms of conceptual obscurity.
17. With the possible exception of certain tacit or intuitive manifestations, reflective thought *always* precedes practice.
18. The mental imagery of reflective thinking draws upon a variety of cognitive approaches. Step-related or mediated logic, intuitive or immediate knowing, and emotive inspirations each plays a part, either separately or in combinations, in the creation and culmination of reflective thinking.
19. Language and the interspersed dynamics of conversation and dialogue are logical vehicles for producing reflective thought.
20. Reflective thinking is a natural humanistic and artistic process.
21. Reflective thinking involves a method without method and, therefore, a certain pervasive ambiguity and vagueness should be expected in any definition.
22. The reflective thinking process is open-ended and stresses free-form in reasoning. Cognitive approach is unrestricted.
23. An improvement of some sort is often the goal of reflective thinking.

24. Reflective thinking is an experience as well as being about the understanding and expansion of other experiences.
25. Reflective thinking is connected to logical manipulations that are in turn associated with the uses of linguistic abilities.
26. The scope of experience determines perspective and perspective limits or extends reflective thinking.

These pronouncements in the form of aphorisms cannot be thought of as either conclusive or exhaustive. The growing innovative conceptualizations of reflective thinking and practice are endless. Likewise, the innovative adaptations of thinking to practice seem infinite. Studying the theoretical and philosophical foundations of reflective thinking and practice is difficult precisely because so many legitimate meanings exist. Many more will exist as various subcategory concepts develop and grow. It seems unlikely that it will ever be possible to say what reflective thinking is in a purely definitive sense. Reflective thinking is the devise of human ingenuity whereby other concepts are clarified and expanded. In the process, reflective thinking is an expanding concept. Reflective thinking and practice are products of imagination and creativity and paradoxically, imagination and creativity are the products of reflective thinking.

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