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It is the theory within each teacher that must become the central subject matter for teacher education.

Teacher education as theory development

by William H. Schubert

As teacher educators concerned with educational foundations, we seek to teach teachers to be more philosophical and self-reflective. Although our efforts are well-intentioned, we often find disinterest. Teachers tell us that educational foundations are dry and useless theory. We, on the contrary, know of the deep and personal growth that can accrue from study in these areas. Why does disinterest persist on the part of teachers, and what can be done about it?¹

Conditions, Teachers, and Theories

In a world of considerable uncertainty, daily news-casts and papers bombard teachers with tragedies of war, catastrophe, impingement, violence, illness and accident. They convey the dread notion that if such is not already one's plight, he/she is momentarily blessed with good fortune and had better tread carefully. In this set of conditions teachers must relate to students whose backgrounds they scarcely know, and teach them to value that which is often of dubious merit. Indeed, life in classrooms accentuates the alienation and despair, but also the potential for growth, in what Maxine Greene so aptly labels "teacher as stranger."²

We want to encourage teachers to examine the fundamental views that give them equilibrium in chaotic times. We hear them lament that theory is boring and claim that they need practical devices to edge their way toward increased stability. We know that these are merely tricks which take away symptoms, not problems. Yet, we must ask what does their desire for tricks of the trade symbolize? Surely, it represents a psychological striving to learn and

grow. To this end, we ask them to study educational issues and assumptions that undergird them. Such a request may be profoundly dangerous to the stability that they hold in slim grasp. As Natanson poignantly observes:

It is, after all, profoundly unsettling to be forced to examine one's oldest and deepest beliefs. How can we be sure that what will follow analysis will be a fair exchange for what we had before? And what assurance is there that philosophy will bring satisfaction or contentment? In the recesses of his mother wit, mundane man clings to what he knows in fear of what he does not know. . . . He knows and is involved in manifold ways in the large commerce of reality. It is the limits of uncertainty which threaten him, and it is those limits which the philosopher probes. Thus, mundanity and philosophy complement each other in strange ways and reinforce each other through tension and opposition. Out of the conflict between them arises the unity of the self.³

Do we seriously attempt to relate the pattern of beliefs already within teachers to the extant theoretical literature that we ask them to read and integrate into themselves? As we ask them to become more philosophical, do we heed the Deweyan admonition to start where the student is, the same admonition that we tell teachers to follow? Do we begin by inspiring serious reflection on the constructs or theories that their cultural experience forms to guide their personal and professional lives? Or, do we lay alternative scholarly writings before them and expect that increased meaning and direction will accrue automatically through intellectualized reading and discussion? In most cases such literature has little or no perceived relation to teachers' personal dilemmas.

Can we avoid asking, as did Plato in the *Meno*: How can one come to know something unless one already almost knows it? Put another way, to draw an analogy from Herbart, how can ideas that are new to us enter an apperceptive mass that has no kinship to the novel that tries to penetrate it?

Where must we begin to bring the meaning of foundational studies to teachers whose experience has amassed no perceived kinship to the likes of Aristotle, Kant, Hegel and Dewey? I submit that we must enable teachers to recognize that their labyrinth⁴ of experiential patterns is, in fact, a theory most worthy of study. We need to begin by enabling teachers to assert a tighter grip on their own labyrinth, that hodgepodge of hopes, ideals, fears, constraints and beliefs that guides their action. We must enable them to turn their study inward to the electro-chemical, cultural-spiritual pattern that *is* the changing theory of their existence. It is within them that teachers will find a kind of theory that is far from useless because it is the theory that they are. Only as they begin to study and reconstruct this theory will it be possible for them to genuinely integrate extant philosophy and theory in a way that contributes to meaning and direction in their lives.

A Theory Within: Precedents

I want to argue that there exist precedents for the notion that a person *is*, in fact, the theory of his/her life situations. Let us keep in mind, as we consider examples, that teacher education is selected as an illustration only, and the larger idea advanced here is that in teaching any level the prime focus must be given to the theory within

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learners. Weimer expresses the idea of theory within organisms cogently:

In order to survive, an organism must come to know its environment The mere fact of survival implies that an organism has been effective in maintaining the appropriate commerce with its environment. The nervous system of the organism is responsible for this commerce. How does the nervous system function? How did it come to behave as it does? The answer, literally rather than metaphorically, is that the nervous system functions as a theory of the environment of the organism; it makes inferences about environmental contingencies.⁵

Succinctly put by Ortega y Gasset, "Every life is a point of view directed upon the universe."⁶ The organism, or teacher, whom we attempt to inspire toward greater reflectivity, has/is a theory already.

How does theory conceived as a changing viewpoint within teachers become improved and refined? Weimer cites Sellers' contention that language gives human action causes as well as reasons.⁷ If theories within teachers, albeit partially unconscious ones, exist as powerful and personal constructs that guide their survival, we who seek to improve teachers' perspectives must acknowledge their theories as important subject matter for foundational study. Theory-building thus becomes, not only a devising of systems of explanation or prescription, but a bringing to conscious articulation of the patterns that teachers use to interpret and evaluate experience. Through the use of overt language, we may enable refinement of covert languages of the nervous system itself.

While I do not intend to argue that current neurological research is a panacea to perennial educational dilemmas, I do suggest that it has profound implications for education. One of its main contributions is to erode dualistic thought that so long has debilitated progress on issues of prime importance.

Neurological research by Sperry offers educational insight as it helps to dissolve the dualism of brain and mind, of neurological structure and function: "Within the brain we pass conceptually in a single continuum from subnuclear particles, to molecules, to cells, to cerebral processes with consciousness."⁸ He further argues for a unifying view of mind and brain.⁹ The whole of our daily experience continuously reconstructs the building process itself as well as the knowledge and value content stored. Rather than assume that educators must determine the intricate character of neurological structures that facilitate knowledge and value acquisition, be they feature detectors or innate ideas or the *tabula rasa*, we might do better to ponder as an analogy Frank Lloyd Wright's architectural insight that form follows function.

This analogy is most appropriate to the essence of developmental psychology, viz., that the form of our experience with the world creates structures through which we perceive and categorize subsequent experience. The debate about innate organizing structures pales before the notion of evolution or development. That we create our own futures, as the modern adage goes, may be done with much greater frequency than so-called futurists believe. It may occur continuously in the reconstruction of experience in each person's life.

As we travel backward through the above quote by Sperry, we see that our thoughts are formed by subnuclear particles—unique, beautiful combinations of them, the ar-

chitecture of which does not belittle the value of human dignity. Traveling a bit further, with the guidance of today's particle physicists¹⁰ who search after quarks, we see even the dualism of matter and energy extinguished. One day it may be more than metaphorical that quarks, basic components of us all, are named *up*, *down*, *strange*, *charm*, *truth* and *beauty*.

This symbolizes the interactivity of structure, content and function, resulting in the kind of position that Kohlberg and Mayer explicate in their outline of development as the aim of education. They argue for a synthesis of Deweyan and Piagetian thought which they regard as an interactionist epistemology.¹¹ Piaget, himself, concludes that he justifies " . . . that cognitive functions are an extension of organic regulations and constitute a differentiated organ for regulating exchanges with the external world."¹² Dewey and Bentley, however, anticipate and move beyond this interactionist position, by developing the idea of "transaction" to denote the partnership of organism and environment.¹³ The interplay of organism and environment makes the distinction between the two blur; thus, challenging another dualism that has contributed no small measure to ecological dissonance.¹⁴ Theories, as constructs within teachers, are both created by and represent the environment and the teachers.

Sperry's pioneering work on functional differences between the right and left hemispheres of the brain is built upon by Ornstein who concludes that, "Much modern research, for instance, shows our ordinary consciousness to be a *construction* of the world, a *best guess* about the nature of reality. Yet rarely, if ever, in psychology or education classes is this fact brought home to students and made part of their experiences."¹⁵ Herein lies potential for the resolution of the subjective/objective dualism. That which is usually considered theoretical in scholarly circles has the air of public knowledge, i.e., it is generalizable.

Personal knowledge, as in the case of a teacher's beliefs, is usually considered subjective and less credible. While such knowledge is unique to an individual, it is none the less objective, for as Polanyi argues, much that is considered objective is built on a succession of subjective assumptions, particularly those about viable epistemological bases.¹⁶ A teacher's own theory of the world, rudimentary though it may be, is a primary guide to action for his/her life in general and as an educator. Since neurological structures function throughout the body, the entire body itself with its muscle memory and intricate cellular adaptations, may be as justifiably labeled a theory of human functioning as extant written theories of academe.

This theory within the human organism, then, how is it formed? History is replete with explanations. Jaynes¹⁷ provocatively argues that consciousness as we know it is a relatively new phenomenon, approximately four thousand years old. Based on elaborate historical and neurological research, he explains that early humans followed commands from voices or schizophrenia-like hallucinations that they thought emanated from gods. This is not unlike the interpretation of early man's intellectual relationship with nature and cosmos provided by Frankfort, et al.,¹⁸ who contend that in mythopoeic cosmologies nature was considered as Thou.

Humans, then, did not categorize and explain the universe. The universe was related to personally; not yet as an It, as it is today. The authors remind us of the theme from Plato's *Timaeus* that claims we are forever indebted

to our ancestors' time of oneness with nature that internalized for us a sense of number and category from the uniformity of night and day, seasonal change, and other natural bonds that are beyond our consciousness. Now we see the world as It, a thing to act upon, find out about, control and change; but the It that we act upon is still within us, too. It is part of our theory. Jaynes' contention that the human mind has commanding and obeying halves¹⁹ might well persist, for example, in today's classrooms where we find the image of teacher command and student obedience. This provides a provocative explanation for the lack of credibility granted to the student perspective or theory which is to be controlled and changed as It, rather than valued and understood as Thou. Examples are legion which suggest that the past is irrevocably part of our present, part of the theory that we are. Indeed, in this context, Jung's archetypes of the collective unconscious seem far from bizarre.²⁰

While the above historical perspectives may be a salient part of the origins of the theory within, there must be a good deal more. A prominent example is the debate about origins which continues to rage between eugenicists and eutheicists over the primacy of heredity and environment in making human beings what they are. Yet, the above historical perspectives apply here as well, and in their light, the dualism of heredity and environment blurs into undifferentiated human experience.

When does the creation of an organism begin? What environmental conditions influence the nature of conception and prenatal development? Might possibilities not include climate, the position of the planet, altitude, the gravitational field, the community atmosphere, the presence of toxic chemicals and yes, information on the chromosomes of multifarious ancestors? Are even parental genetic traits not environmental in that they are an intermediate stage amongst a multitude of prior influences? Is it not hereditary that a parent's cultural inheritance to scold a given act influences the child after birth? Overall, is it not enough to know that the theory that we are is an outgrowth of historical and current influences, and that these are often combinations of culture, biology and the inanimate?

All of these influences, and more, seem to be collected and organized in the theory that we are. Our body itself may extend into the environment farther than we realize. There exists some evidence that the processes produced by the human body extend considerably beyond the apparent body.²¹ These processes, known as mind in earlier days, are housed in, produced by, and producers of the neuro-mechanism. They become the theory within, an inseparable union of what was once called the mind-body dualism.

Implications for Teacher Education

What do we know about theories within teachers that will enable us to teach more effectively? Boulding anticipated the notion of a theory within persons in describing what he calls *the image*.²² By first delineating dimensions of his own image of the world, he explains how each person's location in time, space, personal relationships, natural operations, and emotional context is the rudimentary structure of their image of the world and how it works. He describes different degrees of impact that messages may have on that image. They may, for example: bypass the image; subtly change it; trigger a revolutionary change by striking a major pillar of support within it; reorganize or bolster the image; or, cast doubt or uncertainty on the

image. Boulding also describes images as having value weights, differing degrees of strength or weakness; and he calls for an integration of the disciplines to provide more holistic knowledge of the image. Such knowledge is needed because of the image's critical role in social and psychological affairs. Surely, teacher education is thoroughly embedded in such affairs.

A number of other authors use different language to express an essentially similar idea as an image or theory that is the essence of human activity. In his autobiographical search, Pearce refers to the "cosmic egg" as "... the sum total of our notions of what the world is, notions which define what reality *can be* for us."²³ Among major perspectives on human brain functioning, we find complementary views: Lilly refers to the organization of similar experiences into "programs," which evolve into increasingly elaborate "metaprograms," and "supraprograms."²⁴

Hart labels these overarching tenets "prosters," and contends that an important educational implication of current brain research is that the normal brain is a highly efficient processor and organizer of experience.²⁵ He suggests that it is indeed puerile to expend a great deal of time pre-organizing curricula for input into the brain. He compares such endeavors to telling the lungs how to breathe or the heart how to pump blood. Exposure, he asserts, is more important than pre-specification.²⁶ Thus, we might conclude that teacher education would best progress by exposing teachers to more of the theory within themselves, and to others who actively and consciously try to develop their own theories. Hopefully, those who can provide such examples are available in the faculties of teacher education.

How then does the brain proceed with organization? Have we clues to its methods for establishing overarching programs or theoretical tenets? Pugh²⁷ describes the human neurological system as a value driven decision system. He argues, presenting supportive data from diverse fields, that values are products of human evolution and genetic heritage. He interprets behavior in a context of social and intellectual motivations. If certain basic values are characteristically human, values not unlike those basic to Maslow's hierarchies,²⁸ then some generalizability about pillars of inner theories that guide human action may be possible.

Still, much remains specific to individuals whose pattern of personal values, theory, has been forged by engagement in experiences of unique character. That both generalizable and unique aspects of theories within persons can be revised, allows for education to play a formidable role in human evolution. Eccles and Popper²⁹ claim that the emergence of theories enables natural selection to lose its original violent character. False theories can now be corrected by non-violent criticism. The idea of theory within persons can be applied to this notion of scientific theory, as it implies the potential for evolution through the criticism provided by the educative process. Thus, theories within teachers evolve by self-reflection and interaction with others. The impact of the conscious, self-directed evolution of theories within teachers could, indeed, reach far into the culture itself; for, as Popper observes: "Non-violent cultural evolution is not just a utopian dream; it is, rather a possible result of the emergence of mind through natural selection."³⁰ To realize that our work as teacher educators is of evolutionary magnitude implies that we should seek greater knowledge of the theories within teachers with whom we work, if we wish to contribute to evolution in our own small niche.

Surely, to extend the effort to learn more about the personal theories of those whom we teach would put us in better stead than merely entering classrooms with stacks of notes and books about extant theories that do not relate to the theories already growing in teachers. By reaching into theories within teachers, we can enable philosophizing to become more real to them by speaking to the abstract constructs that guide their functioning. If values are keys to theories within teachers; and if we wish to teach them to refine and develop these theories, we must develop methodologies to discover those values and the theories they represent. The best way to do this would seem to be through highly personalized dialogue with teachers, but large classes, time and energy often prohibit this process. Thus, I suggest that suitable alternatives exist in the form of activities which stimulate self-reflection.

A Methodology

The question of methodology has at least two dimensions: descriptive and prescriptive. Empirically or descriptively, how can we learn about the theory of experience that guides teachers? As suggested in the previous section, much may be gleaned from frontiers of neurological research. Insight into life-guiding theories also accrues from serious introspection into the mysteries of human consciousness. Evidence from psychotherapy, biofeedback, hypnosis, parapsychology and Eastern methodologies³¹ indicates that much more than previously expected can become available to consciousness. The proper beginning of foundational study for teachers should be centered on foundations of their own functioning. While further research on the nature of human consciousness will likely be quite helpful, we must try to understand the theories within the teachers whom we teach, now. By preoccupying students with the writings of others, their attention is diverted away from theories within themselves that give foundation to their own lives. Moreover, such diversion may covertly teach teachers that their personal theory is much less worth serious study than extant theoretical documents.

It is the theory within each teacher that must become the central subject matter for teacher education. Freire³² suggests that this must be the case in the education of oppressed persons, and it is difficult to find populations that are not in some way oppressed. In the case of illiterates, with whom he worked, Freire found that they must not feel less human because they are illiterate; rather, that they are persons who through their awareness have worthwhile contributions to make, and through literacy can expand that awareness.

We who seek to foster a literacy of reflectiveness on the part of teachers reinforce the notion that teachers are less whole persons because they lack foundational expertise. We need to establish dialogue that enables them to see that they already possess foundations of a theory that they refine daily. Their development of this theory, however, is too often unconscious and could be done more effectively. Interpretive, normative, and critical perspectives that are available in foundational studies can help teachers clarify ambiguities, generate possible courses of action, and develop a basis for critique of proposed and actual consequences of action. Only as teachers begin to assert tighter grip on their own theory, will they be able to derive meaning and direction from the array of foundational literatures.

This leads to the second methodological point, the prescriptive. We need to help teachers come in closer touch with the theory within them. Insight, here, can be fostered by well-placed questions. For too long, however, we have acted on what Dewey called a logical rather than a psychological interpretation of subject matter.³³ We have assumed that, since theory guides practice, we must start with basic assumptions, proceed to the level of curricular and institutional planning, and then to daily practice. The logical interpretation ignores the deep embeddedness of teachers in practice. It is the improvement of their lives as teachers that impels them to pursue genuine study. If we are to be responsive to this concern, we must begin with the Deweyan psychological. We must enable teachers to translate expressed interests about their teaching experience into genuine human interests that often have roots in perennial problems addressed in the disciplines. This latter dimension pertains to the role that foundational literatures can play in teacher education; for such writings to bring increased meaning and direction, they must evolve from interest in theory that derives from within the teachers' lives.

In response to this need to begin with the psychological and move to the logical with teachers, I have begun to develop a methodological framework that builds upon the notion of theory within teachers derived from literatures reviewed earlier. Particularly pertinent is Kelly's "psychology of personal constructs," the fundamental postulate of which is: "A person's processes are psychologically channelized by the ways in which he (she) anticipates events."³⁴ This emphasis on anticipation speaks to the heart of teachers' concern for resolution of problems in their educational lives. In their understandable anxiety for immediate solutions, teachers are too willing to accept bandaid approaches that deal only with symptoms, not the roots of problems. That problems are grounded in situations, leads to the position that as one develops an integrated interpretation of those situations, one derives meaning and direction that empower the imagination of possible solutions. Kelly calls this "constructive alternativism" and summarizes the liberating function of person theory as follows:

Theories are the thinking of men who seek freedom amid swirling events. The theories comprise prior assumptions about certain realms of these events. To the extent that the events may, from these prior assumptions, be construed, predicted, and their relative courses charted, men may exercise control, and gain freedom for themselves in the process.³⁵

The question, then, is how to help teachers realize the theoretic import of their own uncertainties. I approach this problem by engaging teachers in discussion of preferences and assessments about their current situation. We then probe toward the grounding of their claims in foundational assumptions. The path toward assumptions is often paved with frustration as teachers realize that their decisions and actions are founded neither upon routine and daily planning nor even on long range goals and empirical research results.

Instead, the ground of decision and action can only be approached by enabling serious reflection on fundamental assumptions about such questions as: What is worthwhile to teach, to whom and why? How should education contribute to the good of the individual, society and culture? What is the nature of the human organism, its re-

lation to its milieu and its process of growth? By creating their responses to such questions, teachers enter deeper communication with the theory within them. Such communication is the seedbed for developing personal theories that add meaning and direction to their transactions with the world.³⁶

How can we guide teachers to this reflective realm? Exposure to lofty published discourse will be unlikely to penetrate the shell that protects fragile fragments of theory within. If, however, their concern is with the here-and-now, this is where we must begin. Therefore, I have devised a number of game-like methods to help teachers probe into the theory that shapes their educative lives. Two examples follow.³⁷

The first activity deals with teacher/student expectations. Teachers are asked to list five to ten characteristics that they would like to grant to all persons to help them live more fully functioning lives. Next, they share and defend their list of expectations in small groups, bolstering and clarifying the list. As they attempt to defend and clarify, they ask themselves and one another: What do I mean by each of the characteristics listed, and what do I mean by "fully-functioning?" Why do I consider each of the characteristics important? As teachers respond, their response in turn is extended a similar question: Why is that reason worthwhile, and is its meaning clear? This process leads teachers toward more fundamental levels of assumptions, pillars of their theory. The critical factor that brings relevance is that the process is begun from a point of current concern, i.e., from expectations which teachers hold for their students.

The next step in the activity consists of encouraging reflection on what teachers spend time doing with students. They focus on lesson plans that they actually use, and ask why they do these things. After three or four levels of questioning the reasons for their emphasis on certain kinds of lessons, they are asked to compare the reasons with ideal characteristics listed in the first part of the activity. Do their lesson plans foster the kind of ideals implied in the characteristics that they wish to bestow on humankind? If not, do differences stem from dissimilarity between reasons for the actual and ideal? If this is the case, and it often is, what accounts for these differences? What alterations could be made to increase consonance between the ideal and actual?

This activity may be a long way from the level of comparing expositions of an existentialist and pragmatist philosopher of education, but it enables teachers to see that their action is based on more fundamental considerations couched in an evolving theory within them. Moreover, they come to see themselves as theorists, and begin to view theory as a living foundation of the way they live. They begin to realize that it is through the continuous reconstruction of their theory of experience that they prepare the experiences they offer to students.

A second activity deals even more directly with students in the classroom lives of teachers. Teachers are asked to bring to class names of students in their classes and rate each one on three areas: achievement, happiness and justice. Ratings are numerical (for metaphorical rather than statistical purposes) using a +3 through -3 scale, with +3 being highest. *Achievement* ratings are interpreted as: How well does each student do what he/she is expected to do? *Happiness* focuses on: How happy overall, do you think each student is in class? *Justice* (using a loose interpretation of Rawls³⁸ conception of justice as

fairness): How fair, given what you know about each student's unique combination of experiences, feelings, prejudices, attitudes, aptitudes, etc. is the classroom situation for each? Teachers are advised that low ratings are not necessarily an evaluative reflection on them, but may be due to circumstantial or institutional constraints.

Results of the ratings are compared, often resulting in teacher realization that achievement is planned into the curriculum, but happiness and justice are not focused on as carefully. Teachers are then led to focus on possible explanations for patterns they see in the ratings, especially the low ones. What might be altered or introduced to overcome low ratings while not simultaneously diminishing other ratings? As teachers pursue such questions, they begin to realize that insight requires personal and public reflection on more fundamental assumptions. Thus, they learn that the foundation of educational improvement lies within their own perspective, the theory within them. As they grapple with the lifelong process of refining, clarifying and reconstructing that theory, they will be able to bring more of it into consciousness. It is in this striving that they will appreciate knowing the writings of others (philosophers, educational scholars and teachers) who have devoted lifetimes to public and/or personal theory building.

Summary and Possibilities

Evidence from neurological, philosophical, psychological, literary and educational sources points to the existence of a powerful image or theory within each person. It is a theory that is both strong and fragile, embodies desire and fear, hope and despair, and susceptibility to the erosions and creations of life's predicaments and fortunes. Such a theory guides human activity; and if a given human happens to be a teacher, it guides his/her teaching. The theory is a synthesis derived from past and present experience; yet, it may extend into the future; our anticipations account for much of our present. Its roots may extend back into our ancestral modes of perceptions and conceptions of the world. Whatever its particular composition, those who seek to educate teachers should help them search for the theory that guides their lives. One way to help this search is to employ activities that enable teachers to question assumptions that guide their action; and thereby, to examine, question and revise their theory.³⁹ The ultimate purpose of such activities is to inspire teachers to engage in serious reflection as a normal process of living. It is, in any event, questionable how far we can accompany them into the uncharted territory of their own theory. We can suggest questions to ponder and sources to read that facilitate this pondering; but, teachers must be liberated to explore and reconstruct. Overt education must diminish to allow self-education to spring forth.

Teachers who realize that they have, and strive to develop, a theory within them may, in turn, see their own students as theory builders. It is then that the old aphorism, "we teach what we are," can be given new purpose. As teachers see what they are with greater acuity, and as they are inspired to be more of what they want to be through reflection, they will build a more secure theory that cuts through the swirling turmoil of surface existence. As they become more aware of the theory that gives them meaning and direction, and thus become more fully themselves, they will be in better positions to help students to pursue the same fulfilling journey. The example of theory development as teacher education, the overt subject of

this article, should finally be an analogue for what education at all levels might become: the development of theories that persons are.⁴⁰ The principal educator in such a process must become the person whose theory is being developed.

Footnotes

1. I wish to express my deep appreciation to Ann Lynn Lopez Schubert for the sharing of ideas and critical comments about this paper, and for her assistance in editing and typing the final manuscript.
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6. See Greene, *Teacher as Stranger*, p. 119. From: Jose Ortega y Gasset, "The Doctrine of the Point of View," *The Modern Theme*.
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10. For examples, see: Fritjof Capra, *The Tao of Physics: An Explanation of the Parallels Between Modern Physics and Eastern Mysticism* (Bungay, Suffolk, England: The Chaucer Press, 1976); and Gary Zukav, *The Dancing Wu Li Masters: An Overview of the New Physics* (New York: Bantam, 1979).
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29. Karl R. Popper and John C. Eccles, *The Self and Its Brain* (London: Springer International, 1977).
30. *Ibid.*, p. 210.
31. See, for example: Arthur Koestler, *The Roots of Coincidence* (London: Pan Books, 1972); Daniel C. Dennett, *Brainstorms: Philosophical Essays on Mind and Psychology* (Montgomery, Vermont: Bradford Books, 1978); Ernest R. Hilgard, *Divided Consciousness: Multiple Controls in Human Thought and Action* (New York: John Wiley and Sons, 1977); Irvin D. Yalom, *The Theory and Practice of Group Psychotherapy* (New York: Basic Books, 1975); Alan Watts, *Psychotherapy East and West* (New York: Pantheon, 1961); and sources cited in notes 10, 15, and 21.
32. Paulo Freire, *Pedagogy of the Oppressed* (New York: Herder and Herder, 1970).
33. John Dewey, *Democracy and Education* (New York: Macmillan, 1916); in, 1966 Free Press Paperback Edition, see pp. 219-223 and 286-288.
34. George A. Kelly, *A Theory of Personality: The Psychology of Personal Constructs* (New York: W.W. Norton, 1963), p. 46. Also useful, is: M. Pope and T. Keen, *Personal Construct Psychology and Education* (New York: Academic Press, 1981).
35. Kelly, *A Theory of Personality*, p. 22.
36. For further related discussion, see: William H. Schubert, "Knowledge about Out-of-School Curricula," *Educational Forum*, 45, No. 2 (January 1981), pp. 185-199, and William H. Schubert, "The Foundational Character of Curriculum Inquiry;" A paper presented at the Annual Meeting of the American Educational Studies Association, Boston, November 6, 1981.
37. I have conducted the two activities discussed here with classes of graduate and undergraduate students at the University of Illinois since 1973. I acknowledge Jay H. Shores for contributions to these activities through discussions and applications at the University of Houston in 1976.
38. John Rawls, *A Theory of Justice* (Cambridge: Harvard University Press, 1971).
39. Other activities, toward this end, are portrayed in: William H. Schubert and Ann Lynn Lopez Schubert, "Teaching Curriculum Theory," *The Journal of Curriculum Theorizing*, 4, No. 2 (1982), in press.
40. Another avenue toward this position was advanced in: William H. Schubert and Ann Lynn Lopez Schubert, "Toward Curricula that are Of, By, and Therefore For Students," *The Journal of Curriculum Theorizing*, 3, No. 1 (1981), pp. 239-251.