

Toward an Alternative Research Paradigm for Small/Rural Schools: Beyond an Approximated Reality

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This paper, based in part on the work of Thomas Kuhn, argues that most research efforts relative to rural/small schools are based in "normal science" which means research firmly based upon previous scientific achievements; a kind of stockpiling of knowledge, that supplies the foundation for further practice. This preconceived reality of researchers attempts to force the nature of rural/small schools into a relatively inflexible box. A case is presented that at best this body of knowledge represents an approximated reality.

INTRODUCTION

"Do you believe in ghosts?"
 "No," I say.
 "Why not?"
 "Because they are unscientific." . . .
 "They contain no matter," I continue, "and have no energy and therefore, according to the laws of science, do not exist except in people's minds."
 . . . "of course, the laws of science contain no matter and have no energy either and therefore do not exist except in people's minds."

Robert M. Pirsig, 1974, p. 30

Approaches to the study of schooling are philosophically rooted and/or framed in reality bases unique to individuals or groups of researchers. Sergiovanni (1985) refers to these reality bases as mindscapes. He states, "Mindscapes are implicit mental frames through which supervisory reality and our place in this reality are envisioned" (p. 6). Although Sergiovanni's comment is aimed specifically at the field of supervision, the general thesis is applicable to a broader interpretation; the study of schooling as lived reality.

If reality bases are unique, then it follows that in studies of schooling the researcher's perception of reality and the questioning of reality are subject to critical analysis (Freire, 1970). Heisenberg (1958) suggests, "What we observe is not nature itself, but rather nature exposed to our method of questioning" (p. 81). Or as Ponder (1986) states, "It is the questions we ask that determine finally the answers we get" (p. 34). Epistemological efforts dealing with human activity (the study of schooling) must focus not only on answers to questions but also on why certain questions are posed and others ignored.

Mindscapes can be limited by conventional wisdom which Apple (1975) refers to as habits of thoughts. He states, ". . . our 'habits of thought' are exactly that: Habits that have become part of our taken-for-granted reality that has become so common-sensical that we have ceased even to question it" (p. 121).

Heisenberg (1958) suggests that ". . . every work or concept clear as it may seem to be, has only a limited range of applicability" (p. 125). Do educational theorists/researchers carry the burden of a preconceived set of historical notions about the educational experience to the study of schooling or does the innocence of the encounter shape their reality?

Kuhn (1970, p. 10) views most research efforts as grounded in "normal science" which means research firmly based upon previous scientific achievements; a kind of stockpiling of knowledge, these achievements supply the foundation of a particular scientific community for its further practice. This activity too often attempts ". . . to force nature into a relatively inflexible box" (Kuhn 1970, p. 24). Mindell (1985) sees this attempt of theory-matching as emanating from an interpretation of scientific research coached in the ". . . idea of a fixed state, which is a static picture, an unchanging description of a situation which has been broken up into parts" (p. 11).

Media hype as well as studies of schooling published in professional journals project the notion that the education or mis-education of American children has reached a crisis stage. We contend that if such a crisis does exist it is epistemological in nature and therefore deals with the construction of knowledge, its limits and validity. The remainder of this paper includes a critique of the knowledge base relative to rural/small schools, which include knowledge construction and validity. We argue that at best this body of knowledge represents an approximated reality.

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The Situation

Although one imagines that small/rural schools function in a somewhat more isolated and autonomous fashion than their larger counterparts, they have not remained immune from the larger cultural context of mandated reform measures. Reflective of this has been urban service delivery models being recommended and unsuccessfully applied to rural/small schools (Helge, 1985). This would be reason enough to discount the validity of most mandates. However, in addition to this problem of correspondence, lies a more obscure and complex problem, the manner in which knowledge itself is created. Contemporary descriptions or the knowledge/data base about how rural/small schools function has resulted from educational researchers' activities being grounded in a tradition of classical realism. This "rational" or Cartesian tradition is state-oriented (Mindell, 1985), reflecting the fixed routines of classical organizational theory based on bureaucracy and hierarchical structuring (Sirotnik & Oakes, 1981). Arguments can be made that recommendations for school improvement (National Commission on Excellence in Education, 1983; Bennett, 1986a, 1986b, 1988) have furnished educators with a deterministic or imposed reality of the "one best" way to give school (paint by numbers) instead of an unfolding reality which is the way of process science.

State of the Art of Scientific Research Activities

There is adequate evidence to suggest that a substantive paradigm shift in both natural and social science research is emerging (Capra, 1982; Ferguson, 1980; Gleick, 1987; Prigogne & Stengers, 1984). The term paradigm shift was popularized by the work of Thomas Kuhn (1970) who views paradigms as accepted models or patterns based on universally recognized scientific achievements. The shock waves of this shift are beginning to gain the attention of educational researchers. Andrews (1989) suggests that traditionally when researchers generated questions for which current methodology seemed inappropriate, they merely turned to more appropriate methodology. However, when researchers begin to question the very assumptions and concepts of their research orientation, then perhaps a real fundamental shift is in process. An occasion for change occurs after a particular research paradigm, usually dominant in an area of study, begins to deny rather than facilitate access to a phenomenological field by presenting unusual numbers of anomalies or novelties.

During the sixteenth and seventeenth centuries the metaphor of the universe as a machine was being formulated. There was one God who functioned as a clockmaker and made the world and everything in it. "If there is one God who made the world, He made it in a rational way. One set of laws, 'natural laws' covered everything and there were no exceptions" (LeShan, 1986, p. 66).

The metaphor of the world as a machine was founded on the revolutionary changes in physics and astronomy culminating in the achievements of Copernicus, Galileo

and Newton. An assumption of these pioneers' research efforts was that when enough knowledge about how the world functions was stockpiled, then everything could be explained in the same way. Their efforts provided the mental structure for the tradition "... that science is the business of describing nature more and more accurately, nature being all that is out there in the physical world, independent of ourselves" (LeShan, 1977, p. 65).

This grand vision of a world created in the manner of a machine was shattered, however, by twentieth century atomic physics. The classical "Newtonian" clockwork universe; the linear system of predictability or determinism where virtually every aspect of life was predetermined and expected from the division of cells in microscopic organisms to the orbital paths of planets was challenged by new discoveries. This transformation of thought and new ways of dealing with reality began with Einstein in his theory of relativity. Einstein proved through experiment and mathematical calculations that space and time are relative to one another and are not absolutes as believed under Newtonian thought.

Quantum theory introduced the concept of "randomness" into the deterministic framework of Newtonian thought. Pertaining to the atomic world, quantum mechanics detroys the deterministic world view by demonstrating that electrons jump around atoms in a totally unpredictable manner. According to Pagels (1982) "... there just isn't any physical law that will ever tell us when an electron is going to jump. The smallest wheels of the great clockwork, the atoms, do not obey deterministic laws" (p. 47).

Relatively new knowledge about such manners as nonlinearity, uncertainty, paradox, randomness, relativity, flux, process, determinism, fluctuations and the like have emerged from the hard sciences, mainly the field of physics. Gleick (1987) summarizes these revolutionary innovations when he states. "... relativity eliminated the Newtonian illusion of absolute space and time, quantum theory eliminated the Newtonian dream of a controllable measurement process; and chaos eliminates the Laplacian fantasy of deterministic probability" (p. 6).

These new insights, heavily couched in the concepts of evolution and process science, are being combined under the rubric of chaos (Prigogne & Stengers, 1984; Gleick, 1987) as a suggested new science. Simply defined chaos is random, recurrent behavior in deterministic systems (Gleick, 1987, p. 306).

A shift from the metaphor of God as a "clockmaker" to God as a "pinball player" or "dice player" will no doubt continue to impact the research activities of educational theorists. This shift from a vision of reality as a static, fixed, and stable condition waiting to be discovered, to a vision of reality that is in evolutionary process constantly unfolding indicates the need for alternate research procedures.

Rural/Small School Knowledge

Contained within research paradigms are notions about what exists to be studied, the nature of that reality, the

relationships between the observed and the observer, and the goal of the research endeavor (Stephens, 1985, p. 31). Additionally, in epistemological efforts it is useful to entertain questions as to what kind of knowledge is being talked about; the nature of the knowledge involved and the language in which this knowledge is expressed (Capra, 1980).

For the most part, current knowledge about rural/small schools and their effectiveness have evolved from summative educational research, based in the tradition of normal science. Schools can best be known through the perspective of those within the school environment. The influence of the observers' presence has been well documented in the literature of science (Einstein, 1950; Heisenberg, 1958). Studying school from a cultural perspective and acquiring and understanding the perceptions and viewpoints of the people within the school setting can bring about a more concrete reality base. Culture is both a group's way of doing things and the means by which people make sense of their presence within their setting (Heckman, Oakes, & Sirotnik, 1983).

Few rural/small school researchers, however, are looking within the school for the solutions to and an understanding of the problems facing education. Typically, rural/small schools are viewed by researchers who are distant outsiders and who neither know nor understand what is happening in the school. Often these outsiders assign meanings to school events and recommend changes that reflect their views and beliefs, incompatible with the views and beliefs of those people within the school.

Individuals (teachers and students) bring and develop a unique set of experiences, perceptions, beliefs, and values to the classroom each day. These variables, in interaction with the events of school, constitute a personal and collective reality of what is commonly referred to as the rural/small school.

Contemporary research efforts and the reporting of research findings accomplished through a paradigm of normal science reflects preconceived theories and world views which are used as interpretative modes for collected data. Little or no attention is given to the particular structuring, behavior, meanings, and belief systems that have evolved in the school (Heckman, et al., 1983).

Theories, evolving from a normal science paradigm, that form the basis for inquiry, either individually or collectively, are at best approximations of concrete reality. In 1950, Einstein declared ". . . that as far as the laws of mathematics refer to reality, they are not certain; as far as they are certain, they do not refer to reality" (p. 28). There is futility in advancing rhetoric about rural/small school descriptions until the context that gave form to the description is critiqued. Reasoned reflection is not limited to the statement or concept at hand but rather includes the conditions that gave birth to that statement or description; what is real is too often obscured by the obvious. Gadamer (1975, p. 259) states, "The harmony of all the details with the whole is the criterion of correct understanding."

According to Greene (1973), if educators want to be themselves and achieve something meaningful in the

world, then they need merely ". . . to think what [they] are doing" (p. 6). "In arriving at accurate interpretations, then, the inquirer must understand not only the object studied, including its context, but also the horizon, the forestructure of understanding, and the prejudices she or he brings to the task" (Culbertson, 1981, p. 3).

An argument can be made that researchers are encouraged to act as if they have no presence in their work. Individuals are the chief agents in the construction of knowledge, culture creators as well as culture bearers. Hence, educational researchers draw heavily upon their own experiential bases as method, thus recognizing as major resources the preconscious realms of experience (Miller, 1979).

We argue that researchers might expend more energy in examining the philosophic roots of the personal paradigmatic posture underpinning their efforts. This implies that researchers understand basic systems of philosophy and science and the relationships among particular philosophic and scientific positions with certain educational points of view.

A concern for order, clarity, and simplification has popularized the notion of and exaggerated the power of a normal science paradigm in research activity about rural/small schools. "Reconstructed logic" (what observers say the logic of scientific investigation appears to be) should be distinguished from "logic-in-use" (what scientists actually do) (Apple, 1975, p. 121). The popularity of reconstructed logic in educational research is grounded in a normal science tradition and is an outgrowth of a tendency on the part of some researchers to use the scientific method as a technology. This technological view has led to an orientation of prediction and control relative to the rural/small schools in an attempt to simplify the processes and eliminate ambiguity. Guided by the assumptions of certitude (fixed laws), research activity is deterministic. This leads to reductionism which has a tendency to result in dealing with educational variables that are amenable to technology, thus reducing science to its lowest common denominator.

A conceptual framework (paradigm) that reverses this trend is practical curriculum inquiry (Schwab, 1969, 1971, 1973, 1983). Practical curriculum inquiry is a workable, useful, everyday method of study based on the interaction among the people and the cultural and historical circumstances of the curriculum setting being studied. Ragan and Shepherd (1977) view the school curriculum as including ". . . all the experiences of children for which the school accepts responsibility" (p. 3). The researcher and participants, immersed in the curriculum setting, search for meaning and understanding of curriculum problems by studying the situation and interpreting its meanings. Decisions reached as a result of practical inquiry serve as a guide for possible action and necessary school change (Schubert, 1986; Schwab, 1969).

According to Schubert (1986), there are four assumptions undergirding the practical paradigm.

1. The source of problems is found in a state of affairs, not in the abstract conjuring of researchers who

tend to imagine similarities among situations that cannot be grouped together defensibly.

2. The method of practical curriculum inquiry is interaction with the state of affairs to be studied, rather than detached induction upon it and deduction about it.
3. The subject matter sought in the process of practical curriculum inquiry is situational insight and understanding, instead of lawlike generalizations that extend across a wide range of situations.
4. The end of practical curriculum inquiry is increased capacity to act morally and effectively in pedagogical situations, not primarily the generation of generalized, publishable knowledge (p. 289).

Researchers who adhere to these assumptions (a) focus on a particular educational setting, (b) search for insights into situationally specific problems through interaction with the actual educational setting being studied, and (c) increase the capacity for effective and moral decisions, direction, and meaning (Schubert, 1986).

The aim of the practical researcher is not only to seek knowledge, but to generate action as well. Viewing curriculum problems as practical problems which only can be solved by those with inside knowledge of the curriculum setting leads to educational reform which may be implemented effectively and purposefully (Reid, 1978).

DISCUSSION

From a state-oriented or fixed perspective, knowledge is treated as a static and stable condition. Knowledge is viewed as something out there to be known rather than as a dynamic process having an historical, cultural, economic, political and philosophical context. In order to adequately critique knowledge, its construction as well as its substance must be scrutinized and interpreted (Dobson & Dobson, 1987). Contained within contemporary rural/small school reform efforts is the treatment of findings emanating from research paradigms based in normal science as truth statements which are to be reduced to a practical level and implemented. This research activity is more akin to applied engineering than science as a descriptive function. This exercise, causal determinism as the dominant mode of thought, has contributed to the delusion and confusion of knowledge about rural/small schools.

The classical research questions dealing with rural/small schools are (a) who is to be taught what? (b) in what way? and (c) for what reasons? These are basic and practical questions which must be deliberated within a philosophical context dealing with broader questions of humanity and issues of science. What is real (ontology)? What is true (epistemology)? What is good (axiology)? A combined interpretation of these questions probably constitutes what has been referred to in the literature at various times as congruence (Aspy & Roebuck, 1977; Dobson & Dobson, 1987; Shaw, 1975), mindscape (Sergiovanni,

1985), perspective (Schubert, 1986) or more commonly as a world view. At a more conscious level when these sometimes lucid world views become thought and are articulated, educators have the makings of a research paradigm. From our perspective, the individual should be the heart of educational paradigms. Lukes (1973) makes a distinction between abstract and concrete individualism. Abstract individualism treats the individual apart from any cultural context. The abstract individual is seen as a concept which bears certain predetermined features that are used not only to explain but to determine appropriate behavior which is role-bound in a contrived reality.

On the other hand, concrete individualism conceives of the individual as a person, an agent of choice, "... a source of (yet to be discovered) intentional purposes, capable of valuing (yet to be discovered) activities and involvements and capable of (yet to be discovered) forms of self-development" (Macdonald, 1977, p. 10).

However, from a rational point of view, school reality based in a notion of concrete individualism is nonutilitarian because it defies a static definition, thus losing its usefulness in prediction and explanation. From a normal science tradition, researchers can only approximate a definition of rural/small schools. The dilemma growing out of this has been the creation of a language of approximation at the expense of a possible language of potentiality. The context for contemporary efforts at knowledge construction (research) about rural/small schools for the most part are based on rational paradigms. The primary focus of such efforts are on quantification and technique which assumes a rational goal-based system which is the very foundation of a normal science paradigm.

REFERENCES

1. Andrews, S. Changing research perspectives: A critical study of Elliot Eisner. *Journal of Curriculum and Supervision*. 1989, 4, 106-125.
2. Apple, M. Scientific interests and the nature of educational institutions. In W. Pinar (Ed.), *Curriculum theorizing: The reconceptualists*, (pp. 120-130). Berkeley, CA: McCutchan, 1975.
3. Aspy, D., & Roebuck, J. *Kids don't learn from people they don't like*. Amherst: Human Resources Development, 1977.
4. Bennett, W.J. *What works: Research about teaching and learning*. Washington, DC: United States Department of Education, 1986a.
5. Bennett, W.J. *First lessons: A report on elementary education in America*. Washington, DC: United States Department of Education, 1986b.
6. Bennett, W.J. *James Madison elementary school*. Washington, DC: United States Department of Education, 1988.

7. Capra, F. *The taos of physics*. New York: Bantam, 1980.
8. Culbertson, J. *Three epistemologies and the study of educational administration*. *UCEA Review*, 1981, 22, 1-5.
9. Dobson, R., & Dobson, J. Curriculum theorizing. *The Educational Forum*. 1987, 51, 275-284.
10. Einstein, A. *Out of my later years*. New York: Philosophical Library, 1950.
11. Ferguson, M. *The aquarian conspiracy: Personal and social transformation in the 1980s*. Boston: Houghton-Mifflin, 1980.
12. Freire, P. *Pedagogy of the oppressed*. New York: Seabury Press, 1970.
13. Gadamer, H. *Truth and method*. New York: Seabury, 1975.
14. Gleick, J. *Chaos: Making a new science*. New York: Penguin, 1987.
15. Greene, M. *Teacher as stranger*. Belmont, CA: Wadsworth, 1973.
16. Heckman, P., Oakes, J., & Sirotnik, K. Expanding the concepts of school renewal and change. *Educational Leadership*. 1983, 40, 26-32.
17. Heisenberg, W. *Physics and philosophy*. New York: Harper Torchbooks, 1958.
18. Helge, D. *Establishing an empirically determined national rural education agenda*. Bellingham, WA: Western Washington University, National Rural Development Institute, 1985.
19. Kuhn, T. *The structure of scientific revolutions*. Chicago: University of Chicago Press, 1970.
20. LeShan, L. The new development in science. *Life Times Forum for the New Age*. 1986, 1 (1), 65-69.
21. Lukes, S. *Individualism*. New York: Harper, 1973.
22. Macdonald, J. *Looking toward the future*. Paper presented at the Society for Professors of Curriculum, Houston, TX, 1977.
23. Miller, J. Curriculum theory: A recent history. *Journal of Curriculum Theorizing*. 1979, 11, 28-43.
24. Mindell, A. *Rivers way: The process science of dreambody*. Boston: Routledge & Kegan Paul, 1985.
25. National Commission on Excellence in Education. *A nation at risk: The imperative for educational reform*. Washington, DC: United States Government Printing Office, 1983.
26. Pagels, H. *The cosmic code: Quantum physics as the language of nature*. New York: Bantam, 1984.
27. Pirsig, R. *Zen and the art of motorcycle maintenance*. New York: Bantam, 1974.
28. Ponder, G. Ways of knowing. *Kappa Delta Pi Record*. 1986, 22, 34.
29. Prigogne, I., & Stengers, I. *Order out of chaos: Man's new dialogue with nature*. New York: Bantam, 1984.
30. Ragan, W., & Shepherd, G. *Modern elementary curriculum*. New York: Holt, Rinehart, & Winston, 1977.
31. Reid, W.A. *Thinking about curriculum: The nature and treatment of curriculum problems*. London: Routledge & Kegan Paul, 1978.
32. Shubert, W. *Curriculum: Perspective, paradigm, and possibility*. New York: Macmillan, 1986.
33. Schwab, J. The practical: A language for curriculum. *School Review*. 1969, 78, 1-23.
34. Schwab, J. The practical: Arts of eclectic. *School Review*. 1971, 79, 493-542.
35. Schwab, J. The practical: Translation into curriculum. *School Review*. 1973, 81, 501-522.
36. Schwab, J. The practical 4: Something for curriculum professors to do. *Curriculum Inquiry*. 1983, 13, 239-365.
37. Sergiovanni, T. Landscapes, mindscapes, and reflective practice in supervision. *Journal of Curriculum and Supervision*. 1985, 1, 5-17.
38. Shaw, F. Congruence. In W. Pinar (Ed.), *Curriculum theorizing: The reconceptualists*, (pp. 445-452). Berkeley, CA: McCutchan, 1975.
39. Sirotnik, K., & Oakes, J. A contextual appraisal system for schools: Medicine or madness. *Educational Leadership*. 1981, 39, 165-173.
40. Stephens, D. Toward a reconceptualization of educational inquiry. *Forum in Reading and Language Education*. 1985, 1, 31-43.