# *Looking Back to the Future: A Recursive Retrospective*

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I, now a newly minted Canadian resident, am indebted both to Deborah Osberg and the Canadian Association for Curriculum Studies for honoring me with a retrospective on my work in the curriculum studies field. This is not something I ever expected, especially back in the 1980s when I began searching for a *new curriculum model* to the one then prominent, the Tyler Rationale (1950). At the time I was much engaged in reading Jean Piaget, and while I had great difficulty with the usual American interpretation of his work – "ages and stages" – I did feel his biological sense of cognition (*Biology and Knowledge,* 1971) and his actual work in the fields of biology and zoology provided a framework the Rationale did not consider. This framework, that of an organism's inherent self-organizing powers,[1] became clearer to me as I was introduced to Ilya Prigogine and his work on *becoming*. As I noted in my 1986 article, reprinted in this volume, I found a strong connection between Piaget and Prigogine and bringing this connection to the fore, with the paradigm in which it is encased, could "stand as an alternative

[1] N. Katherine Hayles (1983) does a fine job of explaining the difference between the 19th century's concept of *élan vital* (vital ardor) as an (animated) living force within the cosmos but still separated from the cosmos, and the 20th century's sense of a dynamic cosmos wherein subject and object are not split (Introduction).

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to the measured curriculum" — that which the Rationale had become. Only later, due to the personal insight of Sherrie Reynolds, did I realize that in his late writings, those with Rolando Garcia (1989, 1991), did Piaget express his belief in and support for the work Prigogine and his colleagues were doing.[2]

Reading in the history of curriculum at the same time I was reading Piaget and Prigogine, I became aware that the measured curriculum[3] was not an invention of Ralph Tyler, although he certainly emphasizes measurement in his work on the Eight-Year Study. The dominance of measurement as a way — indeed *the* way — to assess the efficiency, hence validity, of a curriculum has roots deep in American industrial, psychological, social, and educational thought in the time period between the American Civil War and World War I. Tyler, thus, is more a culminating than seminal figure. While the American psychological, behaviorist movement had a number of sources for its origins (Green, 2007), Frederick Winslow Taylor's "time and motion" studies with pig-iron carriers at Bethlehem Steel Company, in the 1890s, became seminal; indeed it was more than seminal: it was virtually a Holy Grail. America, during these years, was not only inspired by, but actually defined by Taylor and his scientific efficiency movement (Kanigel, 1997).[4] As Robert Kanigel points out, Louis Brandeis wrote the introduction to Taylor's *Scientific Management* (1947 [1911]), Walter Lippman saw "the scientific

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[2] The journal, Advances in Chemical Physics, has devoted a Special Edition to the work of Ilya Prigogine (Vol. 135, 2007) and his influence on the fields of chemistry and physics. This edition is comprehensive and invaluable to anyone interesting in delving deeply into the sort of paradigm Prigogine developed. An earlier and more critical but still complementary view can be found in N. Katherine Hayles' *Chaos Bound* (1990). Prigogine's own recognition and approval of Piaget's work can be found in his article "Physique et Metaphysique," in Connaissance Scientifique et Philosophie. Bruxelles: Academie Royale des Sciences (1975, 312-316).

[3] A. W. Crosby gives a fine historical account of how western society became a "measurement" society: *The Measure of Reality* (1998). For measurement in education, see S.J. Gould, *The Mismeasure of Man* (1981).

[4] My exploration of this phenomenon can be found in my essay "Beyond Methods?" (2002).

spirit" ushering in a new sense of democracy, and Antonio Gramsci "embraced Taylor's ideas." Factory workers around the world, though, uniformly rejected the Taylor Plan.

While clergymen measured the efficiency of their sermons (Callahan, 1962), Joseph Mayer Rice, the physician who exposed the dreadful plight of schools in major American cities during this industrialization period, said the remedy for all of America's school ills lay in "the measurement of results in the light of fixed standards" (1969 [1914], xv).[5]

The euphoria which surrounded Frederick Taylor and his work on scientifically measured efficiency — the University of Pennsylvania did award him an honorary doctorate for his labors in bringing the "system out of disorder" in the American workplace — led me to believe that seminal as was Taylor and his empirical results, something more lay behind America's euphoria with measurement. Hence, Rice's statement about education needing to be assessed via measurement and fixed standards, while a natural corollary to Taylor's work, also showed a deeper commitment to framing curricula in set, linear, sequential steps, validated in terms of results which could be scientifically measured.

One line of research led me back to Pierre Simon (Marquis de LaPlace), to Henri de Rouvroy (Comte de Saint-Simon), and to Auguste Comte, all who applied Isaac Newton's scientific theories to social issues. Each took Newton's mathematization of physical Nature — Newton specifically states that his conjectures on the principles framing natural philosophy (gravity being the chief one) are expressed in mathematical terms only [*Philosophia Naturalis Principia Mathematica* (1962 [1729])] — and applied it to social situations. LaPlace believed he had a method for predicting all future events in the cosmos; all one needed was to acquire the necessary facts (or variables) and then, putting them into a linear, cause-effect chain, prediction became certain. Trying to get these

[5] This sense of emphasizing results is, I believe, an unfortunate corollary of what might be called "vulgar pragmatism": looking at results as their "cash value" — in William James, colorful but easily misinterpreted phrase. Pragmatism, *the* American philosophy, integrates product with process; product alone is a vulgarization of the concept. Of the many books and articles on pragmatism I recommend Biesta, 2008; Biesta and Burbules, 2003; Dewey, 1933; Hendley, 2006.

variables to stay stable was what caused mathematicians (Poincaré) and physicists (Heisenberg) such difficulties in the early part of the 20th century. Obviously LaPlace's cosmos was not a dynamic one, for in his grand design there was no instability problem: the universe was stable. Saint-Simon and Comte saw a new (industrial and technocratic) age adawning in the early 1800s, one wherein a "new breed of men would arise, 'engineers, builders, planners'"(Doll, 1993, p. 21). This new breed would no longer work *with* nature but would improve, control, *civilize nature*, using the new device of scientific measurement. Progress seemed not only possible, but inevitable. Precision, A. N. Whitehead says (1925), is key to this measurement method; precise precision one might say.

Another line of research, directly connected to schooling and education, took me back to Peter Ramus, Johann Amos Comenius, and Puritan institutions on both sides of the Atlantic (Doll, 2005b). Here I am indebted to the work done by David Hamilton (1989, 1992, 2003) and to two of my former students, Stephen Triche and Douglas McKnight (2004). These three have focused strongly on the Protestant development of the word curriculum (a path to be followed), on the presenting of that path (a chart or map or course of study) in linear steps, and of "giving" (laying out) knowledge to the learner in a direct, didactic, hands-off, textbook fashion. Ramus, a French Catholic of Protestant persuasion — for which he lost his head in the St. Bartholomew's Day Massacre (1572) — is the first to capitalize on using the Latin word curriculum in an educational sense. As a schoolmaster, as well as a university (Regius) professor, he wanted to keep teaching simple and basic: "the one and only way Aristotle teaches." Further, in breaking the knowledge to be presented into organized chunks — placing that enunciation "first which is first, in the absolute order of knowledge, that next which is next, and so on," thus producing an "unbroken progression from universals to particulars" (in Doll, 2005b, p. 26) — Ramus not only presaged the methods of the Tyler Rationale but also gave to the western world its first textbooks. His method was indeed to "textbookize" knowledge. As such he acquired the sobriquet of "the greatest master of the short-cut " the educational field has known (in Ong, 1983 [1958], p. 3).

Further study on the methodizing of knowledge has helped me see that Ramus, foundational as he was, was not alone (Doll, 2005b). Rather he belonged to a huge methodization movement in the 16th and 17th and

18th centuries. John Bunyon was part of this movement, as were both Francis Bacon and René Descartes. The philosopher Gottfried Leibniz says, "Nothing can escape our method . . . it spares the mind and the imagination"; the latter especially "must be used sparingly" (1951 [1674]). The work of Taylor in industrialization and Tyler in education are but two aspects of a broad and deep movement — *methodization* (with its corollaries of standardization and measurement) — which has shaped the west's intellectual discourse for the past four to five centuries.

General intellectual awareness in the 20th century that the universe is dynamic and emergent, not stable and stationary — as methodization, standardization and measurement require — helped Prigogine posit a new paradigm. This paradigm he says is built around the concept of the universe being an open, not a closed, system.[6] Prigogine makes much of the open system, closed system distinction, as do I in my post-modern book (1993). Basically a closed system, such as a thermostatically controlled heating/air-conditioning system, works toward a pre-set goal, one set in advance. Equilibrium or equilibrated balance is the desired state. Perturbations or movements "off the mark," are regarded as disruptions, negativities to be corrected. Such systems emphasize *setness, stability, simplicity.* In metaphorical, or metaphysical, terms they emphasize Being not Becoming. In thermodynamic terms — Prigogine was a chemist (Nobel Prize, 1977) — a closed system, such as a steam engine, is able to *transfer* energy — here from the boiler to the movement of gears. Such a system, though, machine oriented, can *only transfer*. It cannot *transform.* [It is worth noting how mechanized is our language of education, and how transference oriented are its assumptions.]

Open systems by their very nature are transformative, as in atomic reactions, or in all life. Open systems replace setness toward a predetermined goal with dynamic change, stability with emergence, and simplicity with complexity. Such systems are process oriented, since they are always in process, the process of transforming the somewhat "chaotic" into the orderly. The Prigogine (and Stengers) book is entitled (in English) *Order out of Chaos* (1984). As I have said before, "open systems require disruptions, mistakes, perturbations" (Doll, 1993, p. 14).

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[6] In addition to Hayles (1990), see my "The Arrow of Time" (2008) on Prigogine and his project.

These are the "stuffs" process systems transform. If no messy, chaotic, fuzzy "stuffs," then no transformations. As a curriculum theorist, I saw the need to have a curriculum filled with *richness* — that is, to have "the 'right amount' of *indeterminacy, anomaly, inefficiency, chaos, disequilibrium, dissipation, lived experience*" (p. 176). The key, of course, to this sense of a curriculum which can be both transformed and transformative — to student and teacher — is the notion of "right amount." Too much fuzziness, messiness, or chaos and transformation will not occur; but without these disequilibria, as Piaget (1977) says, there is no development: "However the nonbalance arises, it provides the driving force of development. . . . Without the nonbalance [disequilibrium] there would not be increasing re-equilibration" (p. 13).

The concept of devising a developmental curriculum which is dynamic, emergent, transformative, and non-linear has attracted me and been my challenge during almost all my teaching career. As I have said so many times, the sort of linear, sequenced developmental frame often attached to Piaget's name is not the sort of development frame I have sought (Doll, 1993). Recent emergence of the "new sciences" of chaos and complexity have provided a grounding for my beliefs. Here not only Prigogine and his colleagues have been helpful, but so has been Stuart Kauffman (1993, 1995, 2000) and his colleagues at the Santa Fe Institute. In these new sciences it is possible to see *a sense of development that is both non-linear and self-organizing*. This fits nicely with what we are learning about the human brain and how it works (BrainConnection.com). Following this line of reasoning, it seems to me that a quality curriculum — one which *enhances* a learner's own way of development and at the same time *transforms* that way so that one learns with depth and breath – – can be structured along the lines of Richness, Recursion, Relationship, and Rigor. It is hard for me to say where these 4R's came from. Obviously there is a bit of playfulness here in my naming these four, nor can I argue that it is these precise four which are needed to produce a quality curriculum — one enhancing and transformative . Yet, over the years I have come to believe there to be a certain worthwhile structure here, no matter what the structure is named.

In reading, yet again –– recursion if you will — N. Katherine Hayles' (1990) exploration of Prigogine's fundamental insights, I find myself more and more agreeing with Prigogine, and with Stuart Kauffman too,

that any system which is to be developmental, in a dynamic sense, must be "dissipative." That is, the system needs to operate in an environment rich enough (but not overly rich) in material that "waste" is part of the emergence process. The waste in such a system, is a necessary and needed waste, as the system works both to enhance and transform itself.[7] Such a view challenges the whole efficiency movement which has captivated American curricular and instructional thought for well over a century (Doll, 2002). Jean Jacques Rousseau's oft quote remark comes to mind here — "To gain time, one must often waste time." A.N. Whitehead's admonition to "throw ideas into every combination possible" also comes to mind. It is this I mean when I talk of a Rich curriculum, one filled with just the right amount of problematics, perturbations, and paradoxes that prod.

Recursion, the second R, is quite explanatory in its name — a looping back to what one has already seen/done to "look back and see, yet again, for the first time." Such a non-linear revisiting, this time with new eyes, has been a key part of my modus operandi ever since I wrote my book on a post-modern sense of curriculum (1993). Jerome Bruner, the father of the spiral curriculum, has often commented that a curriculum not recursive, hardly deserves the name curriculum. Recursion, in the mathematical sense of iteration, is a key feature of all non-linear equations (Doll, 2008). The act of recursion destroys linear cause-effect sequencing, again so uniformly accepted in our instructional practices. Developing a non-linear approach to both curriculum design and instructional practice is a challenge in and to our modernist oriented society. A rich curriculum is, I believe, a *sine qua non,* a necessary starting point, for any curriculum designed to loop back on itself, and thus, in both seeing what was not seen before and in integrating the original seen with the just seen, able to bring forth the new. Such an integrational view is compatible with and informed by the work of Gould, Kauffman,

[7] This argument lies at the heart of Stephen Gould's "An Earful of Jaw" (1990), talking of how in evolutionary terms the ears of humans came from the jaws of fish. The efficiency of this transformation occurred via the excess (hence wasted) amount of jaw the fish provided. The notion of waste being part of an efficiency process is not a modernist concept.

Prigogine, as well as by the American pragmatists, especially Charles Peirce and his sense of a "Logic of Relations" (1992 [1898]).

Relationality is the "glue" (of connections) which holds any system together, which makes a system a system. The oft-shown Lorenz attractor (Doll, 1993, front cover) is one such illustration; another is a collection of illustrations of the synapses in a brain under activity (see internet "Brainbow"). Relations are what Whitehead calls the "really real"; it is not things or objects but relations that are real. Born, 1931, into a generally modernist world and educated in a rational/analytic frame, it took me years to understand that it was not solid, massy, hard atoms that were the really real, but relations themselves. Recent pictures of the atom[8] — more space than anything else — and readings and ponderings on Whitehead have helped me understand the reality of relations. Bruner's 1986 essay, "Two Modes of Thought" which influenced my thinking only many years after I first read it, explicated in my 2003 paper (Modes of Thought), helped me understand that a good curriculum design would counter-play the rational/analytic with the non-rational/experiential. Here I take the view that it is not so much an integration of these two modes of thought as it is the counter-playing of one against the other in a dynamic manner which is important for the development of the new. Donna Trueit's persistent question of "Where does the new come from?" (2005, and this volume) has inspired and informed my thinking for almost a decade now. Her answer of "from conversation" is an idea worth exploring, as she is so doing. Here I also applaud William Pinar and his use of the word in his recent series of books, Complicated Conversations.

Rigor, as an idea, came to me as I tried to be both a bit less cute with the 3 R's (a fourth was definitely needed), and to act as a buffer to those who wanted to dismiss what I had to say in my 3 R's as ivory tower ideation. While Whitehead spends much time on the need for rigor in the traditional sense (Doll, 2005a), he also combines it with romance/play and generalization/abstraction. These latter qualities, quite marked in the human species, combine with rigor to remove it from the static *rigor*

[8] The journal Discover (June, 2007) has an interesting article by A. Stone on imaging the atom (first done in 1969) and a picture of silicon atoms. They look quite different than the "planetary" models we are used to in textbooks.

*mortis* frame into one where the new and the creative can emerge. As an example, when I was teaching elementary school (back in the 1960s) my fourth grade students knew their multiplication tables at least through 20 x 20. They did not, though, memorize 400 separate facts; instead they found patterns which they played with and abstracted: 6 x 17 is double 3 x 17, itself 30 plus 21; or 6 x 17 could be "seen" as 6 x 15 (itself 60 plus 30, or 3 x 15 doubled) plus 2 x 17 (34). All this led to a playful/abstractive sense of working the numeration system in countless ways. Needless to say, the students enjoyed math, scored well on tests, and acquired the ability to be inquisitive, interpretative, imaginative. This same sense of rigor integrating play with precision and principles (abstractions) came forward in these same years when a teacher colleague and I ran a Saturday morning Great Books program on the local TV station with 8th graders. Here we followed not the prescribed script from the Chicago Great Books program but chose our own books and had spontaneous conversations (two teachers, eight eighth graders) about what interested us in the books and why. Again, through such "conversations" all ten of us learned, all ten of us contributed and in Whitehead's sense, knowledge was kept alive.

Rigor can also be looked at in a poststructural, Derridean sense; that is in exploring the possibilities that exist or can exist in any current situation, event, teaching moment. How can we look at what we are doing, at what is happening, in a different sense? What happens when we look at adding 2,3,4 in terms of multiplying the middle term (3) three times?[9] What happens when we look at a story, not in terms of its "main idea" but in terms of various characters in the story – their feelings, their perceptions, their (possible) ideas and values? Tom Stoppard's *Rozencranz and Guildenstern are Dead* (1968) comes to mind here. While one does not expect second grade students to produce such a work, they can be amazingly creative when one frees them from the fetters of a traditional focus and asks them to use their imaginations (Greene, 1995).

[9] One could, here, of course, use any three sequential numbers. Those of 3, 4, 5 fit in well with a right triangle, itself 1/2 of a square as well as introducing the famous Pythagorean theorem of the square on the hypotenuse. For more exploration here see Crosby (1997) and Livio (2003).

No teachers I know, do this better than the Galileo Group of David Jardine, Patricia Clifford, and Sharon Friesen (2003, 2006).

In regard to this poststructural sense of rigor, I am much attracted to the work on Michel Serres, who had Ilya Prigogine and Isabelle Stengers write a postscript to his *Hermes* (1982) collection of essays. Following from Serres, himself a "chaotician" (1995), I have become interested in the social/political thought of Bruno Latour, a younger scholar much influenced by Serres but also carving out his own directions (2004, 2007). Here the quiet influence of William Pinar is beginning to have its effect on my usually apolitical writings.

In our *Curriculum Visions* book (2002), born of many hours of post-AERA conversations as we traveled southern Georgia and northern California, tasting pecans and wine, Noel Gough and I took different but complementary directions in our Introductions: his is more personal and political; mine is more historical and speculative. Noel in his Introduction makes the point that any future vision must not neglect our present vision, but rather needs to emerge from our current critical engagement with the present, and that our "'seeing' is determined by where we stand and how we frame our fields of visualization" (p. 8). These themes he revisits in the book, particularly in his essay "The Long Arms of Globalization." Here, drawing on the writings of Jacques Derrida, Sandra Harding, Ursula LeGuin, as well as his personal teaching experiences in South Africa, Noel describes and fights against the "cultural imperialism and colonization" that results from globalization. To move away from the imperialism inherent in globalization, Noel gives the name *Transnational* to the journal he edits for IAACS (International Association for the Advancement of Curriculum Studies).

My own Introduction, "Ghosts and the Curriculum" — read by, elaborated on, critiqued, and played with by all the essayists — sees the "Ghost of John Dewey hovering over the American curriculum" (p. 23) with the ghost of John Calvin haunting, influencing, controlling, the curriculum we in North America and Western Europe practice today. As I say at the end of my essay, what unites the curriculum of the Calvinist Ramus with that of the objectivist Tyler is the sense of *certainty* each espouses: Both curricularists were part of the paradigm which believed [to draw from Richard Rorty, 1989, 76] that if it did "not have all he

answers," at least it had the "criteria for the answers." (p. 53)

John Dewey, of course, believed that a fixation on certainty, a *Quest for Certainty* (1960 [1929]), underlay our current metaphysical malaise; itself born of a fear of change, a desire to unite ourselves with that which "is antecedently fixed in existence" (205). Such a desire manifests itself today in many classrooms: in a focus on "facts,"[10] on set procedures, on rigid rules. In breaking away from this centuries long tradition, I (again, playfully) proposed our looking at curriculum from multiple perspectives: those of *currere*, cosmology, complexity, conversation, community. The first (currere) and last (community) of these, most arbitrary five, is intentional to emphasize the interplay of the individual with the communal. This interplay has guided much of my own teaching where the atmosphere I encourage is one not only of honoring our own thoughts and those of others, but also of bringing these ideas into experiential interactions of varied types. When possible, the south Louisiana tradition of eating together becomes part of our LSU (Louisiana State University) curriculum experience. Also, classroom doors here are always "open," and other professors, former students, students from other classes, visitors are welcomed in to share and add to the richness of the current conversation. The goal, here, is not to develop a unified focus but rather to develop a network of connected and interconnected thoughts. I see my task, as a teacher (one of many teachers in the class), as helping all of us weave a tapestry or construct a network/matrix of the many strands and loops "floating" around the classroom. Understanding is thus not "passed on" via teaching-as-telling (Trueit, 2007; Trueit and Pratt, 2006; Pratt, this volume), but rather emerges from, is created through, interactions. Needless to say, my studying in the fields of chaos, complexity, and (open) systems has been invaluable; and here I owe a great debt to Brent Davis and Dennis Sumara for their encouragement, leadership, guidance. The CSER (Complexity Science and Educational Research) conferences they direct

[10] We think of facts as being certain and "hard." In reality the concept came into being when Francis Bacon, wanting scientists to distinguish between the real/exact and the speculative/imagined decreed that any bit of knowledge agreed to by 12 respected men (jurors as it were) would be considered a "fact."

and the journal *Complicity* that Brent started (in collaboration with Renata Phelps) have been an intellectual stimulus to my own scholarship and teaching habits.

Using *currere* (the personal) and community (the social) as brackets for an arbitrary and playful 5 C's, in my introductory essay, I then filled in the space between the brackets with cosmology, complexity, conversation. In searching for a new model, I thought that if our cosmos is creative in its Being, should not our curriculum be such also; if we now envision our learning habits as being complex, should not our curriculum reflect this complexity; and if, as Richard Rorty says (1980, pp. 171, 319), after we abandon the foundational and are left with conversation as our hope for a better future, should we not utilize this device in our teaching? In doing this I wished to open up our definition/sense of curriculum.[11] One such opening began (Doll & Gough, 2002, footnote 30) when I pondered the notion of adding Spirit to the S's of Science and Story. These three S's, especially that of Spirit, have occupied much of my curriculum thinking in the past few years.

The scientific way of thinking, including the whole logical/rational discourse of modernism is certainly well known. It is, as Bruner says "our paradigmatic way of thinking" (1986, p. 13). A few decades ago, another way of thought emerged, the metaphoric one of story. It has its own truth, not that proven, rather that felt. Story (or narrative) Bruner says, "is built upon concern for the human condition," *l'affaire humaine*. (p. 15). It is heartfelt, whereas the scientific is "heartless" (p. 13).

These two, often called the quantitative and qualitative, are complimentary ways of thinking -- neither is "better" than the other, each is different from the other and together they give us a richer picture of what we are studying. What we are studying though is always a situation, an event, an idea, a particularity. As such, each situation, event, idea, particularity has its own "spirit," its own "breath" which gives it life. Finding this spirit is a difficult challenge; for it is not an object, which science studies, nor can it be shown graphically or

[11] Ted Aoki (2005), a seminal British Columbia educator, makes an important distinction between "curriculum-as-plan" — which as teachers we plan to use in our classrooms — and "curriculum-as-lived experience" — which we indeed do use (often unconsciously) in both classrooms and life.

symbolically, as can story. Rather spirit is ephemeral, it floats, even haunts. Spirit, though, is powerful; it carries a situation along, it impregnates it with life, vitality -- even with integrity, values, aesthetics. There is something spiritual about spirit. It transcends our ordinary ways of encounter. We enter the spirit of a situation, event, idea, particularity via intuiting, feeling our way around. As such we need, to use Dewey's phrase, to "plunge into the situation," struggle with it, explore it in depth, to *be* in it.

As many have shown (see especially, Davis and Sumara, 2006) what is so different about this current paradigm is that although, in a sense, we are always inside the situation we are studying we are not *simply* inside it. There is no outside, nor inside; thus the notions of external/objective or internal/subjective are quite literally, *meaningless.* The same is true of quantitative and qualitative; their split is arbitrary. Every measurement is based on some arbitrary assumptions, "stories" if you will.[12] Every qualitative experience is bounded, held in, shaped by our culture, language, past experiences. Whatever we study then, experiment on, write, draw, graph, picture — in short represent — is always incomplete, and open to further revision, development, interpretation.

That which is incomplete is not closed, it is open — to new possibilities, to revisions, to a "growth" (a word and concept Dewey was fond of emphasizing). That which is incomplete, though, is also potentially capable of being wildly rhizomatic — unbounded, unstructured, even formless. Therefore curriculum designs and instructional strategies, if they are to be useful, need to lie in that space created by the dynamic interaction of the closed with the open (or in the interplay of the scientific with the storied with the spiritful). In a sense we, as humans, need a "reality," or a world-view, wherein we continually strives for closure, but hope against hope (even pray) that such closure is never achieved. In this interactive or "third space,"[13]

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[12] Kanigel (1997) brings out this point forcefully with his story of the *arbitrariness* of Frederick Taylor in his development of "standards." See also my paper, Beyond Methods? (2002).

dynamically formed by the tensioned interaction between the open and the closed, lie the connexions, nodes, attractors which give birth to the new.

Such a "model," is hardly what most would call a model. Models in the traditional (modernist) sense are things — objects, diagrams, etc. Here the model is an ongoing process. It needs a rich set of interacting factors for its beginnings, and recursions, relations, and rigor as it develops. As a curriculum theorist and practicing teacher I will continue my work on the philosophical, physical, and practical aspect of this new "model."

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[13] A number of authors have written about the "third space, notably Homi Bhabha and Michel Serres. I like best Hongyu Wang's treatment of it in her *Call from the Stranger on a Journey Home* (2004).

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