A Pattern Language for Learning

by

Mark Alphons Classen
B.F.A., University of British Columbia, 1990

A Project Submitted in Partial Fulfillment of the Requirements for the Degree of

MASTER OF EDUCATION

in the Department of Curriculum and Instruction

© Mark Alphons Classen, 2005, University of Victoria. All rights reserved.

This project may not be reproduced in whole or in part, by photocopy or other means, without the permission of the author.
Supervisors: Dr. Laurie Rae Baxter, Dr. Antoinette Oberg

ABSTRACT

The project proposes an alternative to stepwise, outcome-oriented methods in education: values and practices based on living systems and aesthetics which support diverse learners in achieving unique goals. I suggest that the sense of aesthetics is a wholistic, balanced response to complex stimuli which inform choices. I outline a set of patterns which generate distinctive solutions rather than mandating procedures, much as Christopher Alexander did in his 1977 architectural work.
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>ii</td>
</tr>
<tr>
<td>Table of Contents</td>
<td>iii</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>iv</td>
</tr>
<tr>
<td>Dedication</td>
<td>iv</td>
</tr>
<tr>
<td>Prologue</td>
<td>1</td>
</tr>
<tr>
<td>Metalogue:</td>
<td></td>
</tr>
<tr>
<td>Values</td>
<td>4</td>
</tr>
<tr>
<td>Learning Systems</td>
<td>6</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>11</td>
</tr>
<tr>
<td>Patterns</td>
<td>13</td>
</tr>
<tr>
<td>Bibliography</td>
<td>18</td>
</tr>
<tr>
<td>The Pattern Language</td>
<td>23</td>
</tr>
</tbody>
</table>
ACKNOWLEDGEMENTS

I wish to acknowledge the inspiration of my thesis committee, especially Dr. William Doll of the University of Louisiana, and of the elders and traditions of the First People of this continent.

DEDICATION

Dedicated to my mother, Everine Classen.
Prologue

During my university training as an educator, one essay had the most profound effect on my outlook: Daiyo Sawada’s *Aesthetics in a Post-Modern Education: The Japanese Concept of Shibusa*. It was not that the essay introduced a completely new approach to education, but it drew together concepts that I had felt intuitively for many years under an aesthetic ideal, known in Japan as “shibusa.”

Sawada treated the subject of education with a compassion and sensitivity often missing from professional discussions, yet he evoked timeless truths recognized in the most current post-modern educational theory. He invoked a trust in our sense of peace and beauty to guide our choices in modern education.

Over the years I have come more and more to abandon the highway of mainstream educational theory with its emphasis on efficiency and analysis for the country lane which dawdles through the landscape and sometimes loses us in unexpected and happy encounters. I believe the obsessive need to quantify and control the holy exchange which we call education has nearly suffocated its ability to generate inquiry, humanity and joy. Whether these qualities have a value worthy of preservation is a question for each culture, community and individual to ponder.

This thesis is a cursory survey of the landscape of current educational practice and a sketch of an alternate system of values and practice based on living systems and a sense of aesthetics. I propose that the sense of aesthetics is a wholistic, balanced response to the infinitely complex stream of stimuli—external and internal, environmental and cultural— which informs our choices. I suggest that the human being is a self-correcting organism upon a journey of individual and collective discovery and that it hardens under the extremes of control to which we currently aspire in education.

I propose a constellation of patterns which embody humane and organic goals of education as a basis for practice, and welcome the “play” (in its multiple meanings) required for diverse individuals to achieve unique goals. I propose these patterns as evocative phrases which suggest diverse solutions rather than mandating procedures. I propose an educational “Pattern Language” much as Christopher Alexander did in his groundbreaking architectural work.

The language is incomplete. As Sawada said when he summarized the attributes of “shibusa” in one quality: “Shibusa, in having no mechanical regularity or quantitative precision, invites participation by the observer because it suggests rather than commands; it opens up new possibilities because it is inherently unfinished.”

With the understanding that learning is truly meaningful when it engenders a transformation in the participants (rather than simply involving the transfer of data), I invite the reader to participate and explore this work in a specific way.

A learning interaction ideally leaves a vivid mark on both the teacher and student; in a profound learning relationship the two labels are interchangeable. Though we conventionally recognize that
there is a one-way transfer in which significant experience, technique and knowledge are passed to the learner, I suggest that a master teacher is acutely aware of subtle cues from the learner which fundamentally influence their communication process. Further, that the teacher is establishing an intimate bond that facilitates an exchange, and that the teacher can be renewed and vivified by an increased sensitivity to intimate interaction and the questions posed by the learner. The questions are a substantial part of the learner’s contribution to the exchange, a manifest opportunity for the teacher’s learning, and the essence of their intimate nourishment, without which the exchange becomes a form of news broadcast.

A thesis certainly lacks opportunity for such intimate exchange. A thesis project encourages perusal with a professional and sceptical judgement and the reader is insulated from the vulnerability of any interchange with the writer. If we are prepared to consider intimacy as an enhancement to learning exchange, the reader might open some of its channels by approaching this work with an altered perspective.

The first section outlines a theoretical core which has influenced my own teaching practice and occupied my thoughts for the last twelve years. It recalls the intellectual environment which generated patterns that characterize my practice. Of course, it is not only theory which has generated my patterns, but also my experiences. To ask the reader to make a leap of faith, it is necessary to reveal my own experiential base and the prejudices and limits which have shaped my understanding.

I spent most of my early career as a designer, builder and cabinetmaker. Influenced by a year spent with a community of artists, I took a Bachelor degree in Studio Art in my early thirties. One winter, as my body began to rebel against the rigours of housebuilding, I had the opportunity to work as a Teaching Assistant in a rural alternative primary school on the Gulf Islands, founded by a teacher from England and influenced by A. S. Neill’s school at Summerhill. I felt that I had found my calling and took my teaching credentials in Secondary Art.

I returned to the same school to establish an ungraded intermediate program with a group of 12-14 students, some of whom stayed with me for several years. I returned to university for a Masters in Curriculum Studies, where I took a broad range of courses besides the theoretical including ceramics, environmental studies and conflict resolution. After my coursework, I was hired as the Principal of a First Nations band-operated primary-secondary school for three years, and subsequently of a small primary school in the Nisga’a public school district. My focus in these schools has been cooperative discipline, the use of manipulatives in math and the profound integration of traditional First Nations skills into the curriculum.

I hope the reader will inhabit the first theoretical section, reading meditatively and allowing the ideas to reframe their own experiences. By inhabit, I mean to allow, for this short time, the ideas to seep among your own web of connections, suspending temporarily the responsibility to refute and formulate responses which serve to distance and depersonalize the ideas. I ask the reader to make a leap of faith, as if we had established an intimate learning relationship and opened the doors of trust, allowing us to consider ideas without initial judgement and competition. It is a leisurely, private visit to a garden, without interruption by the gardener.
As you later leave the gate, habitual doubts and questions will return to alter the experience. This is the time to quietly use questions to personalize the theoretical background, to rework the theory in light of your own history and to consider your own practice through the lens of patterned thought and activity.

After absorbing the first section, I suggest an unstructured meandering through the second section—a tranquil consideration of the patterns of thought and action which have shaped another teacher’s practice. The invitation is to sense the internal coherence of the presented patterns and their consonance with the reader’s own metapatterns (whether or not they have been transformed by the earlier reading experience), and to then use, discard, or add to the specific patterns presented here.

As in Alexander’s design process, the purpose is that each participant develop a rich personal pattern language to focus or clarify their intent—without rigidity. Their patterns can then mesh with those of fellow learners to generate a common language which simultaneously describes and shapes resulting interactions. The vocabulary of each pattern is a description or aesthetic specification which clarifies, influences and shapes the intent of future iterations of the pattern.

Ideally this weaving of communal pattern languages would proceed in a more fluid and interactive way in the context of a website where a visitor could comment on patterns, contribute anecdotes which support or refute them, or generate patterns which describe their own successful learning experiences.

Let me open the gate for you…
Metalogue

Values

I have come to understand that change, whether incremental or catastrophic, is inevitable but that it does not necessarily lead to improvement or deterioration. It is a matter of point-of-view, of perspective and prejudice. It is a matter of foregrounding one set of values and retiring another. Every change that supports one value, undermines another. Evolution is not a headlong rush towards perfection, but simply a kaleidoscopic shifting in form and perspective—a play of nature in dynamic balance.

Implicit in the weaving of a set of objectives or the development of a vocabulary for conscious change is the commitment to a value system. The pattern language outlined in this essay fosters and is nurtured by a web of specific interdependent values. Those values are familiar and vital to me given my personal history and beliefs. They are not universal. They may even be perceived by some as antithetical to “quality in education” or the viability of culture. But they resonate with a fundamental tone of trust among learners.

This trust is a departure from the concerns at the heart of many current educational philosophies and practices: the Protestant fear that children will “squander” their time in play, the Darwinian fear that they will be ill-prepared for the harsh demands of a competitive future, the xenophobic fear that a teacher without constraints may subvert our children, the compulsion of the power elite to maintain unegalitarian, unstable systems through propaganda and control. Even more insidious is our insecurity that the process of learning, as natural as breathing to every child, must be improved and regulated by the application of scientific analysis and rigid, prescriptive procedures—that education must be subjected to a new scientific Inquisition which will purge it of the whimsical errors of naive practice.

In contrast, trust is a symbiotic state, one in which a community of learners both feed and are nourished by each other. Trust does not guide by suppressing inconsistent views, but forms a milieu which nourishes some attitudes and abandons others to wane. I have outlined some of the values which inform this pattern language, and contrasted them with some current, competing values. I do not suggest that our practice must be mutually exclusive, but that the former values receive increased emphasis in order to nourish each child and their diverse gifts.

Inclusiveness implies the opportunity for all partners in a process to fully participate. Different actors may have varying roles and involvement, depending on individual skills, development and commitment, but the invitation to participate is implicit. Many modern school systems are built on a structure of authority which invests individuals at the top of a power pyramid with substantial control and requires individuals at lower levels to conform and obey.

Intimacy suggests a close personal connection among actors characterized by familiarity, openness and integrity in communication, and genuine mutual esteem. It carries the risk of emotional vulnerability and requires constant adjustment in interactions, for the rules of intimacy are intuitive and ephemeral rather than prescriptive. Teachers today are encouraged
to practice **professionalism** and to maintain a distance from their clientele. Policies and protocols drive interactions. The scientific traditions of observation and intellectual distance are maintained as ideals.

**Exploration** is an acknowledgement that a multiplicity of solutions are as yet undiscovered and that the confidence and interest required to look beyond well-travelled paths is of value. The creative process of exploration will inevitably call into question and challenge existing paradigms. The process of self-development must support this process of inquiry as well as the building and **preservation** of those established skills emphasized by the mainstream curriculum.

**Diversity** is acknowledged in system theory as a fundamental requirement for viability and adaptability of systems. It is the celebration of varied perspectives and processes as well as the collaborative development of common vision. Our monoculture emphasizes a **unity** of perspective and an imposed vision built on tradition or developed by experts.

**Transformation** is the basic model for systems learning: the mutual restructuring of the organism and its environment in a harmonious dance of homeostasis. A child and a culture continuously reinvent themselves as they interact with each other. In our culture, our main goal is constant **growth**; an organism which is not serving the functions of growing, accumulating, processing, is stagnant or dying. An organism must assert its unvarying characteristics on an ever-growing scale. Change is a function of inadequacy, a failure.

**Nature** is the model and informant for our system of patterns. It is the ultimate source of infinitely complex and ingenious solutions to the process of living. We can trust natural processes to mediate a balance among all organisms and their ecosystem. In contrast, modern society depends on **technology** to provide solutions to every problem of environmental imbalance, including those caused by technological failures. Technology is no longer a mediator with the environmental pool of resources, but has become an origin—a resource for responses to any challenge.

In effect, the preceding values are metapatterns which inform the development or recognition of the micropatterns which follow. They are what Gregory Bateson would identify as higher order patterns, part of the “pattern which connects” living things. He suggests: “the right way to begin to think about the pattern which connects is to think of it as **primarily** (whatever that means) a dance of interacting parts and only secondarily pegged down by various sorts of physical limits and by those limits which organisms characteristically impose.” So these metapatterns are elastic descriptions of relations, not specifications for constrained behaviours.
Learning Systems

Julian Orr, an industrial anthropologist working for Xerox, made some observations about the practice of field-service technicians that are applicable to current practice in education. He describes the corporate production of "directive documentation" to prescribe the practice of technicians: "The service manuals were not designed to provide information with which to think about the machine; their goal was to direct the technician to the solution of a problem through a minimal decision tree." Orr found that the technicians’ practice was far more complex: "interpreting machine behaviours, users’ actions, and their colleagues’ accounts of both, in a context-laden attempt to maintain the equilibrium of a relationship between machines, users and technicians." The manuals are of course inadequate for that task and Orr suggests that their production is tied to "the common discourse on business and organization [which] assumes that practice decomposes into techniques [my emphasis], which may be considered, changed, automated, or taught independently and in the abstract. It assumes further that an assemblage of techniques recomposes into something resembling the original practice." The manual of instructions and the actual practice of the technicians are two versions of reality grounded in what Orr interprets as a struggle with a political-economic facet. He suggests:

The existence of two versions was seen as a contest for "authoritative knowledge," part of a larger contest over the relationship of employment, particularly with respect to claims of skill and deserved compensation. In particular, the management discourse contains the claim that the work is not skilled and has been reduced to "merely" following directions.

In keeping with our mechanistic and reductionist age, we have analyzed and fractioned the process of learning to attempt to isolate its essential elements. With a conviction worthy of Henry Ford and Frederick Winslow Taylor, we have attempted to quantify those elements, define them as goals and objectives, and then fine tune their delivery so that educated students can be efficiently generated by specialist assembly line workers: teachers.

Assembly lines efficiently generate identical product but they are poor models for adaptability—a characteristic that has historically defined human ingenuity and has become more important with the evolution of an ever-shifting global socio-economic culture. When an assembly line is retooled for a new model, it is a major disruption which entails a lengthy shutdown in production.

Learning on a production line may make sense when educational practice is driven by a demand for the creation of standardized workers, but only if we assume static conditions in the marketplace and only within our current set of values in economics. The primary emphasis on bottom line, the avoidance of responsibility for social and environmental impacts and costs, and the focus on short-term rather than generational effects are inappropriate guiding influences for education. The foregrounding of economic goals and growth must be tempered and replaced by an overriding concern for quality of life: a commitment to sustainable patterns rather than to a messianic technological vision of future material abundance.
Learning is not linear progress. The metaphors of filling a container or assembling or repairing a uniform product are inappropriate. Every learner fashions their understanding in a different way, comes to different conclusions, develops different strengths and strategies, struggles with unique challenges. Recognition and development of this uniqueness is critical. The very concept of democracy and freedom is meaningless without the existence of diversity and difference.

To utilize a cybernetic model: our cultures are able to adapt and generate solutions because of the interaction among individuals acting as unique and complex filters. Just as neurons are not simple on/off switches, but may switch according to varying voltages and positive and negative input from many other neurons, individuals filter information in subtle ways and, reacting as a group, provide a complex and buffered social response to stimuli. The push to control our society’s behaviour and to pursue efficiency in uniformity may generate short term productive gains, but ultimately undermines adaptability. In a sense it is the modelling of society after principles of current digital prototechnology. Millions of years of biological evolution has developed a far more adaptable and subtle response mechanism in the brain’s system of “fuzzy logic”.

Or, in different terms: if every individual had similar knowledge and a similar methodology for processing information (perceiving, forming conclusions, etc.) how would the "conversation" that some believe defines social evolution, proceed and generate novelty? From the perspective of a cybernetic engineer, such a system would require structuring and programming by a higher order system to generate specific, repetitious output. It is not a learning system, but a machine which generates a predetermined and identical product.

Or, to suggest another analogy: if cultural evolution were a cocktail party conversation, the dialogue among identical individuals might resemble that which John Malkovich experiences when he reflexively enters his own psyche in the film *Being John Malkovich* — "malkovich, malkovich, malkovich"— an endless string of redundancies.

Conversely, an exclusive emphasis on divergence would cause a system to disintegrate, to lose its cohesiveness. The elements of the system might diverge to the point where there is insufficient shared structure to support communication. To continue to function, an integrated system requires a mechanism to balance convergent and divergent forces. One of the defining characteristics of a system is the existence of a web of connections among its components. This medium of connection, whether it be chemical or electrical or linguistic in nature, is a channel for constant feedback. Especially important is negative feedback where any increase in input results in a decrease in output. This process naturally attenuates excessive divergence. Systems also utilize positive feedback, where increased input stimulates increased output, to amplify desirable conditions. Feedback enables a system to self-correct and maintain a norm or ideal range for internal processes. That constantly shifting balance is homeostasis.

Learners are systems embedded in a classroom system inside an educational system, and in turn part of a larger cultural system. While forming an embedded system, education simultaneously functions as one of the feedback mechanisms for our cultural system, both positive (by
reproducing and amplifying information sanctioned by the body politic) and negative (in closely limiting development of its members). When fully integrated, each system can act in a feedback role for the higher-order system within which it is embedded.

A system’s structure is not fixed and unvarying. Through connections with other systems, a living organism may alter the structure and function of others and may itself be fundamentally altered— even to the point where vital processes evolve to become mutually dependent on another organism.

According to Lovelock’s Gaia hypothesis, organisms also form systems connections with their environment and are able to alter conditions in the “nonliving” environment (for example in atmospheric conditions and certain chemical cycles) to maintain favourable conditions for survival.10

When extreme conditions overwhelm feedback mechanisms, the system experiences wild perturbations. These fluctuations are characteristic of the period leading to disintegration of the system (“death”) or restructuring of the system at a higher level of organization able to cope with the new conditions (“transformation”).

One of the fundamental insights of systems thinking on education is to posit that cognition and learning, far from being simply a transfer of data from teacher to student, are transformative processes that alter the very structure of both organisms and their environment— sometimes in subtle ways. Central to this outlook on cognition and learning is the Santiago theory, developed by Humberto Maturana and Francisco Varela. I will draw from an excellent summary of their work in Fritjof Capra’s The Web of Life.11

Maturana equates cognition with the processes of life: “Living systems are cognitive systems and living as a process is a process of cognition.”12 A living system interacts with its environment through a connection Maturana calls “structural coupling.” Interaction actually triggers structural changes in the system and those changes constitute cognition. We cannot isolate a one-to-one correspondence between changes in the external world and the internal neurons; such correspondences are present only in regulated experiments with sedated animals.13 In normal functioning, cognition seems to be holographic— a function of relations in the system as a whole.

Organisms do not generate an internal model of an independently existing world, but “bring forth a world” whose characteristics are defined by the perceptual capabilities and associated actions of the organism, and by the way it defines boundaries and identifies patterns.

The fluid but distinctive relationship among the components of a system changes over time in response to environmental disturbances. Each species evolves an appropriate pathway of development, and each individual organism develops in a distinctive way; hence development and learning are associated as two aspects of cognition.

Cognition is not simply a function of the nervous system, but incorporates responses by the immune and endocrine systems. Recent research indicates that the immune system does not
model a "defence" metaphor except under extreme stress, but acts as the body’s regulatory system which continually checks all cells, including its own, to maintain homeostasis.\textsuperscript{14} It is an organ of self-identification. Further work by Candace Pert has identified the family of peptides produced in nerve cells, glands and immune cells as essential components in a communication system which blurs the boundary between brain and body. Emotions, manifesting in peptide production, have a fundamental effect on perception and thought process.\textsuperscript{15}

Of course, structural changes that are not directed by the organism (e.g. damage by an accident) are not cognitive, nor does cognition occur in response to all environmental disturbances. Some are filtered out and the pattern of an organism’s filtered responses constitute its distinctive world.

Through mutual structural coupling, individual living systems are part of each other’s worlds. They communicate with one another and coordinate their behaviour. There is an ecology of worlds brought forth by mutually coherent acts of cognition. In the Santiago theory cognition is an integral part of the way a living organism interacts with its environment. It does not react to environmental stimuli through a linear chain of cause and effect, but responds with structural changes in its non-linear, organizationally-closed, autopoietic network…. From the perspective of the Santiago theory, intelligence is manifest in the richness and flexibility of an organism’s structural coupling.\textsuperscript{16}

The Santiago view of living systems does not ignore the need for control. It outlines the flexible implementation of control through feedback mechanisms, which are able to adapt to changing and unforeseeable conditions. Feedback is especially crucial for maintenance functions in an existing system and depends on close communication or connection among the system components. When applied in education, feedback requires an open and cyclic or iterative channel for information among all participants.

To identify the learning process as a systems— rather than industrial— process is significant in that it implies an alternative approach to the initial development and maintenance of a learning environment. An assembly line has a very specific purpose, is constructed in a linear, stepwise procedure, and is easily quantified and evaluated. A system simultaneously embodies multiple roles and purposes. It evolves and continually transforms with changing conditions. Judgement of its "success" is a subjective and continuous inquiry and ultimately hinges on the question: "is the system sustainable?"

One way to apprehend the cognitive functioning of a system is to acquire a sensitivity to rhythmic activity. We differentiate rhythmic or patterned activity from purely chaotic behaviour by its regular repetition of specific characteristics, or incremental recursive change. Awareness of patterns does not come necessarily through focussed attention, but through multisensory intuitive awareness. Michael Fullan quotes Claxton’s description of the necessary sensitivity in \textit{Leading in a Culture of Change} (Wiley, 2001): "One needs to be able to soak up experiences of complex domains— such as human relationships— through one’s pores, and to extract subtle, contingent patterns that are latent within it. And to do that one needs to be able
to attend to a whole range of situations patiently without comprehension; to resist the temptation to foreclose on what that experience may have to teach.”

Gregory Bateson identified the learning process as *stochastic*, a word to which he assigned a very specific definition. Rather than simply chaotic, a stochastic process incorporates random behaviour and then filters its output for specific characteristics. It harvests and winnows chaos.

Of course, the “chaos” label is simply a surrender to the impenetrability of an infinite array of complex overlaid patterns. To perceive individual patterns in the chaos around us is to filter and "bring forth a world” limited by our perceptions, as envisioned by Varela. Shared pattern perception is the bringing forth of a shared culture.

Along with skills used in music improvisation, I suspect that one of the most sophisticated conscious human pattern recognition behaviours is the aesthetic response. The aesthetic (from Greek *aisthetikos* from *aisthainomai*, to perceive) is a conception of beauty and harmony. It is a resolution of multivariate factors into a single overall response to stimuli. It is an intuitive judgement— a measure of overall coherence or elegance. It is a recourse to revelation when analysis fails.
Aesthetics

"The aesthetic function of curriculum replaces the amelioration of the technological function with revelation." Madeline Grumet, Songs and Situations

Because the interactions of living systems are so complex, incorporating multiple layers of "meaning", varying histories and intents, and a fundamental interconnectedness which defies explicit boundaries, the perception of pattern can be viewed as a fundamentally aesthetic process. The aesthetic response is a "feeling" response of an organism to a complex stimulus as it resolves intricate sensory input to generate a coherent reaction. The response may be generalized as poetry or image, myth or music in an attempt to incorporate echoes of other related experiences and beliefs in an expanding web of relations.

Gregory Bateson considered the aesthetic approach to be vital to the apprehension of essential relations among living things. He defined the aesthetic response as a meeting "with recognition and empathy. By aesthetic, I mean responsive to the pattern which connects." Each culture generates a system of treasured beliefs, values and patterns of interaction which constitute a group aesthetic. The aesthetic is not prescriptive, but is developed through shared experience, shared icons, and shared ideals. Every object, action and idea may be evaluated in the light of this aesthetic. Approval or disapproval is often based on this intangible evaluation. Although there are attempts to quantify and analyze the aesthetic, for the most part individuals apply the aesthetic in an unstructured, sensory or visceral way. Hence references to "taste" and "I don't know anything about art, but I know what I like."

Daiyo Sawada describes a Japanese aesthetic with an ancient history known as "shibusa" and applies it to modern education practices in a 1989 address. He contrasts this pre-industrial aesthetic, which is unconsciously integrated into many aspects of Japanese life, with the technological commitment of present-day Japan. As he describes it, shibusa has seven characteristics: simplicity, implicitness (integration), modesty, silence, naturalness, roughness and normalcy. He uses each characteristic as a focus for comment on a specific aspect of modern curriculum and instruction.

Simplicity in the austere and unadorned interior of a Japanese traditional dwelling, with its connection with the outdoors, is contrasted with the compartmental design of Western buildings and the concomitant separation of inside/ outside and relevant/ irrelevant in the various subject areas.

Implicitness implies an essential integration of a thing with its context. Sawada suggests that Western analytical traditions devalue implicitness as imprecision, and demand strict specification of parts, with the understanding that the whole is simply the sum of those parts. He suggests that this practice undermines coherent understanding of each discipline as a whole.

Modesty is a celebration of quiet beauty, without garish or striking ornament. Sawada relates this quality to the unacknowledged presence of the child in the classroom whose personality is
overwhelmed by the power of the teacher’s personality and her stamp on the classroom environment.

Silence highlights a tranquility which is a form of mutual respect and an invitation to participation by all. He contrasts that aspect of silence with its imposition in the Western classroom, where quiet is either a straitjacket against open participation or an emptiness to be feared, like the “dead air” in radio broadcasts.

Naturalness suggests that profound activity is a spontaneous by-product of everyday life. This contrasts with explicit specifications and prescribed activity used to generate industrial output. This constrained activity, adopted by many in the teaching profession, contrasts sharply with the natural responsive behaviour of human beings in daily interaction.

Roughness foregrounds irregularity and individual uniqueness and imperfection. Western education responds to roughness with a need to homogenize experience. Children are taught using textbook examples which offer a smooth affirmation of established theory. Sawada identifies the roughness of a child’s daily experiences with a richness, meaning and beauty which is lost in uniformity.

Normalcy emphasizes that shibui product arises from even the most humble individual and does not require genius or giftedness. Knowledge is a natural birthright and instinct of each student and does not qualify them for elevation above others.

Sawada concludes by consolidating these descriptions under one concept: that of the unfinished. He suggests that what is left unsaid and undone is as essential to integration as that which is complete. The unfinished is a call for participation in ongoing meaning-making.

The aesthetic of shibusa is alien in modern society but resonates with the desire for a more genuine, post-industrial existence. It is a perhaps quixotic invitation to abandon conformity and predetermined outcomes for chaotic, indeterminate adventure. While he does not specify objectives and methods, Sawada gestures like a Japanese calligrapher and evokes a possible aesthetic for education; he evokes a set of patterns.

Were it appropriate, Sawada might suggest images (a twig snapping in the garden, a moss-covered stone) or anecdotes scented with shibusa, but shibusa might elude confining description or be misshapen by its controlling force. It cannot be manufactured, but emerges shyly from the harmonious interaction of elements which I will call patterns.
Patterns

As Gregory Bateson describes them, patterns are the distillation of details, an essential ghost or contrail of the details of activity. When utilized in a Platonic sense, patterns may profoundly influence the character of each resultant manifestation, without explicitly dictating its details. Patterns generalize the system of relations among elements in an interaction. A pattern is not a mould. Each iteration is a unique expression of characteristic relations.

Perhaps because we place so much emphasis on material—on nouns—we lack the descriptive tools to define relationships and patterns with elegance. In communicating them we identify the parts in the interaction and use adjectives and anecdotes which hint at the flavour of relationship which is sought. We develop an evocative pattern language.

In his research at the University of California, Christopher Alexander developed a pattern language for architecture and planning which he published in his groundbreaking book *A Pattern Language* in 1977. Alexander’s team spent eight years analyzing successful buildings, proposing a methodology for design work (outlined in *The Timeless Way of Building*) and applying the methods in an experimental project (*The Oregon Experiment*). Alexander’s approach has had a seminal influence on architectural practice. I will share some quotes from his work which are striking in their invocation of the principles of system theory and which suggest a remarkable and humane approach in their application to education.

Central to Alexander’s thesis is that design is not the domain of professionals, but must be a collaborative process among people who use the buildings. He conceives this to be not simply a consultative role, but the central process in design. He gives the designers a tool to focus their work—the pattern language—and suggests a way to apply that language to design problems.

"...towns and buildings will not be able to become alive, unless they are made by all the people in society, and unless these people share a common pattern language, within which to make these buildings, and unless this common pattern language is alive itself."

To involve all participants in the design of a learning project seems at the same time radical and intuitively obvious. Parent councils are supported in public school administration, but the students’ measured input is largely absent. They are perhaps victims of the system rather than participants, just as homeowners in tract housing relinquish control to expert architects. And tract architects receive their feedback through the ponderous mechanism of market forces instead of through intimate exchange with each client. Alexander proposes to dethrone these experts and to empower amateur designers sensitive to local conditions.

Alexander composes his language from basic units called patterns, which might be conceived as algorithms which generate a response to a problem. "The elements of this language are entities called patterns. Each pattern describes a problem which occurs over and over again in our environment, and then describes the core of the solution to that problem, in such a way that you can use this solution a million times over, without ever doing it the same way twice." He uses a standard format to develop each pattern: an evocative title, an exemplifying photograph, a paragraph which relates the pattern to its larger context of patterns, a succinct description of
the architectural problem requiring a solution, an extensive discussion of that problem and historical responses, an explication of the proposed solution pattern, and a paragraph which outlines finer patterns which complement and may be incorporated into the pattern in question.

Each solution is stated in such a way that it gives the essential field of relationships needed to solve the problem, but in a very general and abstract way—so that you can solve the problem for yourself, in your own way, by adapting it to your preferences, and the local conditions at the place where you are making it.14

Alexander emphasizes that the patterns describe relationships and that each pattern is intricately woven with larger and smaller patterns which constitute a social system of understanding; one that is physically manifested in the buildings it creates.

In short no pattern is an isolated entity. Each pattern can exist in the world, only to the extent that it is supported by other patterns: the larger patterns in which it is embedded, the patterns of the same size that surround it, and the smaller patterns which are embedded in it. This is a fundamental view of the world. It says that when you build a thing you cannot merely build that thing in isolation, but must also repair the world around it and within it, so that the larger world at that one place becomes more coherent, and more whole; and the thing which you make takes its place in the web of nature, as you make it.25

Furthermore, each individual utilizes a personal pattern language to create their own world, and these personal pattern languages mesh, interact and replicate to form the substance of a shared language.

...every society which is alive and whole, will have its own unique and distinct pattern language; and further, every individual in such a society will have a unique language, shared in part, but which as a totality is unique to the mind of the person who has it. In this sense, in a healthy society there will be as many pattern languages as there are people—even though these languages are shared and similar.26

Alexander’s conception of the pattern language reflects some basic principles of systems theory in his description of the complex interactions inherent in design and development. He also emphasizes the necessity for an aesthetic apprehension of his language in a chapter entitled The poetry of the language where he says:

It is possible to make buildings by stringing together patterns, in a rather loose way. A building made like this, is an assembly of patterns. It is not dense. It is not profound. But it is also possible to put patterns together in such a way that many patterns overlap in the same physical space: the building is very dense; it has many meanings captured in a small space; and through this density, it becomes profound.27

Alexander divides his patterns into three levels of scale and suggests a different method for application at each level. His broadest level for pattern-making is applied to Towns. Because decisions at this level are made by large groups, and individuals rarely have sufficient influence to implement them, he makes the following suggestion:
We believe that the patterns presented in this section can be implemented best by piecemeal process, where each project built or each planning decision made is sanctioned by the community according as it does or does not help to form certain large-scale patterns. **We do not believe that these large patterns, which give so much structure to a town or of a neighbourhood, can be created by centralized authority, or by laws, or by master plans.** We believe instead that they can emerge gradually and organically, almost of their own accord, if every act of building, large or small, takes on the responsibility for gradually shaping its small corner of the world to make these larger patterns appear there. [emphasis in original]

At a more intimate level of application, that of Buildings, Alexander sees the most exciting work of design taking place. He suggests work on site and a visceral approach to design where rooms, gardens and windows are staked out on the ground while they are contemplated for inclusion.

The basic instruction is this: Take the patterns in the order of the sequence, one by one, and let the form grow from the fusion of these patterns, the site, and your own instincts.... Remember too, that the form will grow gradually as you go through the sequence, beginning as something very loose and amorphous, gradually becoming more and more complicated, more refined and more differentiated, more finished.

His final section, which applies to Construction, is the most tentative. The previous sections have been applied in numerous projects, while the principles of construction he espouses have had limited use in actual buildings. Because of the very concreteness of his patterns at this level, their method of application may be the least applicable to knowledge work, but Alexander does offer this critique of modern society: "Our intention in this section has been to provide an alternative to the technocratic and rigid ways of building that have become the legacy of the machine age and modern architecture."

When Alexander’s comments are interpreted in the context of educational practice they are wonderfully evocative. Although teachers are not generally engaged in the construction of physical buildings, Alexander’s principles for design practice can be an analogy for design of learning systems. Essentially, Alexander foregrounds relations over objects. Educators who strive to make their stock-in-trade the developing external and internal relations of learners, rather than their production of learned output, might fruitfully apply these principles to their practice.

Alexander’s essential tool is a linguistic and artistic one: a set of phrases with the power to generate rich personal imagery and whose connotations are so dense that they resonate harmoniously with the experience of everyone who shares them. He may include detailed instructions, but only as a means to sharpen his readers’ personal vision, not to limit their creative participation.

This thesis is an attempt to generate a rudimentary pattern language for learning which foregrounds aesthetic principles. In contrast with Alexander’s patterns which (being applied to
the more concrete activity of building) are mostly descriptions of structures, our patterns mostly describe relationships and activities. The intent is the same: to evoke a particular quality which is conducive to our educational goals, and to permit and encourage the freedom and creativity to manifest it in unique ways.

Having been incubated in the womb of individual experience, these patterns reflect a very personal vision of the learning exchange. Pattern languages become communal as they are shared, discussed and implemented in varied contexts. Explicit mission statements, goals, strategies, procedures and resources are abundant in the educational field. This communication tool is a more diffuse and rhizomatic approach which examines an individual vision and practice through many lenses in order to record and encourage experimentation.

While some ideas may seem repetitive, I would prefer to see them as recursive: a metapattern applied in many different ways over an extended period of time. I would hope that the reencountering of ideas speaks of an integrity of approach. As Alexander emphasizes, each pattern is intricately supported by others, so that the totality embodies a living, unique and coherent practice.

The pattern language is by no means authoritative or exhaustive. It can be pared down or expanded to still reflect the same themes. Each pattern is an overlay which focuses the clarity of the central image, which in turn must be filtered by the reader and their own past experience.

Alexander provides complete and extensively researched descriptive passages. My approach might be seen as a blend with a more contemplative Eastern tradition where the idea to be communicated is presented in the form of an evocative phrase married with an aphoristic expansion of the phrase’s significance. This is followed by a short discussion of the thinking behind the phrase with occasional anecdotes. One might parallel this form with the yoga sutras in which pithy aphorisms use carefully chosen words to evoke the goals of long practice. These aphorisms over centuries acquire glosses from many commentators who flesh out the ideas presented and provide illustrative examples.

The Taoist classic Tao Te Ching in its first chapter presents the fundamental problem in communicating subtle aspects of practice and philosophy:

The way that can be told is not the Eternal Way
The name that can be named is not the Eternal Name
The nameless is the beginning of Heaven and Earth
The named is the mother of ten thousand things.

Commentaries are an endless preoccupation, but fruitlessly attempt to manifest the unmanifest—to describe a journey which each student must make to develop a personal and secret understanding.

The patterns in this iteration of the language have no particular order, although I have attempted to group them according to general themes. This is another feature of some Eastern wisdom texts which seem to defy stepwise logical development. A charming story concerning this characteristic explains that Patanjali, the author of the Yoga Sutras, wrote his verses on
individual bodhi leaves which were bundled together. One day a great wind scattered them and some were lost. Those which were recovered were assembled somewhat out of sequence necessitating acute attention on the part of the reader.

Most of the patterns could usefully be applied to a multitude of learning situations from one-on-one instruction and home-schooling to small-school alternative education and public education environments. The pattern language is a matrix upon which to build educational practice and does not necessarily preclude routine teacher practices such as development of long-term plans, daily lesson planning, class management strategies, etc. However, reflection about teaching philosophy and practice through the application of the language may call into question certain practices and imply others.

I suggest that this process of fluid inquiry into philosophy and practice must be continuous in order to adapt to conditions in constant flux.
Bibliography

Central inspiration to this thesis:


Background readings in holism and systems theory:


Maturana, Humberto R., and Francisco J. Varela, Robert Paolucci (trans.) *The Tree of Knowledge: The Biological Roots of Human Understanding*, (Boston; Shambhala, 1987)


Classic readings in radical alternatives in education:


Discussions of alternatives in modern education:


Capra, Fritjof, Creativity and Leadership in Learning Communities, Lecture at Mill Valley School District, April 18, 1997 (transcript from Centre for Ecoliteracy, Berkeley, CA)

Capra, Fritjof, Ecoliteracy: The Challenge for Education in the Next Century, Liverpool Schumacher Lectures, March 20, 1999 (transcript from Centre for Ecoliteracy, Berkeley, CA)

Doll, William E., Jr., A Post-Modern Perspective on Curriculum, (New York; Teachers College, 1993)


Discipline:


Roberts, Monty, Horse Sense for People, (New York; Viking, 2001)

Critiques of technology:

Franklin, Ursula, The Real World of Technology, (Concord; House of Anansi, 1990)

Mander, Jerry, In the Absence of the Sacred: The Failure of Technology and the Survival of the Indian Nations, (San Francisco; Sierra Club, 1991)


Readings in cultural diversity:

Abley, Mark, Spoken Here: Travels Among Threatened Languages, (Toronto; Vintage, 2003)


Davis, Wade, *One River: Explorations and Discoveries in the Amazon Rain Forest*, (New York; Touchstone, 1996)


Mander, Jerry, *In the Absence of the Sacred: The Failure of Technology and the Survival of the Indian Nations*, (San Francisco; Sierra Club, 1991)


**Miscellaneous:**


I asked a Japanese friend about the word, but she was unfamiliar with it. She later realized that it was the basis for the adjective “shibui” which she told me was a mark of approval among Japanese young people, roughly equivalent to “cool.”


ibid. p. 450.

ibid. p. 446.


Capra, Fritjof, *Creativity and Leadership in Learning Communities*, Lecture at Mill Valley School District, April 18, 1997 (transcript from Centre for Ecoliteracy, Berkeley, CA) p. 5

... One of the most interesting theories is one by a German sociologist, Niklas Luhmann, who describes a human community as a network of conversations. This network involves multiple feedback loops. The results of conversations give rise to further conversations, which generate self-amplifying loops. Thus an offhand comment may be picked up and amplified by the network until it has a major consequence. The closure of the network within the boundaries of the community results in a shared system of beliefs, explanations, and values — often referred to as the organizational culture — which is continually sustained by conversations.


ibid. p. 93-94.


23 ibid. p. x.

24 ibid. p. xiii.

25 ibid. p. xiii.

26 ibid. p. xvi.

27 ibid. p. xli.

28 ibid. p. 3.

29 ibid. p. 463.

30 ibid. p. 936.

A Pattern Language
for Learning
Learner Choice & Responsibility

Learners have a right to choose their learning path and a responsibility for its outcomes.

In contrast to past centuries, when youth were expected to marry and take their place as providers at a young age, we have created an interim stage of life known as the teenager. The teenager has passed through pubescence and is seeking power in the areas of work, sexuality and politics. Older generations with a lifelong investment to protect maintain control of the system and fear the inexperience of the younger generation, attempting to reduce both decision-making power (which might alter the status quo) and associated responsibility for decisions.

Experience of the consequences of actions is a fundamental learning tool. A learner must have the opportunity to make choices and then work with the results of those choices. This is a basic feedback mechanism in training an individual to make wise choices. Learners must be offered choices within a reasonably safe range and be encouraged to experience the positive and negative results of those choices. Of course we are responsible for steering youth away from life-threatening situations, but our culture's obsession with safety and control has made learning an activity where real choice and uncertainty is virtually absent.

Alongside the responsibility to impart basic literacy and numeracy skills, educators should offer the student considerable choice in learning direction. Learners can thereby reclaim their learning experience as their own and take responsibility and credit for the consequences of their unique approach. This ownership can become a lifetime habit such that the adult does not blame society, superiors or family for consequences, but acknowledges a personal power to choose a course of action and shape a personal destiny.
Learning Agreements

A teacher and a learner must come to an agreement about their relationship.

In denying responsibility for action an individual can always blame coercion. In our legal systems, an admission or contract made under duress is invalid. The relationship between a student and teacher or staff member is implicitly authoritarian and is usually established without the explicit consent of the student. If the relationship is seen as a social contract between the parties, with benefits accruing to both, it must be entered into voluntarily. Students receive an education tailored to their needs, teachers receive remuneration, and the whole process is carried out under conditions which support the completion of the project.

If this agreement can be made explicit, the terms and goals agreed at the beginning of the relationship, and the concerns of both parties aired and settled, then the relationship between student and teacher can commence without unspoken assumptions which generate resentment. It forms a powerful bond for the parties to reach a mutual agreement on ground rules, put them into clear language, and then literally sign an agreement together. A student is much more likely to conform to an agreement to which they have signed their hand. If the agreement is broken, then the teacher or student must make amends.

The school, through the teacher, offers instruction which respects the integrity of the student with a reasonable caveat to guarantee the safety of participants, support the efficient achievement of mutual goals, and preserve school resources for future use. A student who does not support those reasonable conditions, may find other avenues for instruction.
Democratic Council

A learning community must share the responsibility for its management.

Young children enter the arcane school world and are expected to assimilate the explicit and implicit rules of that world and find a comfortable working relationship with those rules. They have little political power in the establishment of those rules. Schools are one of the last obvious bastions of discrimination in the democratic world, discrimination by age. Our society has a conceptual bias that children are incapable of understanding reason or process. Perhaps this bias was reinforced by Piaget's research and his contention that children are subject to “concrete” thinking and that “conceptual” thinking is inaccessible before puberty.

When children are shown the traditions of participative democratic interaction— the calling of meetings, establishment of an agenda, free debate, voting procedures, the keeping of records— they are capable of coherent contribution from a young age. While a kindergarten child's outlook may seem naive to older students, they have a right to make their concerns known to the community and have them acknowledged in a group solution. Such participation develops the perception that an individual is a maker of (or at least a contributor to) their own destiny.

Group meetings which involve the whole school body (and not just an elected group) involve and bind the group to the agreed solution. Ideally such meetings reach consensus on issues, but such a solution usually requires considerable time. More commonly a method of majority rule, whether 50% or 2/3 or some other established proportion, is a more practical goal. Of course there should be a “bill of rights” in place which safeguards the rights of the minority from manipulation by the majority. The creation of such a “Youth Bill of Rights” is a highly educational exercise for any school.

In the school where I started work as a teacher there was a weekly school meeting of all students (about 40-50) along with teachers and interested parents. Every individual could contribute opinions, concerns and proposed solutions. Even kindergarten children took their responsibilities seriously and carefully worded their contributions. Students do not take responsibility for issues of funding, hiring and budgeting, but those that concern them more directly: boundaries for play areas, candy at school, rules for playground interactions, discipline for transgression of rules, suggestions for field trips, management of personal property in the halls, etc. Far from being frivolous encounters, the meetings involve careful consideration of disciplinary measures and a constantly evolving system of rules— government modified according to its results. Although such meetings can involve two or more hours, they are an essential exercise in practical democracy.
Parent Meetings

*Teachers act for parents and must maintain close contact with them.*

The student and teacher are not the only parties to the learning relationship. The child has been entrusted to the professional educator by the parents, who in former times had the responsibility for this task. With the perceived increase in quantity and complexity of material to be transmitted and the specialized methodologies and technologies devised for teaching, that task has been appropriated. Only a small proportion of parents choose to homeschool, most commonly for religious reasons. But education is fundamentally an aspect of childrearing and despite the debate over who carries ultimate responsibility for children— the parent or the state— that task is usually coordinated by the parent.

While some schools establish parent committees who act as general liaison with the school and fulfill essentially token functions such as fundraising, parents are generally expected to leave the details of instruction to professionals. They must accept the expert judgment of school officials regarding curriculum, school policies and practice, and choice of class groups and staffing. They receive scheduled reports on their child’s progress several times a year.

Ideally a school can bridge the gap between the caregivers and the professionals and reintegrate parent ideals and goals into the classroom environment and its practices. When the teacher holds regular meetings with parents to explain current activities and goals, share professional insights and answer parent concerns (and generally establish a personal relationship with them) the teacher builds a caring and communicative community which is better able to cope with conflict. When basic parent questions have been addressed early on, they are better able to apprehend current problems and offer constructive support.

Like a democratic council, regular parent meetings require an investment of time. There is an inevitable disparity in values and goals among different families. But after the initial need to air and validate individual opinions, most parents are able to compromise and come to a satisfactory arrangement. “Peer pressure” from other parents usually softens resistance from a parent who maintains an unreasonable stance and, like a student who is unable to come to a mutually beneficial contract with the school, that parent should always have the option to look for another learning situation more harmonious with their personal philosophy.
Wisdom of the Elders

Elders preserve the history and continuity of a community. Their participation in education is healing for both child and elder.

In a non-school environment, children frequently interact with other generations during mealtimes and social occasions. During these times, there is an opportunity for the sharing and passing of insights from older generations as well as a welcome contact by elders with the vital energy of youth. Where in past centuries elders were respected for accumulated wisdom and held a considerable portion of the responsibility for education of the young, today elders are considered worn out components of the societal machinery and isolated from the more active members of society. Our culture values progress and innovation at the expense of continuity and tradition, values which elders often embody in actions, stories and connections with the past which they love to share. While modern society may choose the path of change, the critique afforded by alternate values and philosophy must remain available to us.

Therefore a school should strive to maintain a connection with the elders of the surrounding community, both by inviting them into the school to take part in celebrations, and to make an active contribution to the learning in the school: offering stories of historical customs as well as alternate perspectives on current values and practices. These perspectives deepen student understanding of issues. This contact between generations can occur outside the classroom as well: field trips and community service projects that engage youth with elders in their homes and haunts can do much to heal the isolation which our society has bequeathed to our elders.
Small Neighbourhood Schools

The school must be intimate and preserve intimate connections with a neighbourhood.

So many modern schools are conceived on economies of scale; bring together the greatest number of students possible and the needs of special interests will be better served. Specialists will be available to give expert assistance and costly equipment will become affordable when shared among a larger student body. What is lost in the commitment to technical and economic efficiency is the social fabric of intimacy among the school population. The anonymity inherent in a large school is terribly intimidating to a young child, and for older children is overcome by strong allegiance to cliques and interest groups.

The massive movements which take place in response to bells, necessary to efficiently manage such large groups of people, are reminiscent of livestock management. Teachers in a high school environment deal with a daily stream of over a hundred students and must resort to statistical methods and computer tracking systems to analyze and report the progress of students. Although teachers may develop bonds with some of their charges, there are many students who drift into isolation and develop dysfunctional coping strategies or lash out with inappropriate abuse or violence.

In contrast, small schools (say under a hundred students) usually develop a culture of intimacy where everyone knows each other’s name, family background, and some details about their lifestyle and interests. While there may be a more limited range of interests and character represented in such a school, students must establish connections with a more diverse group of friends rather than gravitating towards individuals with matching interests— or prejudices. The drive for social connection overwhelms the fear of the strange; exposure to alternative ways is required and an appreciation of differences is necessary if friendships are to continue.

Of course, this acknowledgment of diversity is undermined where a small school is established to serve the needs of a discrete cultural group. Such schools sacrifice “enforced diversity” for the more urgent demands of cultural survival.

Where possible, a school should be established on a human scale which foregrounds the relationships among its members and does not “intimidate” the surrounding community by its size, but invites participation.
Community Service

The school is part of a community and must take its responsible place in that community.

The individual is an inextricable part of a whole—a community. The individual’s survival, while not utterly dependent on the community, is impoverished by the absence of links with others and with the whole. Despite the North American ideal of self-actualization and advancement of the individual, the goals and health of the collective are still critically important. The child should develop, beginning at the earliest practicable point in their learning process, an emotional identification with the health of the community, the opportunity to positively affect it, and the skills to conceive and implement projects for community improvement.

Such large-scale tasks are intimidating to young people, but with the support and guidance of adults who already have standing in the community, it is possible for them to identify an area of need, develop a modest strategy for dealing with it, and then persevere over an extended period of time in implementing that strategy. There may be setbacks, and there will certainly be lessons in coping with bureaucracy, vested interest and the realities of resource allocation in a world of limits. But these are the kinds of challenges that adults face in adult life: small obstacles that can hobble a worthy idea and choices among many alternatives, none of which are “correct.”

More than this, there is the development of a responsibility towards the good of the whole. It is a significant challenge for youth to put aside immediate and personal gratification for broader goals. This is a practical application of higher order thinking which transcends the present and local to address global needs and objectives. Youth have a deeply developed emotional empathy (witness the success of the “Chicken Soup” series of books) which may be harnessed and redirected to benefit others.
A Safe Place

Learning will not be welcomed in the presence of fear.

We could postulate two types of learning: learning which takes place in extreme circumstances or under threat of harm, and learning which occurs under low-stress conditions and is driven by interest and desire to know. The first type is reminiscent of a life-and-death situation in which an organism must adapt or die. It is accompanied by adrenaline production, extreme stress and intense fear. Some learning programs are driven by fear of consequences: explicit “bullying” by teachers, fear of humiliation before peers, threats to future success in the workplace, fear of failure in examinations. In these situations learning is a desperate attempt to cope with a threatening environment. In contrast, a learning program which provides a supportive climate for investigation whose reward is the frisson of discovery contributes to a perception of learning as an innate and normal function of the organism.

Further, learners cannot engage fully with learning if they experience a constant background threat from peers. This threat may be physical due to bullying or psychological due to humiliation. A learning place must be a haven of safety from which the student can step out and explore new concepts and engage in speculation without the threat of embarrassment or uncompromising pressure to perform according to fixed standards. Fear of physical violence engenders the most basic responses which ensure survival. This is not to say that the learning experience must be insipid. Adrenaline-inducing challenges bring a vibrant excitement when faced in the context of communal support.
Comfortable Working Conditions

In order to learn effectively, students need to be comfortable.

When I was young, I attended schools in South Africa modeled on the English system utilizing fixed desks and hard oak bench seats which were admittedly almost immune to student abuse. One of my most persistent memories is of the discomfort these seats afforded my bony posterior. When I established my first class, I went to a government auction and purchased oak chairs with padded seats and a durable fabric which would shed inevitable spills. My purchase was viewed with a certain suspicion— there seems to be a common prejudice that students cannot be too comfortable lest they lose concentration. I meet a similar prejudice in my current First Nations school— parents who grew up abused in residential schools assume that hardship is an integral part of education. I believe the perception being reinforced is that learning is a hardship to be endured for the school years and then thankfully forgotten.

We should be reinforcing a contrasting notion that learning is integral to living and must continue throughout life if we are to adapt and survive. Learning is not just uncomfortable work to be shirked at every opportunity, but a fulfilling joy for every living organism. Parents spend vast amounts of time caring for their children and providing for their comfort. Why should their comfort at school be a lesser concern? Any businessman who spent several hours at a desk each day would take steps to ensure their comfort. Discomfort may keep someone from falling asleep, but while that individual is awake, the discomfort is a constant distraction from attention to other sensory input and thought processes.

Working conditions for students should embody simple comfort. Temperature and humidity should be maintained within reasonable limits in rooms adequately bathed in natural light. Better to provide tools for modifying natural light and reducing glare, as well as centres in the classroom with varying light levels which suit the intended task, than to depend on the buzzing, flickering, oddly-tinted but “efficient” fluorescent light common in most schools. Furnishings can be durable, easy to clean and easy on the eye and body. The provision of a comfortable and inviting reading area will go a long way in reinforcing literacy as a pleasurable experience rather than a trial.
Quality Tools

To do fine work, children need good tools.

Anyone who has tried to cut a piece of paper with a cheap pair of scissors knows the frustration of working with poor tools. Imagine the compounded frustration for a young child who is only beginning to develop the coordination necessary to exert sideways pressure on the finger loops while closing them. Fine work requires quality tools: vibrant colours spring from artist-quality pencils; measurements are effortless with fine stainless steel tools; pencils glide smoothly in drawing and writing, sharpen easily, and read clearly when they are of superior quality; microscopes, sports balls, computer equipment, musical instruments, art papers— all offer a more fulfilling interaction when they are chosen for quality rather than quantity. Teachers too can use fine quality supplies. One of the enduring joys of entering a Waldorf classroom is the vivid colour drawings rendered by teachers on slate chalkboards using their richly pigmented chalk sticks.

Of course, children must be taught from an early age that tools require care and maintenance if they are to provide lasting service— but this is an essential lesson if our society is to escape a disposable consciousness where cheap items are simply discarded and replaced as they are so easily broken. Children are eminently capable of developing the requisite attitude of respect for tools whose obvious quality demands it. Conversely, it is difficult to convince a child that a cheap plastic device must be conscientiously cared for.

Higher cost for tools means fewer available for use— students must take turns, adapt, and improvise within those limitations. Instant gratification and infinite access are not supported by the philosophy of quality. Teachers must adapt lessons, encourage group work, share resources with other classrooms.

High-quality tools can often be simple while still offering stimulating learning experiences: a sturdy 20-power stereo dissecting microscope; a zigzag sewing machine; heavy-guage stainless steel cooking pots; well-made carpentry hand tools and a heavy bench; hard-bound books, richly illustrated; an indestructible upright piano, slowly turning honky-tonk with years of exploration. They show the wear of their continuous use over the years, and begin to tell a story to each new user as they are taken up. The tool-user develops a relationship with the tools, rather than a passing acquaintance.

The production of artistic supplies has seen a revolution since the development of synthetic dyes and mass-production of cheap papers, but close comparison of work with handmade papers and pigments produced with natural earth products, especially after the passage of years, reveals a richness and longevity unattainable with modern products.
Peaceful Surroundings

The best background for learning is peace.

We are assailed from every direction by advertising images, the sensory artifacts of industry, the sounds of city life, and clamouring voices drawing us out of ourselves to attend to their demands. Video production is tending towards ever-shorter shots and a jittery production style which exacts constant nervous attention from the viewer with its vaguely threatening presence. To earn the attention of an individual with this sort of competition is difficult. Although it is common practice for teachers to decorate their classrooms with vibrant colours and urgent slogans, as if to vie with the media for limited attention spans, the practice seems to exacerbate the “monkey mind”: constant shifting of attention from one subject to the next. Where the teacher has control of the student environment, there is an opportunity to provide an alternative to the sensory overload of technological life: a peaceful, calm awareness.

To facilitate this state the room may be decorated with calming (not insipid) colours and fabrics which mute the echoes generated by hard surfaces. Background music for student work can be chosen for its calming effect. This is not to completely muffle sensory stimuli, but to provide an undistracting backdrop to the current subject of attention. Displayed student work or presentations of vibrant music and artwork stand out against such low-key competition.
Multi-Age Groups

Mixed-age groups are the most natural peer group and most conducive to learning.

The cloistering of same-age children in a room is an intuitively unnatural environment for natural learning. While children do experience close peer interactions in a play environment, many play groups are naturally formed from multi-age cohorts—older individuals influencing younger children. If all interactions with the environment are viewed as learning experiences, then a child’s natural learning occurs to a great extent with other children rather than simply with an explicit teacher.

It is even possible that the sequestering of children by age contributes to future conflicts because they have such limited experience interacting with mixed age groups.

In a multi-age classroom older children frequently assist younger ones with their work and naturally provide examples of more mature responses to intellectual problems. When learning is conceived exclusively as the transmission of discrete facts and skills from teacher to student, multiple ages are seen as inefficient use of the teacher’s skills— the more students of the correct age for a particular transmission are in contact with the teacher at one time, the more gross information transfer can take place. Yet most teachers have experienced a range of abilities in a single-age classroom that can easily span five or six years, with each student demonstrating a complex spectrum of abilities and disabilities. The learning production line is constantly derailed and, in the process, the reality of rich classroom diversity is ignored. Diversity becomes a source of frustration, rather than enrichment.
Twelve Students

Twelve students is an ideal number for a learning group, intimate yet diverse.

In North America, most school classrooms consist of between twenty and thirty students working with a teacher. This ratio addresses the historical disparity between the intimate interactions with a tutor hired by wealthy patrons and the busy grammar schools which might contain sixty to one hundred students in a class. Teachers who have had the opportunity to work with smaller classes recognize that the dynamic in a small group is very different from a large one. Discussions include most individuals, there is an opportunity for extended one-on-one work with each child in the course of a day, and the social structure is more cohesive—without the individual cliques which tend to form in a larger group. On the other hand, very small groups can lead to intense interactions or disagreements between individuals and offer less variety of opinion and style.

About twelve individuals offer a good compromise for rich, yet personal, interaction. Most teachers find that as a group approaches fifteen individuals, it begins to require techniques of “crowd control” and class management which compromise a personal and humane relationship with the students.
Sitting in a Circle

_The circle form makes everyone equal, with a shared focus of attention._

A common model for classroom seating involves the placement of students in rows and columns which allow the teacher to address the students *en face* from one teaching position in the classroom and to easily distribute work to the students. The focus of the students is on the teacher. Alternately, students may be arranged in desk groups which create strong bonds but undermine the unified focus of the classroom.

With class sizes of about twelve, students may sit shoulder-to-shoulder in a circle and still maintain a comfortable conversational distance of about eight feet. The circular format exposes all the individuals equally to group attention and provides an intense focus in the centre of the group, on the “issue” rather than the teacher. If the teacher sits at the same level as the students in a circle without an obvious head, the group experiences a profound root equality: each individual can extend their presence to the common centre and experience the focused attention of the group.
Close to the Earth

*The earth has a centering and stabilizing influence on learners.*

Young children are often confined to chairs behind desks which, if they are not oversized, at least suspend them above the steady earth they are so used to playing upon. A chair for a young child can be something akin to a climbing gym and is not a piece of furniture particularly suited to their nature. Youngsters benefit from the stable influence of a firm seat upon the ground and at least some of each day should be spent there. Of course, a chair limits the movement of a child to a certain extent, but the formality of a circle formed when students assemble can have a similar limiting influence. Children can be reminded to maintain the beautiful symbolic form of the circle (or oval or egg, as the circumstances require) as they participate in storytime, show-and-tell or other suitable school activities.

Even paperwork can creatively be accomplished directly on the floor or at low desks while seated on the floor, though many teachers would frown at an informal scattering of students around the classroom, believing that correct posture is essential to the development of writing skills. Perhaps it is also a cultural bias, as sitting on the floor does not carry negative connotations in Arabic and Indian cultures. Of course regular use of the floor requires a policy of cleanliness (especially regarding shoes), but this is easy to implement in a small-school environment.

Even university students can benefit from occasional activities which seat them close to the earth, especially when outdoors. There is something vitalizing and timeless about instruction on the grass, under a tree in the sunshine or shade. One of the sweet memories I have of my university studies is a lesson we had on the grass under a twisted arbutus tree where we discussed the implications of Sawada’s ideas in modern education.
A Private Place

*Everyone needs a corner to call their own.*

Students love to make a mark on their surroundings and to announce their loyalties as they daily construct and deconstruct their identities. Any janitor who copes with the graffiti and initial-carving in student areas can vouch for this. Rather than globally condemning this compulsion, we can recognize it as an instrument of developing self-expression and territorial behaviour. We can provide a personal space for each student to create a tapestry celebrating their identity, whether this is the inside of a locker door or under a plastic sheet on top of their desk or a section of wall adjacent to their work space. Of course, such decoration must be respectful of the rights of other members of the classroom community. It provides an interesting exercise in applied democracy for a class to discuss boundaries for appropriate self-expression.
Escape from the Classroom

*Learning happens everywhere; sometimes the classroom can become stale.*

View windows are usually considered an irresistible distraction from schoolwork. At the same time they illuminate the essential desire of most children: to inhabit the outdoors, bathed in sunshine, and to explore the world's offerings. The concepts delivered in the classroom are little by little becoming insulated from the natural world they purport to explain. Natural curiosity and exploration are no longer considered sufficient for understanding and interpreting our world. An expert and a theory are required.

Classroom environments are more easily controlled and shaped to support the efficient delivery of data. The teacher can contain the child’s wandering curiosity and ideally focus it on the subject of common study, delivered piecemeal in careful sequence.

But the inevitably pale descriptions and structured world inside the classroom cannot offer the rich stimulus of the world outside and the acid test for classroom learning must be the stuff of daily experience. Every reasonable opportunity should be taken to escape from the closed classroom and take learning into the surrounding community.

While the traditional field trip embodies that ideal to some degree, it usually involves the transfer of many of the suffocating structures of classroom learning to the road: strict discipline and buddying, worksheets to complete, tour guides who model methods very much like the teacher in the classroom, and sanitized environments guaranteed to support the conclusions of classroom learning.

Besides providing a truly appealing environment for occasional lesson delivery, the world outside the classroom provides an opportunity to explore myriad manifestations and extensions of classroom theory.
Intimacy and Touch

*Learning is an intimate sharing and demands trust.*

As a teacher I often feel a twinge of professional propriety when a small child runs up to me and innocently wraps me in a crotch-level hug. Years of societal concern with sexual and physical abuse have made physical contact between teacher and student almost taboo. Professional behaviour demands a formal distance between parties. But knowledge is passed between intimates. The formal regard that our society holds for experts is no replacement for the trust developed over time through intimate interaction with the teacher. An expert is perceived as bound by professional ethics, authenticated to hold privileged knowledge, and authorized to distribute it. That professional ethical guarantee is a lean substitute for personal testing of a teacher’s inevitable prejudices and weaknesses. For knowledge to be accepted and transmitted, trust is essential.

As Maturana & Varela posit, emotion and the senses are not impediments to the transmission of information, but intrinsic to perception of the world. The structural coupling they describe is a supremely intimate connection that blurs the boundary between organism and environment. It effectively redefines learning as relationship. Cognition and learning take place when we touch/are touched by our environment. In this context, the less intimate learning becomes, the more it is impoverished.
Positive Frame of Mind

Negativity crushes initiative and joy.

Teachers easily fall into the trap of decrying the deterioration in community values, parenting and student attitudes. The world is no doubt changing, but it can be seen as an infinite kaleidoscope of experience which is framed and mythologized by the stories we repeat about it. To identify or foreground positive features of the experience is not to naively ignore other aspects, but to focus our intent on improvement. We draw energy for further endeavours from our successes, however small. Our positive feeling is reinforced when we celebrate the successes and simply examine and learn from the shortcomings.

Attitudes also profoundly affect the learning context. Children can sense whether they are loved or only tolerated. A positive learning experience can only be borne of mutual care, trust and positive regard.
Patience

*Change takes time.*

Learning implies a change in the learner— a transformation. Very few transformations are instantaneous. In fact, the laws of physics suggest that such change is impossible. Therefore a primary characteristic of the teacher must be patience. I know from personal experience that I may make the same mistake several times before I am able to rearrange my habits or conceptions so as not to repeat the error. I am therefore sympathetic to this tendency in children, and share their excitement when they are able to reach a new level of understanding.

Probably the greatest obstacle to patience is stress. We can see this in a student when they are attempting to solve a problem under duress. We can see it in a teacher when they are experiencing life difficulties and find it difficult to stay calm when a child does not comply immediately or is having difficulty despite extended help. A child’s learning journey is their own and does not need to be a source of frustration for the teacher. They will move ahead when they have overcome whatever mental or emotional blocks are preventing progress. The teacher who is patient remains open and adaptable to changes in approach which might facilitate a child’s transition.
Meaningful Rules

*Every rule must have a justifiable purpose.*

Rules should have a definable purpose which is clear and can be expressed appropriately to all parties of every age. Hopefully the rules can be general enough in principle so that numerous permutations of unacceptable behaviour need not be defined. At one school where I taught, there were three inflexible “rules”: no hurting bodies, no hurting feelings, no hurting things. Other rules were open to consideration and debate. Every child could recite the three basic rules and had analyzed them in fruitful discussions in class. These rules could be applied in a multitude of situations without objections from the transgressor. They could be conceived as a communal remedy for the Buddhist principle that “all life is suffering,” or an application of Hippocrates’ principle to “above all, do no harm.”

I suspect that human behaviour is not normally rule-based. People act in a fairly free-flowing manner according to their desires, past training, and demands of their environment. It is only when a person approaches an inner boundary of acceptable behaviour that they consult their internal rule book to identify the exact location of the boundary. It is key that rules identify community boundaries without limiting genuine inquiry and personal freedom of expression. Rules are subject to regular examination to check their relevance and should not be honoured simply due to the tradition of their existence. There is a time for this examination: during the development of the learning agreement. Rules should not constantly come under question unless circumstances change significantly. Once an agreement is made after studied debate, it should be adhered to so as not to waste time on minor issues.

That said, I believe that if I cannot explain the purpose of a rule to a student, they have a valid right to question its utility. We should not create an impression that the boundaries generated by rules define human personality. We must be defined in a positive way by our creativity within the boundaries.
Golden Rule

Relations among individuals must be mutually beneficial.

Virtually every ethical system or religion propounds some version of the Golden Rule: do unto others as you would have them do unto you. It is an excellent starting point for building a just society and should apply in school also. Clearly this means that students should treat each other with dignity and respect, but the oft ignored corollary is that adults should apply the same rule in relations with students. Too often respect is a deference expected of youth towards age and is paired with an expectation of unquestioning discipline. An oppressive system invites revolt in overt and covert forms. The teacher must constantly contend with manifestations of resentment and manufacture explanations for the fundamental inequality.

The Golden Rule is a good example of a rule which is bilateral— which skillfully weaves together the equal rights and responsibilities of both parties in any interaction. It encourages reflection on the cascading effects of any action rather than simply condemning specific practices. It empowers children with the understanding that they are not victims of the seemingly random acts of others, but co-creators of the spirit of interactions in their community.
**Spirit of the Law**

*We must focus on the ultimate purpose of our actions and rules, rather than obsess about the details.*

We have been trained to create and enforce rules. We have elaborate systems for keeping records of rules made, rules broken and fair consequences for transgressions. Few schools are without a handbook for teachers and students replete with numerous specifications for behaviour. In this morass it is important to reconnect with the “spirit of the law,” the ideals that spurred their creation. While it is important to apply rules fairly and consistently, it is also important to remember the overall behaviour they were meant to encourage and to make adjustments for the ability of the learner to change bad habits. In other words, it is often beneficial to overlook minor transgressions when there is a general positive trend in behaviour and a willingness to act respectfully. Hewing to the “letter of the law” can breed pettiness and invites hairsplitting arguments about the wording of rules.
Natural Consequences

Discipline should model natural consequences for actions.

The creativity of a teacher or administrator is tested in the formulation of natural consequences for problem behaviour. First, consequence is not a euphemism for punishment. A consequence is ideally an extension of the learning experience. It is also an attempt at restitution. Consequences should reinforce the principle that generated the rule— they should mimic the natural outcome of the prohibited behaviour without endangering the learner. And they should be reasonable, relevant, and reusable.

Clearly, a teacher must apply the necessary consequence to themselves if they are guilty of a transgression. I once worked in a school which had a strict no-violence policy. If a physical altercation occurred between two people, both went through a problem-solving procedure and then went home for the rest of the day. Once, a teacher on the playground lost their temper with a boisterous student and pushed them to the grass. Instead of applying the school rule to themselves and simply leaving for the rest of the day, the rule was unilaterally waived. The unbalanced application of the rule led to weeks of suspicious debate among students, parents, staff and school board and ultimately undermined the trust of all concerned in the justice of the policy.
Solving Conflicts, Healing Pain

Conflict is a natural outcome of difference and is an opportunity for growth

Often an erupting conflict is stifled by an authority figure and glossed over with insincere apologies. Unresolved conflicts have a way of resurfacing unexpectedly and in ways that may bear little relation with their origin.

Conflict can become a stimulus for understanding if it is honestly examined for its source, development and context and if there is a sincere desire for growth. Rarely is there a conflict where fault rests purely with one party, although it may appear so when the history of interaction between the parties is ignored. Parties should come face-to-face when the heat of anger has cooled and take turns describing the events with the goal of reaching an agreed description. This may require open-minded listening and the recognition that, although each person's feelings are valid and deserve to be recognized, misunderstanding is at the root of most clashes. Through the discussion process and the need to hear each other’s story without interruption, the parties will often begin to feel more compassionate towards each other and, when asked for a solution to the situation, will make constructive suggestions on restitution. Children are remarkably buoyant and will rarely hold a grudge if conflict is dealt with as it arises. Most problem solving results in a quick return to friendly play.

Sometimes an individual refuses to participate in a problem-solving process. If the process is fair and safe and equal, this refusal amounts to an avoidance of responsibility and undermines the integrity of a learning group. That individual deserves a time-out, either from temporary group participation or for a period of home-study if the incident is serious. Each individual must take full responsibility and speak for their actions.

While problem-solving may seem tedious when applied to minor incidents, it soon teaches students to take those minor difficulties lightly and apply their time to solving issues which deserve their extended attention.
No Hassle, No Complaint, No Blame

Blame and recrimination crush the spirit and focus on failure. We must move forward with the expectation of success.

Given the moral basis for many rules, we are prone to see the breaking of a rule as a “teachable moment” and an opportunity for a lengthy lecture on standards and responsibility. Usually these lectures are “tuned out” by the offender and considered to be a tiresome character trait of the lecturer. The moral standards which generate a rule should be thoroughly considered and discussed when the learning agreement is first made.

When there is a deliberate breaking of an agreed rule (versus by a genuine accident), the natural consequence should be implemented without fuss and with a light heart. A mistake has been made (it happens!) and restitution must be offered as a simple matter of course. The offender will have another chance to avoid the mistake next time. There should be minimal opportunity to bargain out of the learning agreement—the offender’s commitment to uphold their agreement must be implicit. The referee must deal calmly and matter-of-factly with the incident and move on without dwelling on the error.
Teacher as Mentor

A teacher is a companion on the learning journey.

More than providing a source for facts and skills, the teacher models an approach to learning. Rather than simply passing knowledge to the student, the teacher must establish the connection of the student with their own learning ability. That connection is not created through a violation of the student’s learning integrity, by force-feeding information and conclusions. It can best be accomplished when the teacher acts as a problem-solver and invites the student to participate and solve their own growing problems with appropriate methods.

Students can be inspired by observing their mentor coping with difficulties, whether personal or academic, and come to understand that a teacher is not a godlike figure, but simply one with more experience to share.
Different Teacher, Different Style

*Each teacher has different strengths and a unique contribution to make to learning.*

Every teacher has different methods and expectations based on their training and their experience, both professional and personal. Each has strengths and weaknesses and offers differing challenges and insights to their students. As adults, each child will face varied demands from individuals with very different characters. To experience (through contact with inspirational mentors) and cope with that gamut of approaches will prepare the student for a future of unpredictable interactions.

Probably the most important employable skill is the ability to work productively with a variety of individuals. Students who work with the same teacher through much of their learning careers (for example during homeschooling or in Waldorf schools) are not challenged by varying expectations, but learn to accommodate the particular proclivities of their chosen mentor. No matter how enlightened or wise, each teacher presents a limited methodology and outlook on the world.

Encouragement of diversity extends to a respect for the lessons other teachers may impart, even when we may personally disagree with them. While it is appropriate to present contrasting arguments in a spirit of open consideration, to ridicule other teachers' methods or gifts will inevitably cause resentment and rancour.
Teach Your Passion

A teacher’s enthusiasm and dedication are contagious.

Teachers are expected to broadcast a carefully formulated central educational plan and deliver a curriculum generated by experts from academia, guardians of culture and representatives for marketplace efficiency. Whether they have personal real-world experience with what they teach is irrelevant. Their passion for the subject is also incidental, especially after repeatedly delivering the same material for decades. Students are robbed of the spark of fresh discovery and the example from a mentor who is genuinely fascinated with the subject under investigation.

Those qualities are the ones we seek to pass to children and are most prevalent when curriculum is varied from year to year and when a teacher has the opportunity to develop and share areas of particular interest.
**Beginner’s Mind**

*Discovery occurs when the mind is open to the possibility of discovery.*

When we consider that we have mastered a subject, we frequently close the book on further learning and begin to forget the challenges which the subject held. The beginner approaches the subject with fresh perspective and the expectancy of wonder. Each fresh look at a subject has the potential to lead to new insights as the learner expands their understanding and is able to establish new connections in their personal web of understanding.

I am convinced it is beneficial for a teacher to sometimes teach a subject of which they have little knowledge, remaining only one step ahead of their students— or not ahead of them at all, but learning simultaneously with them. This allows them to model curiosity and learning strategies. There is no embarrassment in making false turns in an investigation if the teacher does not maintain an image of infallibility. They model a real-life process of investigation with its unsteady progress and blind alleys, rather than the idealized progress toward a goal which we commonly attempt to recreate in the classroom.
Peer Critiques

*Critique should be a collaborative process, not one of intimidation and judgment.*

The path of task completion requires frequent adjustments, and these adjustments depend on feedback from outside sources. Ultimately, when the task is complete, its contribution to future practice is enhanced by analysis. And further, the meta-task is never complete, but forms part of an endless cycle of planning, implementation and evaluation.

Standards of quality are usually imposed in three ways: by an authority (a person or fixed historical standard), by peer review, and by internal judgment. Internal judgment of practice occurs constantly and, in its healthy manifestation, is a self-adjusting motivational tool. However high the quality of the product, it can be incrementally enhanced at each attempt. Only when a student has unreasonable expectations of themselves (the classic “perfectionist”) does this process become destructive. Internal judgment is the most important critiquing tool but it requires frequent “calibration” through comparison with outside markers. A student should have ready access to historical standards to develop some sense of the range of possibilities, but an exclusive emphasis on outside standards creates a dependency on judgment from others.

I approach critique with the understanding that there is no absolute standard for most pursuits, only examples to compare, beside which the student’s work can take its place. Students must develop a sensitivity to set standards which drive but do not sabotage their striving. Children are hard enough on themselves and each other. They need to learn to provide encouragement to each other along with thoughtful feedback which can be used to guide the next attempt.

When work is presented in a peer review setting, it becomes an opportunity for discussion about goals and standards; it becomes an integral part of the creative process and a time to examine the larger context. Students are frequently nervous about showing work because they are used to having final judgment made on their competence. When peer critique becomes an opportunity to examine a work’s strengths and weaknesses, without judgment, a student learns to understand the complex range of factors in evaluation, begins to think in shades of gray or colour, and does not demand what he fears: a definitive approval or disapproval of his accomplishment.
Display Work

Attractive display of work is a celebration of process and completion.

For most of our endeavours we look to closure and the reward of an unveiling to the public eye. If work is done in secret and shuffled off into obscurity, there is little incentive to focus, to complete, and to excel. If students know that a portion of their work is a gift to the community, rather than just to themselves, they become accountable to the expectations of others.

That is not to say that display is an invitation to judgment and ridicule. The teacher participates in the project of displaying work to its best advantage and of educating viewers about the principle of positive peer critique and encouragement for learners.

What to do about those who refuse to display, despite encouragement? I don’t believe the issue should be forced. Those individuals are often engaged in a struggle for self-esteem and require support, in the myriad ways that this pattern language encourages, to develop the pride and confidence to expose themselves to public view.
Honour Craftsmanship

_Care and fine workmanship is admirable in every endeavour._

It is easy for us to recognize when care and love and emergent skills have been applied to a project. Students experience an immense satisfaction when they have become immersed in their work, have developed competence and have used that competence to create a coherent product. Honour for craftsmanship does not take anything away from others; there can be many competent individuals without emptying the pool of honour. I find it beneficial to draw quiet, respectful attention to those works, to calmly create an atmosphere where craftsmanship can be recognized when it manifests, and to suggest it as the standard towards which we all work. Our expectation is that we will all develop a measure of skill at some point. Until then, we are not failures, but apprentices.
Accepting Mistakes

*We learn from errors; mistakes may be celebrated as a learning opportunity rather than an embarrassment.*

I lament the abiding fear we have for errors. Our fear of reproof and humiliation prevents us from venturing a guess or opinion unless we are fairly certain of agreement from our peers. Without a certain swashbuckling and naive confidence, we are unlikely to risk a project without a predetermined outcome. Without encouragement to consider the unconventional, a student is unable to grasp the significance of the conventional.

For those who truly explore, “mistakes” are the constant stuff of experience. A mistake is a moment of awareness that the current path of action will not realize the desired result— an opportunity to re-examine assumptions and practice, and adjust them to more effectively reach our goals. With that awareness we might acknowledge errors without recrimination and simply use them as signposts for self-correction.
Awareness of the Aesthetic

A sense of beauty should play a part in all of our judgments.

There was a time when even scientific theories were judged on their “elegance” or conceptual beauty. Popular belief is that Albert Einstein used an intuitive sense of beauty to guide him in developing his concepts.

On a purely practical level, the presentation of information plays an important role in how it is received, and in what is communicated. There is data, and there is the vehicle for the data. It is the vehicle which makes the first impression and, depending on the reception, ushers the data into awareness.

The apprehension of the vehicle is usually aesthetic and intuitive or subliminal. As any art teacher will attest, teaching aesthetics is difficult or impossible to do directly. It is a matter of exposure to numerous examples and a constant consideration of aesthetic criteria. The teacher attempts to develop a familiarity and fluency with questions of the aesthetic. We are not referring simply to subjective ideas of beauty, but a sense of overall coherence in the elements of a work, and its ability to attract and engage the viewer.

That engagement could be considered a fundamental measure of the success of our work—alongside prosaic fulfillment of basic criteria—and deserves equal attention, despite its relative ineffability.
Emergent Curriculum

In the choice of curriculum, each investigation opens new doorways.

With curriculum packaged in multiple airtight blocks, an efficient schedule must be worked out to deliver it within the available time. The delivery schedule has been developed through decades of research and input from economic and professional stakeholders and proceeds at a breakneck pace. There is no time for inefficiency for there is a great deal to cover. No wonder it is called curriculum, a Latin name for a racecourse for chariots, from the word currere— to run.

What is lost in the compulsion to develop a comprehensive universal curriculum is the space for diverse structures of understanding and threads of connection among knowledge fields. Relationships are subtle and require so much more time to elicit than simple facts and technical stepwise procedures. For understanding to be coherent it must be built through recursive examination of material from multiple perspectives.

Curriculum, the racecourse, cannot be preconfigured if it is to reflect the emergent understanding of connections by students. As they discover a relationship with another area of study, it should be pursued until the connection is firmly established. Patterns of relationship emerge which help them to apply knowledge and skills from one area to all their learning. They discover relations and, through those relations, their own unity of understanding.

Although I was an enthusiastic proponent of a curriculum— a standard body of knowledge reflecting an educated individual— I now believe that its application and expansion crowd out the critical coherence and holism in learning. Granted that society expects basic literacy and numeracy from its citizens, but it must also support the full development of understanding and creativity.
Relevance to Youth

Young people are discovering their independence and are self-interested; their learning must address their interests to engage them.

As adults, we pay scant attention to information which does not serve our desires and interests. A considerable incentive is required to engage us. Youth are driven by the same motivations. Their perceptual world is inhabited by friends, musicians and celebrities. Personal adornment, identity and social rites are a critical concern. They thrive on adrenaline-driven experience.

We can only engage youth, and their powers of attention, with material which honours their passion. I believe that youth are also outward-looking and intensely interested in their world and social justice. If we deny the validity and value of their current state of being (committed, in our wisdom, to more enduring values), we demean them. If concessions are made in the planning of learning experiences, we develop a mutual regard which fosters future concessions from students when they are resistant to adult decisions. When their interests are respected, they often shed their ennui and show genuine curiosity about new areas of study. Conversely, the opportunity for the teacher to study youth issues in depth can lead to a more profound understanding of the drives and turmoils of our students.
**Encourage Diversity**

*Diversity is the cradle of innovation and adaptation.*

With the infinite variety which characterizes the world around us, why are we compelled to seek homogeneity? Even the use of “standards” that are a current educational obsession imply a norm which we strive to impose on every learner. Although some insist that standards draw a benchmark which can be exceeded in a multitude of ways, the reality is that measurement necessitates a close uniformity in the property being measured. If we try to compare dissimilar properties, we must stretch the criteria to become inclusive, and they become more amorphous and less meaningful and useful.

When a group of adults collaborate, they inevitably demonstrate varied skills and knowledge. Ideally each is able to contribute in a role which suits their complement of strengths. In fact, the group is able to deal with challenges more effectively because their skill set is far broader than one person could encompass. Unusual combinations of skills and approaches will generate innovative solutions.

We take it for granted that athletes and musicians have a special skill and training in their field far beyond ours. We accept and celebrate diversity at the adult level. Yet at the childhood education level, we attempt to construct an ideal knowledge set in our curriculum in order to fashion an *überkind*, instead of creating a fertile garden for diverse growth.

Let us loosen our grip on development and recognize the differences in children. Let us expect that there will be wide variations in the abilities and interests of our children and accept that they are capable of using their unique toolbox to carve out a personal niche in their world. Indeed, that they will be happier with that challenge than their fear of inadequacy when they try to meet an arbitrary standard.
Web of Connections

*Everything is connected; to elicit those relationships is the most important part of learning.*

Objects/ facts in and of themselves have no meaning. It is relationships that generate meaning. I am here referring to the relations and interconnections between facts as well as the relationship between the observer and the object or fact. To me this principle implies a continual examination of connections and parallels as we observe the world, as well as an emphasis on a personal connection and investment with information. Unless we take a position, declare an intent, acknowledge and adjust our bias, we are lost in a sea of meaningless facts.

We draw on all our previous experience and our current intent to fit newly acquired information into a personal hierarchy of significance and our schema of how the world works. Previous information may need to be discarded in order that the new information can coherently join our existing web of understanding.

No schema— religious, scientific, political— can accurately model complex reality. We might acknowledge that each individual can construct a unique and personal web based on their individual outlook and intent. What is important is that the learner be actively engaged in constructing their own schema— making sense of their reality— rather than committing bits of information and algorithms to memory. Also that they be emotionally engaged with the new information so that they are prepared to invest the necessary energy in a demanding project: reconstructing their schema to accommodate new information.
No Question Taboo

_No subject should be immune to inquiry._

When our objective is to discover patterns of connection, it is disconcerting that our culture mandates black holes in the fabric of our understanding. Threads of association trail off at the edge of perception and invite inquiry. The subject of the taboo becomes more attractive than approved paths of inquiry. If the matter is addressed in a straightforward way, without embarrassment and fear, it is defused and it can be addressed on its merits rather than for its shock value. Some parents may be offended that the subject matter has come up, but if it is brought up in the course of genuine student inquiry and is not pruriently dwelled upon, its consideration is defensible.

We might apply the same indulgence to considering questions which are usually considered fully-examined and closed. They are not closed for someone who meets them for the first time but provide a training ground for speculation and logical thinking. All too often our closure on a subject is due to culturally-driven biases which are not universal.
Knowledge is Unfinished

Knowledge is restructured in every age; our paradigms are only temporary structures of understanding.

In every historical age a pundit has declared that the development of knowledge is nearly complete, that our general concept of the world has been perfected and there are only a few details to be finalized. Time and again we have been humiliated when our carefully constructed world view has collapsed in the face of a new discovery or insight. One hundred years hence, our current sophisticated concepts will seem hopelessly naive and methodologies which now seem essential to clear understanding will appear quaint. Furthermore, the idea that there are but a few details to sketch into our world view is dispiriting to the child. The implication is that the ages of discovery are over and humanity will shortly be relegated to continual repetition of mundane activity without hope of fresh insight.

Better that educators humbly acknowledge the continuous shifting of human understanding, admit the tentativeness of current theories and leave the door of innovation open for a child’s ambition. Even the sense that inquiry is an evolutionary process, proceeding inevitably towards a definable perfection, is debatable. While it is obvious that technologies of environmental control are continuously improving, it is less clear that other values have been well-served by progress: diversity of species and ideas, the ineffable “quality of life,” social cohesiveness within society, and peaceful coexistence among societies.

To create more “tentativeness” in their delivery of current thought, an educator can preface their presentation with an outline of the history which led up to current thinking and the values which inform and drive it. They might present alternative and fringe viewpoints— not in the context of Western and scientific values (which might make those viewpoints appear laughable and naive), but in the context of an alternative value system.

For example, the shamanistic view of forces at work may appear naive to most scientists, but the complex and coherent world view within which it is woven provides an alternate explanation for phenomena. It posits a distinctive human identity and another method of naming the world. The shaman does not seek a mechanistic explanation which leads to a distant, controlling relationship, but a narrative explanation which leads to a connected, personal relationship with the phenomenon.
**Juxtapositioning**

When we associate two things with each other, their relationship generates new ideas.

One of the greatest tools for creative thinking which I have employed is juxtapositioning, which involves the parallel consideration of two nominally unrelated ideas. By striving to define a connection between the two, by comparing and contrasting and stretching significance, we are forced to expand our habitual patterns. I am convinced that this is the reason that Tarot and Oh cards can be such useful tools for awareness and self-examination. They crack the rigid associations of events and objects and encourage new links which may spark insights which were previously unavailable.
Real, Complex Problems

*Real-life problems do not have single, obvious solutions.*

We have elegantly-constructed theories explaining the mechanics of the world and techniques for manipulating that world. In the classroom, we provide examples as proof of those theories and opportunities to test the techniques of prediction and power. Our examples are gleaned from textbooks to clearly and unambiguously illustrate our intended point. The examples are always simplified problems, without variant factors and guaranteed to generate the expected conclusion—a simple cause-and-effect transaction. But real-life complex problems never seem to respond in ways predicted by theory. There are always numerous extraneous factors complicating the interaction so that a simple black-and-white solution is inadequate to cope.

When educators use manufactured examples to illustrate their teaching (often to avoid the embarrassment of an intended illustration which fails) they reinforce a simplistic view of human and physical interactions. Teachers are prone to believe that children are incapable of coping with ambiguity. The belief is symptomatic of a cultural investment in “correct” answers which, once ascertained, put an end to the open-ended or contemplative phase of engagement with a problem.

Complexity theory teaches us that, as more factors of a problem are embraced, an exact solution recedes from grasp. Our “correct” answers can only approximate the future state of a system in flux. Furthermore, a complex system allows for multiple possible outcomes for an interaction, depending on tiny variations in the initial and dynamic state of the system.

If we are to prepare students for this current revolution in understanding and outlook, educators should apply theories to real, complex problems with the expectation that they will have limited effectiveness in describing and predicting outcomes. The regrettable loss of a clear-cut solution to a problem is accompanied by the potential for examination of the multiple facets and grey areas inherent in a genuine experience. Of course, in the artificial world of mathematics, correct solutions can be mandated and students must be initiated in those truths, but in every practical application of mathematics the limitations of its ideal descriptions become clear.
Critical Thinking

Respectful skepticism is a useful attitude in today’s world.

Scientific proof and historical precedent are frequently cited to bolster arguments and points-of-view. We have been trained to trust those tools in the hands of “experts”—to trust their interpretations of complex data. Thinking in the late twentieth century led us to understand that all perception is relative, that no point-of-view is unequivocally grounded and universally acceptable. At the turn of the century, with the rise of global enterprise and political hegemony, the public has been subjected to incessant “spin” of events and systematic manipulation of personal desire and opinion. At the same time, the exposure of political and corporate excesses and deception continues unabated.

If we value independent review and critique of human actions, where diversity of outlook may buffer unforeseen catastrophic effects, it is important to generate not only an ability to analyze claims and theories critically, but to instill the habit of applying those skills to every claim presented to us. Skepticism implies the careful and open-minded consideration of evidence for a claim before it is accepted as part of a personal world-view. It especially entails the examination of the motives for the claim and the proactive consideration of opposing viewpoints.

In the learning environment, skepticism demands the constant pursuit of cross-cultural viewpoints and frequent reconsideration of group assumptions in the light of each new learning experience. The textbook is usually written from a most conservative and narrow outlook and represents a jumping-off point for exploration rather than a tract to be uncritically digested and disseminated. Thoughtful opposition from students should be recognized and considered with the same respect as the textbook thesis.

Skepticism need not extend to a cynicism which ascribes sinister motives to every claim and poisons our trust in friends and community. It implies only an open consideration of all the evidence for and against a claim.
**Tactile Math**

*Math must be more than numbers on a page; it must connect with objects we can touch and see.*

I have often been witness to children who are very capable at filling out math worksheets correctly—providing the correct answers to arithmetic operations—but are baffled when they are presented with a word problem or real-life situation which requires mathematical thinking. They have been trained in an algorithm for manipulating symbols, but have no real sense of how the math symbol system was developed nor its application as a language to describe and master problems. This skill starts early in development, in kindergarten with counting, sorting and grouping, but is quickly sidelined when the child grasps the number symbols.

My early years of teaching were shared with a teacher who came from England and had been trained in the use of Cuisenaire rods, developed by a Belgian music and mathematics teacher in the 1950’s. The rods are based on the metric system, 1 cm. square, of varying lengths, and cleverly colour-coded to reveal some of the inherent properties of the numbers up to ten. The ones I used were wood and were stained with beautiful natural dyes, but they are now usually mass produced in plastic. The children in our school began to play and familiarize themselves with these rods during kindergarten and continued to work with them through middle school. I understand they can even be used in algebra study.

I recall that children would start their math period by “playing” with the rods: constructing structures, making patterns, trading with neighbours. They would then be guided through some mathematical manipulations by the teacher, who would model the activities. Then the children would use the rods to solve certain problems that the teacher presented. Children loved the tactile quality of the rods and would often spend extra time discovering math facts after the lesson was over (I can’t recall anything like this with the students using the textbook). Most of all, I remember the thorough familiarity the children had with the rods, the numbers, and their connection with counting, modeling problems, and the basic arithmetic operations. They used the rods to measure length and area, to build tall towers and discover basic engineering principles, and to create carpets of patterned colour.

The magic of the rods was their universal utility: there was no need for one manipulative to teach fractions and another for area and volume. Rods could do it all—they became the universal math tool and their colours and size became as much second nature as the numbers we write on the page. More importantly they made a connection between the abstract world of number and the concrete. Children used them as a tangible bridge between those two worlds.
Reading for Pleasure

*Literacy is an essential survival skill, and its mastery should be a pleasure.*

Unlike that herculean task of spoken language acquisition which comes so naturally to most children, literacy must be taught—at least according to conventional wisdom. Literacy is considered the greatest gift of schooling and appears to be essential for survival in a technological world. Certainly the gift of written language provides an individual with a powerful extension to memory, access to the accumulated experience of the human species and communication abilities with others across gulfs of time and space.

When it comes to teaching reading, educators are embroiled in a contentious battle between the supporters of phonics-based and whole language programs. Most researchers seem to encourage a mixed approach, with both methods offered to early readers and a slowly increasing emphasis on whole language with increased reading skill. A further controversy surrounds the use of artificial graded texts versus primary, real-life reading material. Students are cajoled and encouraged to cope with a range of print material: readers, storybooks, pocket chart sentences, chalkboard instructions, textbooks, labels and manuals, film subtitles, novels, etc.

Acknowledging that we are most motivated to learn what interests us and that the main educational goal, at least initially, is to teach the mechanics of reading to children, it is important for students to have regular time to enjoy the experience of reading. Whether an inexperienced reader is rapt in decoding comic books, teen magazines, or the captions accompanying photos in a wrestling book, it must be conceded that progress is being made. A case can be made for modeling and encouraging the choice of quality reading material and for challenging the skills of a reader, but if those goals come at the expense of a child’s joy in the reading experience, they are anathema. Reading must not become a dreaded chore.
Writing from Images

The interpretation of the visual world with words is an invitation to creativity.

Since the development of photography, images have become devalued. Crude images which required hours of valuable time to produce for an individual without access to technology, and beautifully-executed fine artworks which required even more investment in production time are a rare presence in modern life. While the average person has the tools to produce and consume floods of realistic images utilizing digital video and photography, television and the Internet, the images are rarely blessed with the power of loving attention and are disposable. Advertisers invest considerable attention in choosing and fine-tuning images to generate a programmed response, but the consumer of images, leafing through magazines and surfing channels and web pages, is awash in a flood of visual stimuli, buffeted by their subliminal whispers.

Learners should again spend time with images and reconnect them with coherent stories. The stories need not be true: they may be personal and apocryphal. The development of those stories reconnects the image consumer with a magical “four-dimensional” time existing around and outside the frame of a photograph. It empowers the consumer to develop alternative perspectives and visions beyond those conceived by the creator. It enriches the viewer’s visual field with story.

One way to achieve this is to isolate provocative images from their context in a magazine and present them to students for a written response: poetic, documentary or narrative. Children may respond with rich descriptive passages and detailed narrative accounts of settings and events depicted in photographs. It is especially rewarding to display a single image along with the many varied responses it generates from individuals.
Storytelling

*Few techniques are so basic to teaching as storytelling.*

The most compelling teaching tool must certainly be storytelling: the teacher takes a brief respite from the headlong progress of curriculum delivery to illustrate a concept with an anecdote and the students relax in their seats— it’s no longer learning, but storytime. Yet it is often the experiential examples presented to students which remain etched in their memories rather than the abstract concepts which are the supposed distillation of lived experience.

The narrative of sequenced, sensory experiences is probably the most basic encoding of events, which provide the raw material for learning. In its undigested state it is still open to interpretation and re-experience by the listener, even though it may be paired with moral and conceptual interpretations by the storyteller. Although a story may be formalized and iconize an idea it ostensibly illustrates, it still bears a potential for new understanding with each retelling.

There is something supremely satisfying about the spun magic of a good story, and few storytellers can resist the urge to embellish details or stretch events in the service of a new teaching opportunity. Stories are passed on, morphing unpredictably and resurfacing as urban legends on the Internet. Stories describe the route to a conceptual destination and provide threads of connection between concept and consequence. They are a basic weft of the social fabric, the parole of individual interpretation of shared belief.
Conversation

The give-and-take of conversation democratizes knowledge.

Most communication in the classroom is teacher-driven, hierarchical. The teacher has a clear objective for a discussion and a planned timeline for its completion. The teacher guides the direction of the talk with frequent summaries and “Socratic” questions. Or the classroom is ruled by demanding questions which “check comprehension” of students, most of whom make themselves as inconspicuous as possible to avoid being chosen to answer. Rarely is there an opportunity to converse with a trust that the innate desire of children to learn will make the conversation fruitful—not always with pointed questions and fact-laden replies, but with gentle inquiry into the nature and practice of being.

The art of conversation includes the subtle give-and-take of humour, status-seeking, poetry, debate, oratory, exploration and speculation, and the delightful segues and tangents to unrelated subjects as well as the surprise returns to the topic of origin. In a tightly-packed curriculum, there is no time for these frivolous adventures and children are taught to get right to the point: deliver the reply expected by the teacher and then quietly wait for the next opportunity to please. Students are mechanical answer-producers.

An open-ended conversation between students and teacher provides an opportunity to explore connections between the curriculum and individual lives and the interrelationships between areas of study. My students delight in asking questions which might sidetrack me from the immediate subject, thinking that they are impishly influencing me to deviate from my course. I delight in showing them how valuable those questions are in discovering the interrelationships between subjects, and in discovering the implications of understanding characteristic of one discipline when transplanted to another. It’s a game I often “lose” when I need to wrap up a far-reaching exploration in response to a school bell.

Children are prone to wild speculation which need not be dashed with practical objections. It is fruitful to respectfully explore the implications of an idea and allow the child to decide whether it merits further personal investigation.

Let us make time for candid conversations among learners which have no predetermined goal and are improvisations shared by all.
Deconstructing Media

Media have an overwhelming influence in shaping our lives; their techniques must be examined and understood in order to think independently.

With the almost universal submersion in global media and the sophisticated manipulations employed in those media, independent thinking skills depend on a conscious awareness of media techniques. The use of thematic music to stimulate an emotional response, the parcelling of experience into jittery “shots” and 30-second “spots,” and the unending cascade of technical “events” utilized in television production are a few examples that are so familiar as to go unnoticed in our consumption of information. While they are almost subliminal in their effect when passively absorbed, they become available for critique and lose their smooth effectiveness when subjected to examination.

New computer software has made music, print and video production accessible to every student. In learning to produce their own materials, students begin to examine media presentations around them, perform sophisticated analyses of their structure and become more critical of their motivation. In learning to storyboard, shoot, score and edit their stories, students also gain perspective on the relevance and importance of their personal passions.
Music

Music belongs to everyone.

There is music everywhere there is life: the rhythms, melody and harmony of the heartbeat, the footstep, the rain, the voice, birds, even the cacophony of the city. And of course, there is the conscious production of music and its appropriation: for advertising, anthems of cultural identification, for soothing the agitated city dweller in uncomfortable situations, and as a soundtrack for personal identity. Music is the articulation of emotional life.

But most people are consumers of music. With the proliferation of music reproduction technologies, the individual production of music has become unnecessary. The individual’s quest is no longer for the means to compose and articulate their personal voice, but for a method to acquire, appropriate and broadcast it.

Some schools ban the playing of music outside performance classes in a battle to silence the rebellious anthems of teen music. Only approved forms of musical expression are encouraged: classical, big band and improvisational jazz. Some schools actively examine the musical expression of rebellion through history and hold musical structures and lyrics up to conscious scrutiny. The open consideration of every musical genre and its focus and message robs rebellion of its illicit appeal and allows young people to move on to consideration of music on its comparative merits.

Usually music production, while encouraged and touted as a method for integration of right- and left-hemisphere functioning, is the preserve of “arts” students. While our musical system has become so complex as to require expert training, the basic production of soundscapes can be a fulfilling outlet for every child. The recent widespread interest in ethnic percussion music is probably a reflection of a common desire to participate in musical production—a return to tribal production where anyone in the village is capable of picking up an instrument and participating.
Life is Theatre is Life

So much of life is posturing and role-playing; there is no better apprenticeship than drama.

For some, theatre is an anachronism. For most, theatre is a part of everyday life. People costume and groom themselves to communicate a character—whether real or assumed. People furnish their lives to promote a lifestyle and claim membership in a social group. People try to convey their stories to others to establish empathy and garner support. We admire those who cut a distinctive character and are able to spellbind us with convincing narratives. Theatre is integral, not only to work in the arts, but to sales, service and public relations. Furthermore, the communication skills and confidence inherent in a skilled theatre performer are beneficial in almost every area of work and social situation.

I was fortunate to be apprenticed to dedicated theatre professionals when I began my teaching career. Having spent several years involved in the production of the *Ramayana* Indian epic, exposed to the crafting of masks, elaborate costumes, demons & monsters, weapons, dazzling choreography, musical scores and special effects, it was a natural extension to incorporate those skills into middle school teaching. We began with a pre-packaged play *The Boy Who Talked To Whales*, and went on to adapting simple folk tales from Africa and Japan. These plays incorporated basic costume, makeup, set design and lighting and tied in with appropriate social studies themes. Eventually we graduated to full-scale productions of Shakespeare and Shaw staged in a local theatre facility. Our school became known for several annual theatrical performances which involved kids of every age.

Extroverted children gravitate naturally to an opportunity to be the centre of attention and introverts often volunteer for technical production tasks. But even reluctant performers are swept up in the excitement and intensity of a public performance. I expect everyone to take a speaking part, large or small. Once students experience their 15-minutes of limelight they are keen to repeat it. I have seen shy students develop an infectious enthusiasm through involvement with the theatre craft. I particularly remember a student with a pronounced stammer who gallantly took the role of the Porter in *Macbeth*. Thanks somewhat to appropriate casting, his performance was a highlight of the evening. With time and training, his impediment virtually disappeared.

Theatre productions take an enormous commitment—our large productions overwhelm the winter term—but the skills learned span every subject area: language, history, science, crafts, etc. Insights into social interaction through analysis of scenes, increased self-awareness from constant improvement of personal performances and self-confidence boosted by adult and peer approval are some of the extracurricular benefits.
Play

At the end of the work day there is fun!

Early in my teaching career, I had an earnest belief that extrinsic reward was akin to bribery and prevented a child from discovering the subtle pleasures of learning. With time I shed this belief for an acceptance that rewards are a motivation for most of our endeavours. “Play” is my preferred reward— time for students to freely explore the resources we as teachers control. After the discipline of fulfilling teacher demands, children have earned the opportunity to apply their learning in a less structured and more social format. Play at the end of the day— be it creating with Lego, in the sandbox in the sun, or cooperating in making a snack— is a time to share the reward of a day’s work with learning peers.
Talking Circle

*A talking circle gives everyone equal opportunity for expression and meditation.*

Most people are now familiar with the ritual of the “talking circle” which seems to have originated with the Plains Indians or been a modern derivation of their traditions. Its specific purpose is to encourage thoughtful insights from all participants in a group, whatever their status. Usually interruption of the speaker, who often holds a ritual object to signify their role, is strongly discouraged. The role of speaker is often passed around the circle with the object or the object is returned to the centre as each speaker finishes, so that anyone who feels inspired may take it up.

Traditionally, talk in a classroom is teacher-talk—delivery of a culturally-prescribed narrative or concept, or instructions about activities. Student talk is discouraged as a distraction from on-task behaviour and student contribution to the shape of classroom learning is negligible.

The function of the talking circle is often somewhat different from the democratic council, which aims to achieve certain practical objectives using democratic input from group members. The talking circle is often a “checking-in” process with no particular agenda. It aims to instill a general sense of belonging in group members and apprises the group of subtle issues before they become obstructive. Or it is an exploration of the group gestalt, establishing a direction for inquiry driven by the unpredictable curiosities of the moment.

Because the talking circle usually does not have a rigid focus or goal, it emphasizes that group process is a shape-shifting, shambling beast, beyond definition, analysis or control. Group process shapes the interaction in a classroom, influenced by the tone of the teacher-student relationship, the enveloping culture and the daily experiences of the participants. A talking circle addresses those influences and hopefully weighs and harmonizes them.

An interesting dynamic in the talking circle process is the need for participants to patiently consider and revise their words as they wait for the opportunity to speak. Often the words of one speaker will engender strong feelings in response, but the Western tradition of debate is stifled as we wait for the opportunity to reply. Often a reply is taken up by another in the circle who adds an additional layer to the idea and further depth to its consideration. Often the individual does not receive an opportunity to respond in a second round of speaking and must internalize their response—manifest it in some other form than oratory.
Silence & Reflection

Out of silence comes peace.

The other side of the “talking” coin is silence; not the kind of silence a strict teacher demands and students grudgingly provide out of fear, but the conscious silence used as a tool for reflection and meditation. This silence is an antidote for the incessant sound track of modern living: traffic noise, hum of machinery, advertising hucksterism, the compulsive verbalizing of the modern city-dweller. Periods of silence and introspection play an important part in Quaker schools where children spend time in silence each morning and close to an hour in reflection each week.

Although religious silence is often structured by a belief system or instructions prior to the period of silence, it is not necessary for the realization of benefits. Silent reflection is an opportunity for a child to process confusing sense impressions or personal thoughts outside the constant flow of information in a modern school.

The self-discipline of spending a period in silence alone can be beneficial, as most people in Western cultures find silence of more than a minute excruciating. The constant stream of sensory input is so ingrained in our daily rhythms that we feel adrift and emotionally empty when we first encounter silence. But, with time, silence becomes a fast friend and a well of inner inspiration to balance the insatiable demands of the world.

For 25 years I have been associated with an ascetic who has maintained complete silence for most of his life. Oddly, I never attempted to spend any time in deliberate silence myself until recently. When I did, I began to realize how much we use talk as a distancing mechanism and as a substitute for other forms of demonstrative communication and for effective action. Times of deliberate silence contribute to my ability to listen to others instead of constructing a reply/ rebuttal before they have finished speaking. It reduces my need to control my world through rhetoric.
Night Time

*The night cloaks the hidden side of human activity.*

Night Time is the home of silence and of the infinite. The constant daytime light of the sun which illuminates the shroud of atmosphere is extinguished and we can be drawn beyond the boundaries of the world. It is doubtful that anyone has not felt the awe of a million million stars signifying an infinity of worlds, reminding them of the insignificance of human activity. Yet the fundamental lesson of the night is hidden from students, even at home. Children are called in at dark, gathered close and hurried to bed.

At least some times in the year, students should have the opportunity to experience night time with their learning group: to discover the world of nocturnal animals, the bracing chill of night air, the glories of the aurora, shooting stars, the full moon, and the hundreds of subtle lights which are overwhelmed by the power of the sun.
The Wilderness

*It is instructive for people to experience an environment where they are not in control.*

Our environment is controlled, mastered, subjugated. Or so we believe until we test our frail bodies against the untamed environment and realize the fragile hold we have on the process of living. Outside the controlled city environment, shaped by schedules and formed by the hand of man, the natural world is brimming with countless permutations of matter and energy, most still unexplained in any meaningful way by science.

Contact with the raw natural world is another opportunity to shed the illusion of mastery which plagues the modern man. To function in situations stripped of convenience, engineered solutions, and buffered interaction returns the individual to some of the root challenges faced by living beings.
Cycle of the Seasons

The turn of the seasons is a compelling force and a subtle metaphor.

When we remain in a climate-controlled indoor environment, we begin to experience the illusion that time is uniform and portioned only by clocks. We lose contact with the primal influence of seasonal patterns and cycles. The differentiation, both gross and subtle, which flavours each month in the natural world, informs the rhythms and instincts of the human body. We must remember and acknowledge those influences and celebrate them. There is such a fundamental difference in our engagement with the world in the cold of winter and the flush of summer.

To explore this dichotomy is to begin to reconnect with the cycles of life. The annual journey from spring through winter is one of the most enduring metaphors in storytelling. And to ignore the rush of green energy inherent in spring growth is to severe our lifeline. Better to teach with an intimate awareness of the flow of energy in the natural world and harmonize with that influence; schedule exploratory and active learning in the spring in contrast with inward-focused, thoughtful work in the darker months.
Microcosm

*There is a world as complex as our own just beyond the power of our perception.*

It seems that we are limited in our understanding by the boundaries of our senses. We look at the sky and the stars are pinpoints of light rather than massive, fiery sources of energy. When we look at the ground, we see blades of grass shivering from some unseen activity or a plant dying from some unknown cause. When we bring our noses close to the earth, our whole scale of priorities shifts and we may, for a short period, realize that there is an intricate industry at work of which we are normally oblivious.

I remember listening to a fellow teacher talking to grade 3 children about the life of the red wriggler worms which were the heart of the composting system at the back of the class. I realized that I knew next to nothing about a creature whose industrious activity is central to the health and very existence of the soil in which we grow our food.

I remember listening to a lecturer describe the part salmon carcasses left near streambeds by bears play in nutrient delivery to the soil, and realizing how oblivious we humans are to the intimate synergies which we share. Bear is just a furry—sometimes dangerous—word. Worm is something wriggly that is exposed during the rain.

An elementary school in our area had a program of plot adoption and observation where each child had a square metre of earth which was cordoned and carefully mapped, each of its plants counted and identified. What was interesting to me was the relationship which was established between a child and a tiny world. Everything that happened in that square metre was intimate to that child.

I am also a big fan of microscopes. Not the 1000-power oil droplet models which require a high degree of skill and accuracy to prepare and use, but the 40-power stereo dissecting microscopes which cause the surface of a leaf or the head of a bee to leap into our vision. It is second nature for a child to bring something in from the outdoors to pop under the microscope for a closer look if the tool is readily available.
Symbols & Maps

We encode knowledge in so many ways; children must be introduced to our techniques of symbolic representation.

As alchemists we seek to describe, control and transmute our world through the use of symbols and maps. We believe that we somehow control the complex interactions of nature when we are able to apply a verbal or written symbol to an object or process; we believe that the “naming” internalizes it and brings it within our sphere of influence. Whether this is a comical misconception or deep metaphysical truth, it has informed human interaction with the environment for aeons and is still an unacknowledged core belief in science. We are no better informed when we apply a Latin name to a plant or disease, we have simply made a connection with a common store of observational knowledge about a mystery.

Children can be initiated into the wonderful hermetic world of symbols by learning and creating Latin scientific names, the poetry of incantation, Cabalistic diagrams, magic number squares, maps of their play area, neighbourhood and night sky (complete with original constellations and whimsical names), foreign alphabets, Euclidean diagrams, codes and ciphers, graphs and charts of all sorts, and a hundred other manifestations of the quest to represent and model our world.
Five Elements

There is something infinitely fascinating in the elements that is never exhausted by study.

While humans classify 93 naturally-occurring elements and continue to manufacture short-lived artificial elements, the ancient classification of matter into five elements has its own charm. Earth, water, fire, air and ether are more representative of alchemical states which have fascinated humans for centuries. While understanding of the periodic table has relevance in the modern world, the ancient elements are mythic touchstones deserving of close study.

From a scientific standpoint, the ancient elements may be seen as roughly equivalent to the states of matter, but those elements deliver a far richer insight when they are studied individually, with a magical awareness. Earth, embodied in crystals, sand and the loamy soil which supports verdant plant growth, provides an opportunity to connect with insect life, the web of interdependent plant species and the growth process itself, as seeds are nurtured to develop root and leaf systems. Water, a haven for numerous amphibious life forms, also provides endless inspiration in its complex flow forms, both in sea waves and in streams and waterfalls. Fire, symbolic of energy and danger, is a source of fascination dating back millions of years. Children’s interest can be creatively channelled as they learn to create, control and respect this element rather than develop an obsession based on a fearful taboo. Air, apart from its fearsome power in storms, also provides another opportunity to become familiar with complex patterns in cloud formations, dust whirlwinds and its interaction with water in the formation of waves and ripples. While ether has no modern equivalent, its symbolic role as the medium for unknown forces is still valid today. Ether is the realm of forces still undiscovered by science.

When we talk about the opportunities for discovery offered by the ancient elements, we are not referring to simple scientific observation, measurement, classification, and naming, but a more mystical and poetic meditation on these natural forces. Every child should have ample opportunities to develop a relationship with the elements and respond with insights, both rational and poetic.
**Eyes, Ears, Smell, Touch**

*The senses are our medium of contact with the world and should be explored, evaluated and inhabited.*

While most kindergarten teachers are engaged in structured play and school-preparatory activities, one of the core tasks of the Montessori teacher is the explicit engagement, exploration and tuning of the physical senses. Montessori supplies include materials for stimulating visual, auditory and tactile awareness and, most unusually for our culture, the awareness of odours and tastes and the development of a corresponding vocabulary for their description.

Piaget, the grandfather of child development, was convinced that children before puberty were locked in a concrete world dependent on sensory data and lacking in the ability to develop abstract concepts. While that idea has been somewhat supplanted, most educators agree that children gravitate to sensory experiences and opportunities to interact with the tangible.

Experiences which excite the senses with rich input— unusual colours not usually found in the 12-colour pencil box, the sound of musical instruments developed in far-off places, the feel of snake and dolphin and lychee skin, the smell of ancient spices of nutmeg and cardamom— help to awaken children to a connection with their surrounding world and an interested in engagement with it.
Growing Things

The growth of plants and animals and their life cycle is a model for our own growth.

A classroom without living things (besides people) is a somewhat sterile environment for the growth of children. Despite my brown thumb, I am able to recognize the life which green plants and the rustle of a rodent in a cage inject into a classroom. These living beings respond so spontaneously to care and affection that they provide undiluted feedback for our efforts in this realm. Furthermore, there is in beings that move, change shape, consume and excrete a far more complex fascination than in inanimate building blocks and books. Granted that rodents smell and plants must be watered, that occasionally they die, but this is the stuff of a living existence.

Living things are teaching “tools” which I call fractal. The more closely you examine them, the more you learn, the more minute insights reveal themselves. Secondary sources such as a picture or book do not exhibit this characteristic to the same degree: they are fractal examples of pictures or books or products of their creators, but not of that which they purport to represent. On close examination they become pixelated and begin to obscure rather than reveal their subject’s intricacies.

So I suggest that we provide sufficient ventilation in the classroom and invite plants and animals to share their secrets. I suggest that students take the responsibility to care and nurture their own seed into green life and intimately observe and diarize the friendship.
Personal Health

*We must all be empowered with personal responsibility for our health.*

Few would deny that the advent of anesthetic, antibiotics and sterile medical procedures have alleviated suffering. But there has also been a downside to our burgeoning medical knowledge and technology. People expect a cure for every ill, even those resulting from poor personal habits. Where poor diet, lack of exercise and overindulgence were once a quick ticket to the graveyard, we now assume that medical technology will reverse the effects of excess or replace worn out body parts at public expense. We no longer accept death as an inevitable punctuation to life, but believe it can be “conquered.” Furthermore, we have lost most of the once common knowledge of natural medicines. The only source for healing is the pharmacy.

There are many plant substances which require only simple preparation to provide relief for common health problems. There are simple principles which all health professionals agree contribute to good health and long life. These must be made available to children in their learning process in order to become part of their daily practice and provide a basis for lifelong awareness.
Chop Wood, Carry Water

Children should share responsibility for the mundane tasks required for daily living.

Most children have family chores at home. It is not so common to have chores at school. Some classes do have a pocket chart to list the rotating tasks of chalkboard cleaning, hamster maintenance and computer monitoring. At a more basic level, there are still schools which need the firewood supply restocked each day. Whatever the simple tasks required to maintain the educational community, students should participate.

As a principal, I have experienced protests from parents when kids are involved in a community or school cleanup. “My child is not being sent to school for that!” Even though the kids have been partially responsible for the initiating mess, the job of community cleanup is viewed as beneath their dignity. The social responsibility entailed in the task is not viewed as a worthwhile learning experience for students. Possibly this is a throwback to the idea that education lifts one above the necessity to perform blue-collar labour.

I subscribe to the view that every task is honourable concomitant with its contribution to community welfare and that children should be encouraged to focus on this intent in their work rather than phantasms of social status and prestige. I love to share mundane maintenance tasks with students. When each task is approached without prejudice, it reveals its peculiar gifts.
Building Shelter

Shelter from the elements is essential to survival and its construction is deeply satisfying.

As a child I remember with deep fondness the hours and days spent with friends in the woods around our home weaving branches among closely-spaced trees to create “forts” which sheltered us from imagined enemies. Besides the lessons in structural engineering which a collapsed or teetering construction offered, there was a profound emotional satisfaction in enclosing a personal space and feeling the protection it could offer. To sit in a rudimentary tree fort, relatively dry, while the rain soaks the outside world rewards one of the most basic animal tasks: to ease the threat of the elements to the body.

One of the perennially-popular pastimes in our school was the creation of “bunny homes” in the surrounding forest, where ageless territorial conflicts were settled and the competition for scarce resources (a limited supply of bricks) required delicate negotiations and creative compromises.

When my daughter attended a Waldorf school, she delighted in the sense of accomplishment when her class spent part of a year mastering the technology of log building and created a small log structure on the school grounds.

These memories plead for an engagement by children in primal activities which, though they may seem trivial in the pursuit of marketable skills, nurture the emotional health of a child. Building projects in the woods are difficult to plan and predict: every piece of material is oddly shaped and must be ingeniously attached. Structures are created, adjusted, expanded, renovated, scavenged, and destroyed to supply the materials for a new creation in an allegory of life process. The lessons learned are not repeatable or quantifiable. Each participant takes away something different from the experience, but all understand in an immediate way the sense of security which a shelter gives. It is a sense that only a child-size creation can fully communicate— a mass-produced home only hints at the satisfaction of that basic yearning.
Sharing Food/ Nourishment

*Shared food is a metaphor for shared knowledge.*

Despite our society’s policy of protecting proprietary knowledge through copyright and patent laws, we are still committed to the free exchange of ideas. We understand that the dissemination of those ideas throughout a professional community will test and develop them. It is central to our principle of public education that fundamental and accepted concepts be freely shared with our children in order that they become equal participants in society. We believe that knowledge is food for the mind.

There is a tradition in First Nations cultures that food plays a central role in public gatherings and meetings. It is expected that the host of a meeting will feed the participants—feed their bodies as well as their souls. One aspect of the West Coast potlatch tradition is that participants are being compensated and thanked for bearing witness in a public ceremony.

I have often witnessed how responsive students are to sharing production and consumption of food. During recess snack in a circle, kindergarten children learn about foods eaten in different cultures and share their treasures. In a high school class a student bakes an elaborate chocolate cake for a class birthday. Primary students walk to the family centre to learn the process of baking bread and cookies and proudly carry the product home to their families. An intermediate class enthusiastically plans a bake sale to benefit tsunami victims.

It seems natural that the skills required to make snacks and meals and the fulfillment of eating and drinking should be utilized to build a feeling of shared community in a learning group.
Handmade

*Despite modern mass production, there is still a place in our world for handmade items.*

It is so much cheaper to purchase mass-produced items than to make them ourselves. That is the achievement of industrial culture. But the process of intentional creation of an object invests it with the energy of attention and care that shines forth in the finished product. Each instance of handmade production is unique, for living things cannot exactly duplicate their actions like machines. Artists know that the layers of effort in the development of an artwork show in a patina of deeper meanings. A gift made by hand conveys the commitment of the time it has required to produce.

Furthermore, we are not simply consumers of goods produced by designers and millworkers, but must discover our individual power of creation. We must engage our senses and our productive skills so that they do not wither with disuse. We must reconnect with the natural materials and resources which were the inspiration for our proto-technology.
**Take Things Apart**

*We should be familiar with the parts that compose the systems around us.*

How many times have we been punished for dismantling something-- chastised by a parent for childish curiosity or mocked as an adult by a device which no longer functions after our attempt to repair it. So many technological contraptions are heat-sealed, held shut by proprietary fasteners and protected by a mystical incantation: “no user-serviceable parts inside.” We are impotent dependents of our technology, helpless to revive it when it sputters its last disposable gasp.

My favourite book as a child was the original “Way Things Work” which revealed the inner workings of toasters and blast furnaces, ball-point pens and helicopters. I was not afraid to take the cover off the toilet reservoir and attempt to resuscitate the mechanism, to jury-rig a poorly-designed plastic part which had broken and necessitated replacement of an entire assembly. Hours of delight resulted from clockwork parts strewn across the table and disemboweled toys awaiting reassembly. Of course, the task has become much more difficult with ubiquitous computer chips driving every device, and parts unobtainable for five-year-old items. But the understanding of the basic principles which drive most technology and the confidence to use basic tools to repair and adjust it is a useful, if not essential, skill.
Travel Broadens the Mind

There is nothing like the exposure to different ways of life to increase understanding and dissolve prejudice.

Surrounded as we are by the products of our own world view, it is easy to become immersed in a self-referencing commitment to a single way of seeing things and a single set of goals. With the world slowly edging towards complete capitulation to global capitalism in the American mould, it is difficult for us to appreciate other values and practices. It is only when we are steeped in another material culture that the illusion of universality falls from our way of life. If we are able to suspend our judgment and become absorbed in the coherence of another way of living, we can begin to tolerate, appreciate and adopt the best aspects of it.

When we broaden our definition of school culture and transcend the obsession with safety that keeps us locked in the school building, travel becomes an obvious learning opportunity. When I worked in a remote First Nations community, many of our students had no sense of everyday urban experiences such as traffic, tall buildings, buses, escalators, ID cards, tickets, fast food, etc. They were unable to comprehend many of the references in their learning materials, and had little sense of the potential or promise in modern post-industrial living.

Travel, if it is to enlighten participants, must begin with preparation and opening of the mind. We can read stories and descriptions to generate a thirst for new experience and a desire to absorb rather than to shield the psyche. We can plan our journey with both comfort and an edge of challenge in mind.

In group travel, there is a delicate irony in the cohesiveness of the group; on the one hand it insulates the travellers from extreme culture shock, but also provides a portable culture which prevents a full experience and assimilation of the new. I find the most engaging qualities in a traveller are genuine curiosity and a willingness to exchange with the people they meet. Opportunities for small acts of service provide a connection with the new community, friendships, and an understanding of unique local problems. When the traveller transcends suspicion and insecurity, they discover a complex world ripe for exploration.

I would consider it ideal for a child to be exposed to one traveling experience each year, ranging from trips close to the home community in the primary years, to extended journeys in the teenage years.
Ritual Practice

Most of our actions are rhythmic and ritualized; conscious ritual action for a given goal focuses intent.

Our school life is filled with ritual, though we do not recognize it. Some schools have formal rituals such as anthems and prayers, assemblies, graduations, plays, examinations. Every school has informal and encoded rituals in accepted forms of addressing staff, school schedules, classroom routines, assignment layouts, playground protocols. What characterizes all the rituals is that they formalize the relationship among humans in the school environment and the community. Rituals which establish a relationship or dialogue with natural forces are absent.

While our scientific outlook and faith in mechanistic explanations has supplanted a belief in conscious natural forces, humans still crave an emotional connection with their environment. Maturana speculates that cognition is an integrated process of nervous, immune and endocrine systems and that knowing is a visceral as well as intellectual process. Ritual practices which focus the attention and specify verbal and physical procedures to establish a conscious relationship with our surroundings are a humanizing adjunct to cold analytical explanations of the world.
Celebration of Passage

Life has milestones and those deserve acknowledgment.

In Western culture, the transition between phases of life is an uncertain one, especially for those in the post-puberty holding pattern of the teenage years. Though religious rituals such as bar mitzvah and confirmation honour the coming-of-age, secular families are without metaphorical doorways to mark the growth of child into adult. After puberty, formal passages are marked by perfunctory examinations and the signing of a form. The gauntlet for the modern teen is the driving licence, the legal drinking age, voting age, and eligibility for military service.

There is a de facto ritual cycle for school age children as they enter the intimidating years of kindergarten and primary education and slowly gain confidence until they become senior students, repeating a similar process in middle school, high school and university. Paper-and-pencil tests or simple physical growth qualify an individual for passage.

But schools may also sponsor challenge rituals which entitle the participant to quiet respect from staff and peers. A Rediscovery teacher told me that in the First Nations community where he works, participants in a rigorous three-day vision quest program still proudly wear tattered crests on their jackets signifying their participation more than a decade earlier.
Wandering Without a Goal

*Goal-oriented behaviour is not the only valid mode; wandering too has its time and place.*

Our society trumpets goal-oriented behaviour and labels anything else as loafing. We are constantly progressing towards a goal which defines our lives. Is there really progress or, when seen from a broader perspective, is it simply random jigging motion? Does anyone have enough information and understanding to responsibly map out the course for every moment of their lives with authority? Or do goals sometimes emerge from our moment-to-moment experiences?

Perhaps there should be opportunities to simply inhabit the present— to be satisfied with it— and sometimes allow our activities to be dictated by “hap.” Maybe a bee buzzes by and we wonder and follow its direction. Maybe we come upon an inviting sunny spot. Maybe an interesting, odd fellow totters up and sits on a nearby bench... A waste of time, you say?
**Magic & Enchantment**

*There is so much outside our control and understanding; it should be a source of wonder rather than fear.*

As much as we try to sap our world of its magic, enchantment manages to enter through occasional doorways. Communion with the immense complexity and beauty of the natural world, occurrences of events and phenomena which defy rational explanation, participation in the timeless wonder of childbirth, death, and happenstance outside the normal paths of travel— all undermine the complacency of our trust in rational explanation and control. When that normalcy is dissolved and the individual can make their peace with uncertainty— and indeed welcome it— the mind relaxes its desperate grip on “reality” and truly opens.
Epilogue

Prime numbers are what is left when you have taken all the patterns away. I think prime numbers are like life. They are very logical but you could never work out the rules, even if you spent all your time thinking about them.

-- Mark Haddon, the curious incident of the dog in the night-time, (Toronto; Anchor 2003) p. 12

In the Prologue to this work I referred to profound learning which grows from a spontaneous and mutual exchange between "student" and "teacher". While the medium of the thesis does not fulfil that ideal, I have included some reflections on an extended conversational exchange with three professors about this pattern language which occurred on August 11, 2005.

For that exchange to become a "conversation" required some preliminary discussion of shared terms and concepts, especially an exploration of pattern and language and their interrelation. Pattern is a word which feels comfortable and familiar to most users but eludes a crisp definition. There is certainly a relationship between pattern and iteration. An idealized path of thought or action may act as an attractor which shapes the resultant action without exactly predicting its course. Each recurrence of the action is distinct, yet approximates that of previous and subsequent paths.

To be identified, patterns must be distinguishable from random activity and must be accessible to some descriptive tool. That tool might be metaphorically called a language, in this case consisting of a vocabulary (the descriptive phrases which evoke an empathic recognition among the participants in the conversation due to their shared experiences) and a grammar (the consistent structure of presentation of those phrases, which both reduces the effort required for apprehension of the ideas and limits the scope of the presentable ideas). There is a natural redundancy or tautology in communication in that the ease of exchange is proportional to the familiarity of the concepts being communicated. In other words, radical ideas are difficult to transmit in any communication schema because the communication tool is based on a system of pre-existing shared meanings and structures.

The map, however, is not the territory. Our conversation about pattern is simply (or complexly!) a casting about for shared experience which illuminates an internal pattern to be communicated. The individual has filtered a distinct pattern from complex input using a system of metapatterns which manage their perceptions. They seek to share that recognition and establish a bond of agreement with others which will make that pattern more palpable. The pattern does not become more real, only more readily recognizable due to its integration with the pattern language shared by the group or culture.

In contrast to the soft negotiation of conversation, it was pointed out that many of the aphorisms which follow each pattern phrase in the language here presented use the term "must". The use of this authoritarian word is especially prevalent in the early patterns which address institutional and organizational issues, and gives way to a gentler vocabulary when interactions with students are described. One can hear the echoes of the traditional father figure sternly managing
behaviour and making family policy and then retiring to the drawing room while the mother transforms the task into one of nourishment of the soul. I understand that Robert Bly suggested that one should slay the father at least once per day.

It is clear that I face a fundamental tension as I migrate from the task of Teacher, where the relations with students are intimate and immediate, to that of Principal, where I am expected to formulate global plans and communicate them to teachers whose pattern languages may be radically different from mine. One is tempted to devolve into drafting prescriptive policies whose style institutionalizes and freezes free pattern-making. I sometimes feel exhausted by my commitment to a poetry and aesthetics which invite interpretation and offer cloudlike support to a struggling teacher who might prefer a foolproof education recipe.

This is compounded in First Nations communities where there is a cultural affinity for tradition and established ways, an affinity which has been simultaneously undermined and reinforced by contact with European culture: undermined in the erosion and devaluation of aboriginal world views, values and practices; reinforced in the paternalistic application of authority and creation of a culture of dependence. I have found the confidence necessary to improvise and interpret does not come easily to First Nations students or teachers. There is a deep fear of “error” and humiliation. They are a culture gingerly forging a hybrid path which will honour their past and also give them a strong footing in a technological world. One would think this is an ideal environment for thinking in terms of patterns, where there is a need for innovative solutions. But our global politico-economic culture gives scant real recognition to aboriginal advancement. There is a tone of condescension in our support for aboriginal initiatives. Aboriginal people sense it and it impairs their confidence and pride.

But that is characteristic of a general cultural reluctance to think in terms of open-ended patterns. We maintain a global production line and it would be antithetical to invite uncertainty. With time the ideas espoused in quantum physics and complexity theory may trickle down to the political, economic and educational level to replace or modify the practices of the industrial revolution. Those ideas have been embraced for millennia in Eastern philosophy, but even there have been submerged in the technological tsunami which has immersed our planet. I hold a hope that the empty calories of material efficiency and wealth will engender a hunger for the richness of diversity and connection, which is the touchstone of this pattern language.

My own pattern language will shift like leaves whirled in the wind, as I recognize new designs and old ones become strange. As long as the conversation continues, that wind continues to blow.