Perspectives
on Place
in Education

by

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Abstract

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This thesis explores the philosophical role of 'place' in contextualizing educational reform throughout the 20th century. It is argued that educational reform movements can be understood in terms of how they construct and reconstruct the geographical and ideological landscapes of education.

The thesis begins with a general introduction to the study of place in education, focusing particularly on the role of ideology and developmentalism in the study of education and place respectively. Subsequent chapters then integrate these two foci by contrasting the different ways in which a number of educational reform movements have organized classrooms and other learning spaces throughout the 20th century. Until the mid-1960s, all reform movements by definition were committed to the physical construction of learning spaces, but with the rise of the cyberschooling movement, a new focus on virtual learning places has now taken hold. A latter chapter of the thesis examines the cyberschooling agenda for education from the vantage point of place. A concluding chapter considers how changing societal and technological conditions could impact on the future of place in education.
To my parents
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Chapter 1:

Place, Pedagogy, and Personhood

When I look at the places I’ve been, the people I’ve worked with, and the things that I’ve done and believed, I am content. The person I was a year ago is not the same person who writes these words today. Nor will I be the same person in the future, for I am continually developing a sense of self-worth, and an understanding of myself, the world, and my place within it.

- David Hutchison (1989, p. 1)

The original impulse to write on the topic of place in education occurred during the winter of 1985, my next to final year of high school. I was looking forward to university and the promise of pursuing a research agenda of my own making and I already had a good sense of just what that agenda would be, at least in a general way. I wanted to be a philosopher of education and it was with this interest in mind that I began reading, on a cold, winter night by the fireplace, M. R. Heafford’s (1967) biography of the ‘father of
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progressive education,' Jean Heinrich Pestalozzi. I had already devoured John Dewey's *Experience and Education*, having chosen it over the more challenging and (then) inaccessible *Democracy and Education*. In tracing the roots of progressive thought, I was ready to move on to explore some of the foundational writers of progressive education, most notably, Rousseau, Pestalozzi, and Froebel. A good place to start would be with the biographies of these early progressives which, particularly in the case of the later two reformers, linked their respective theoretical ideas to educational practice.

Several things struck me about Pestalozzi's life and work and together these points helped to frame, in my mind at least, the notion of schools - and public education more generally - as special places and testing grounds for innovative and challenging ideas. First, I was surprised to learn that Pestalozzi's most notable experiments in education at Burgdorf (1800-1804) and Yverdun (1805-1825) were constantly under threat of closure, mostly due to financial challenges related to Pestalozzi's inexperience as an administrator. Pestalozzi began his work with children - impoverished children no less - fairly late in life, but despite the high praise and notoriety his schools achieved, he never developed the organizational and fiscal management skills needed to ensure the long-term stability of his efforts. Thus, the stress of impending school closure preyed deeply on Pestalozzi throughout his life. To this day, this image of Pestalozzi as an embattled reformer serves as a needed reminder of the precarious nature of educational reform. It is also an image that I carry with me whenever I face challenges and disappointments in my own teaching.

I also had a second, more pronounced response to the places described in
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Pestalozzi's biography. Manifested throughout Heafford's account is the optimism of an age that was just now awakening to the promise and potential of early childhood education. Pestalozzi's work attracted the attention of European leaders and royalty and Pestalozzi himself played host to numerous dignitaries who visited his schools. There seemed to be, throughout Europe during the early 1800s, a genuine interest in experimental and innovative approaches to child education, even at high levels of national governments. Pestalozzi's disciples and other educational reformers were similarly influenced by his thinking and brought his ideas home and began implementing them in their own experimental schools across Europe. In an historic turn of events, one such reformer, a young German student-teacher, sat at the back of Pestalozzi's class for several weeks, carefully observing the practice of the master teacher. Soon to be one of leading reformers of the next generation of educational progressives, Friedrich Froebel would embrace and then later extend Pestalozzi's method, inventing the kindergarten along the way. Years later in my book, Growing Up Green: Education for Ecological Renewal, I traced the legacy of educational reform from Pestalozzi to Froebel and on to progressive and holistic education:

Through lessons in map and model-making...Pestalozzi pioneered the study of place in childhood by having his students explore the terrain and topography of local ecosystems. However, it was left up to one of Pestalozzi's most respected student teachers to consolidate the child/nature relationship in an even more integral manner. As Pestalozzi's more influential protégé, German-born educator Friedrich
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Froebel further developed the relationship between the child and nature as established by Pestalozzi and Rousseau and introduced into this mix an even more profound third dimension which embraced a three-fold relatedness between humanity, nature, and spirit (God). Froebel is perhaps best known as the founder of the kindergarten. Progressive education appropriated this aspect of his pedagogy, but dismissed those elements of his work which extended from the spiritual realm and potentially threatened a secular view of education. Holistic education, on the other hand, embraced Froebel's conception of the spirit and further developed it as the basis for a new vision of child development and education. (1998, pp. 84-85)

Their philosophical and curricular contributions notwithstanding, it was the spirit of place which characterized the experimental schools of Pestalozzi, Froebel, and other early reformers that captured my attention. As a young adult reading about the optimism of the age of early progressive education, I was struck by the seemingly coherent fusion of spirit, optimism, freedom, and educational practice which seemed to characterize the experimental reform projects of the time. In Pestalozzi's day, there was no such thing as a board or ministry of education. Pestalozzi and other educational reformers, such as Robert Owen, whose work I chronicled in an undergraduate paper, founded their experimental schools in small villages across Europe and invited local children to attend them, often free of charge. The intersection of an experimental temperament, a romantic philosophy, and unbridled optimism marked the beginnings of the progressive revolution in education from which many educational reformers have never looked back.
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A Place to Learn

Around the time I was reading about Pestalozzi and other reformers, I was also causing a mild degree of grief for my teachers. For example, I can remember standing up during a grade 12 math class and announcing that "we go to school to learn how not to learn." Although I was an average student, with no discipline problems to speak off, I was disenchanted during most of my high school years. My social shortcomings are touched on briefly in the next chapter, but I was also privately formulating a critique of my schooling which led me to believe that I was not getting what I needed in a traditional secondary school program. I wrote my first essay on the topic of education in 1986 while in grade 12. My comments reveal a disaffected adolescent with a not-to-rosy view of place in education:

Because the school environment is so unchallenging and boring, teachers quickly learn to turn a student's potential into a 'false success' by using outside motivators (such as gold stars, threats, and extra marks) which are designed to trick the student and make him want to learn what the teacher wants him to...The teacher's idea of a good classroom environment often requires that students remain quiet and seated and look straight ahead to the front of the room. (p. 1)

So, in grade 13, I transferred to an alternative school, the School of Experiential
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Education (SEE) in Toronto. This was a difficult decision which met initially with some resistance from my parents, who were concerned that I might be jeopardizing my chances to gain admission into university in the next year. However, my parents concerns were short-lived. I thrived in the alternative program, improved my marks, and soon began to put my educational musings into writing in a thoughtful way.

As the name suggests, the SEE program is built on the idea that individual and shared experience should drive learning. New and revisited experiences are both the source and outcome of effective learning. Learning is contextual, personal, and shared. In conceptualizing this view, the school’s curriculum closely follows David Kolb’s (1984) experiential learning model which comprises the stages of concrete experience, reflective observation, abstract conceptualization, and active experimentation. By challenging me to reflect on and draw from my experience, on both an individual and shared group level, the SEE program set me on the path of articulating an educational philosophy which was drawn from my own experience of school and my early work experience with children. My fledgling early philosophy of education, as articulated during my grade 13 year, reveals a strong individualistic strand of thought which I have since distanced myself from:

The young student must be given the freedom to become aware of himself - and to develop his own sense of self. His ideas, values, and beliefs must be heard and accepted by the teacher - and carefully nurtured...Education is a mission of discovery, not for knowledge of the past, but for the concepts of the future, all of
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which are buried deep within us and can only be unleashed through interaction and experience. Therefore, education is the process of self-discovery. (1986, pp. 23-24)

Until I attended SEE School, my notion of place in education did not extend beyond the four walls of the classroom. Education was what happened inside these four walls. Life was what occurred outside of the school. Yet the SEE program changed this perception by honouring those learning experiences which occurred outside of the school. (This was an admittedly risky move on the part of the program. Not all students were inclined to 'work on themselves' throughout the year and some laxed off.) My teachers encouraged me to reflect on and work through those personal experiences which preceded my entry into the SEE program, particularly my work experience as a summer camp counselor which is discussed below. Such reflections were complemented by overnight trips, first to a small village where our class conducted a community study, and later to an outdoor education center, where we explored group process. In contrast to many traditional class trips, these overnight stays were not separate from or mere add-ons to the instructional program; rather they were the culmination of a study of group dynamics (in the case of the later excursion) or the impetus for new learning (in the case of the former excursion). The impact of these excursions on my emerging philosophy of education was to implant in my mind the notion that schools - as places where children go to learn - serve as arbitrary choices for formal education. The existence of schools need not be a given. Throughout the coming years, this notion of flexibility in learning places would frame much of my thinking about education as I studied free schooling,
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deschooling, and, beginning in the 1990s, cyberschooling proposals (see Chapter 5).

A Place to Practice

During my final year of high school, I was hard at work developing the fundamentals of a philosophy of education and improving my practice as a recreational worker with children. Critical of the perceived authoritarian and irrelevant nature of my own traditional education, I became entranced with the notion of freedom in education - the idea that an individual student is best able to direct her or his own learning. In my thinking about education, I began to challenge the need for grades, external rewards, and teacher authority. I argued that each student should direct her or his own learning according to one's personal aspirations and needs. In characterizing my thinking as the "freedom from philosophy," I articulated the following principles:

All students should be free from control, restraint, authority, and discipline, as long as they respect and do not interfere with the rights of others. A student's education should be as free as possible from excess structure, rules, and teacher expectations. Limitless opportunities for growth should be afforded to students...so that they may discover their interests and develop personal learning goals which will guide them through their education. (1987, p. 2)

To support this educational ideal, I needed an ideal educational place that could
serve as a role model for my own work with children. Like many other supporters of free schooling, I found such a place in Summerhill School in England. Founded as a residential co-educational private school by A. S. Neil early this century, Summerhill served as a testing ground for libertarian principles. The school gained worldwide notoriety with the publication of Neill's 1960 book, *Summerhill: A Radical Approach to Child-rearing*.

Many of my early writings, throughout high school and university, incorporated one or more aspects of Neill's work. One high school paper served as an overview and critique of the Summerhill philosophy. A lengthy first-year university paper traced the development of Neill's libertarian ideals before Summerhill. Yet I was not content to simply revere Summerhill as an ideal educational place in my academic life. I also wanted to put my libertarian ideals into practice in a place where I could personally test my maturing philosophy of education. In 1986, I found such an opportunity as a summer camp counselor working with children with medical handicaps in a residential camp in Northern Ontario. Intent on making the most of my experiment at camp, I kept a record of my experiences and turned my reflections into a major project upon my entry into SEE School in September.

The paper that I wrote - aptly titled "The Dismantling of Freedom" - attempted to articulate why I fell so short of my goal of successfully facilitating a camper group following the principles of freedom. Using a flowchart structure which chronicled and analyzed several discipline incidents, I attempted to articulate how my libertarian understanding of freedom going into camp was almost daily challenged by my camper
group's need for structure and guidance. In the preface to my paper, I wrote about the challenge of facing continuing disappointments and setbacks and the need to come to grips with the threatened disintegration of my camper group:

I made many failed attempts, throughout these months, to explore the experience as much as I would let myself. I seemed to have a dire need to come to grips with the summer experience, especially those behaviours and feelings which caused it to develop negatively. To discover the root causes of my frustrations and my failure to 'move' and influence the children's development at camp - this was my goal. (1987, p. 1)

In reflecting on this early focus on freedom, I wonder now if a radical free schooling agenda for education has not represented, throughout most of this century, a shared ideal for many young reformers. (In our increasingly corporatist culture, this ideal may be less attractive now than in the past.) I know that I have 'matured' in my view of free schooling to the point where I now recognize the important role played by adult authority in children's lives. In the years since my 'freedom experiment' at camp, I have proposed and implemented camper programs that utilize a group dynamics approach to leadership. In these programs, children participate as equals, but under the careful guidance of adults, in program planning and problem-solving sessions aimed at addressing discipline situations. Indeed, in *Growing Up Green*, I chronicle such an adult-facilitated approach to working with groups. I also make a point of challenging the
libertarian vision of schooling (pages 52-54 and 113-117), and explicitly argue for an authoritative role for parents, teachers, and other caregivers in the lives of children.

*Idealized Places*

Pestalozzi's schools, SEE School, Summerhill, and summer camp - at one time or another each has represented an idealized educational place in my mind. During my last years of high school, the optimism and experimental temperament of Pestalozzi's cohorts excited me about the possibilities of educational reform. If I could go back in time to a single moment in educational history, Froebel's visit to Pestalozzi's school in Yverdun might very well be my destination. Or would my destination instead be Summerhill? During my undergraduate years, I wrote widely on the Summerhill School and A.S. Neill's life and, for a time, I even debated a visit to Leiston, Suffolk where the school still operated under the direction of Neill's daughter.

Yet such a visit was not to be. The challenges I faced implementing a libertarian approach as a camp counselor and a growing awareness of the global challenges facing the world led me away from the individualistic impulses of the libertarian philosophy toward a more holistic, ecological, and teacher-directed philosophy of education. So too my focus on place in education slowly shifted from a fixation on ideal educational places - each characteristically removed from the influence of the surrounding society - to a concern for the vitality of local communities and the wider global environment. I retained my early interest in child psychology, but framed my theory of child
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development in a constructivist/holistic framework that emphasized the importance of
place, story, and earth literacy in helping children to develop a functional cosmology of
the world, a 'working theory' of how the world works (Hutchison, 1998).

This thesis marks a return to a focus on place, not as a curricular area of study, as
articulated in Growing Up Green, but as a designated, physical locale where formal
education is deemed to occur. Just as the educational places which were dear to me in
my formative years informed my developing educational philosophy, so too the process
of writing this thesis has further clarified my own thinking about special places in
education. In the chapters which follow, my interest in the philosophy of education and
child development continues to find expression as I explore the relationship of place to
the history of school design, educational ideology, and cyberschooling.
Chapter 2:
The Meaning of Place in Education

One of the demands that we make of places is that we be able to recognize them...Built places of real distinction require effort; an effort in the making and a corresponding effort of recognition. They respond to our queries because they embody careful, particular thoughts. They may bear the traces of many imaginings, the scars of conflicting territorial claims...We must seek the stories in them, piecing together the evidence of our senses and joining in the action.

- Donlyn Lyndon (1986, p. 2)

There is a beautiful moment during the graduation ceremony in certain Waldorf schools which sees each child of the youngest class lead hand-in-hand into the auditorium, a member of the graduating class of the school. Each graduating seventeen-year-old, having dedicated nearly a decade-and-a-half of one's life to the school, is ceremoniously led single file into the auditorium by a four-year-old child who is just now
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embarking on a similar journey. This rite of passage, which is repeated year after year, is first and foremost a ritual which celebrates the accomplishments of each member of the graduating class, but it serves also as a temporal marking off of the significance of 'this place called school.' For all those who attend the ceremony, this moment is a cherished reminder of the sanctity of this place, its significance, purpose, and legacy.

In its own way, I hope that this thesis can serve as a reminder of the significance of schools, as places which are imbued with meaning - both shared and private. Schools act as conduits of ideas and practices within which cultural knowledge, norms, values, attitudes, and skills are passed from one generation to the next. As students, teachers, parents, and citizens, we invest schools with the responsibility for continually renewing the social fabric of society. For adults, schools hold the promise of a secure future life for our children. For students, schools serve as formative sites where social roles and moral codes of conduct can be tested out and practiced. To study the role of place in education is to study the institutional bridge that ensures our cultural continuance, that connects one adult generation to the next.

An exploration of the role of place in education would be warranted any time, but the reforms to education that are presently being proposed surely make this investigation a timely one - one that is perhaps even overdue. This thesis is written during a period when schools, in industrial countries all over the world, are facing financial hardships and public pressures that have prompted school boards and local education authorities to search for increasingly innovative ways to serve students through revamped curricula, private sector funding, austerity measures, high-tech
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reform, and other strategies. So too we are currently in the midst of a technological revolution related to advances in computers and telecommunications that promises to transform our notions of work, leisure, and education. Many economists are arguing that we are rapidly moving from an industrial-based economy to an information-based society. To succeed within such a society, most workers will need to demonstrate advanced technical, critical thinking, and collaborative skills and quickly adjust to rapid technological and occupational change. In the eyes of many, our schools must play an important role in preparing future citizens for these new realities by revamping the role of education in society and adjusting accordingly the types of services which schools provide.

The changes to society which are occurring just now are already altering our notions of place, community, and selfhood. Contemporary notions of place which for centuries have been grounded in the physical experience of neighborhoods and local communities now face serious challenges as networks of individuals linked by global telecommunications replace face-to-face meetings between people and as virtual places in the digital world of Web sites and the Internet replace firsthand contact with people and places in the real world of local communities. The lasting impact of such a fundamental shift in our lifestyles and notions of community and selfhood are yet to be worked out. However, it seems clear that such a fundamental reworking of place will continue to have far-reaching consequences within most industrialized societies. The fact that public education is now being called upon to actively contribute to this change process begs the need for further investigation. This thesis argues that the study of place
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in education can serve as an important vantage point from which to explore many of
the changes to education that we are presently experiencing and are likely to experience
in the coming decades. By exploring how the notion of place has contextualized
educational reform throughout the present century, the chapters which follow articulate
a natural history of place in education that may serve as a helpful context for exploring
educational change in the future.

The Meaning of Place

Place - the term conjures up visions of locality, spatial representations of those
places we are familiar with, and those places whose unfamiliarity intrigues us. We reside
in places, go to work and recreate in places, travel daily through places that are
sometimes meaningful to us - other times ignored or taken-for-granted. We identify with
those places that played some formative (if still elusive) role in our childhood years,
those places which are associated with good times or bad. Place - the term is imbued
with emotion, defined by the boundaries it imposes on space, and informed by the
utility to which space is put in our lives. Place can be understood as an individually
constructed reality - a reality informed by the unique experiences, histories, motives, and
goals that each of us brings to the places with which we identify.

Yet place can also be understood as a socially constructed reality. The boundaries
which define spaces and the utility to which spaces are put are often shared and
understood by a community of people. Even our emotional connections to places (e.g. to
home, school, church, or summer camp) have communal origins that are integral to a full understanding of 'this place.' The significance of place is often enhanced by the personalities and idiosyncrasies of the individuals who populate a place, but, as any returning member of a graduating class will tell you, the significance of a place may well endure after our departure. The spirit of place is carried on, if often transformed, by those who come after us.

In addition to its more common day usage, the concept of place also has deep philosophical roots. In ancient Greece, Aristotle used the term (topos) to refer to feelings of belongingness that are evoked by the 'where' dimension of a person's relationship to the physical environment. Centuries later, Roman philosophers introduced the notion of the genius loci or the spirit of place, a phrase which has helped to frame much of the academic discussion of place in recent decades. Recent years have also seen a renewed interest in the concept of place as a way of expressing the emotive relationship of person to environment in a variety of disciplines, most notably architecture (Arthur, 1992), geography (De Blij, 1998), psychology (Groat, 1995), and environmental philosophy (Orr, 1994). Yet, despite this renewed attention, the concept of place has continued to remain elusive and contested, well outside the purview of most disciplines and professions. Jonathan D. Sime (1995) underscores this assessment of place and warns of a potentially uncertain research path ahead:

The concept of place is reaching the early stages of academic maturity.

Undoubtedly, there are confusions in the way the concept is used at present. What
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one wants to avoid is the concept becoming a catch-all 'wastepaper basket', receptacle for a whole range of research and design issues which would otherwise be discarded by whichever subject area is espousing the concept. (p. 28)

Perhaps the most succinct definition of place is forwarded by Christian Norberg-Shulz (1980, p. 18) who defines place as "space plus character." This phrase captures the semiotic and emotional connection of person to space which gives a place its unique identity. Instead of "designing spaces," place-conscious architects are in the habit of "creating places." They create places which are culturally meaningful and emotionally resonate. To focus on place as space plus character is to balance the geographer's over-attention to physical settings with the psychologist's over-attention to mind. The discussion below briefly expands on this basic definition of place by situating place research within the context of three of its major disciplinary advocates: phenomenology, human geography, and critical sociology. I have chosen these disciplines in order to give voice to three divergent "root metaphors" and the way place is constructed within each of them.

The Phenomenology of Place

[Consider] the experience of fire. Before I ever heard any explanation about the phenomenon of combustion, I had already experienced fire in different situations in my own life. I had experienced its heat, its brightness, and its destructive or
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purifying character...Phenomenological description aims at retrieving through thought, the original soil of experience, the life world that is assumed by our representations and by scientific knowledge. (Korosec-Serfaty, 1985, p. 68)

The aim of phenomenology is to "return to the things themselves" (Husserl, 1962, p. 8), to return to "that world which precedes knowledge" (Merleau-Ponty, 1967, p. 9). Phenomenologists ask what is the primal, subjective, and pre-cognitive place experience of the human? To be human is to be in relationship. To know that relationship is to articulate one's sense of spatiality. The primary spatial relationship is that of our orientation to the world. As an ever-present reality, gravity and our erect stature set the vertical dimension of lived experience apart from that of the horizontal landscapes of our existence (Dovey, 1985). From a phenomenological perspective, place is inhabited, rather than filled. Out of basic necessity, individuals dwell, find shelter, and arrange spaces for their possessions. They are intentional in their effort to find meaning in settings. Immediate perceptions, memories, anticipations, and hopes all contribute to the historical richness of that experience. Although each individual's experiences are subjective, phenomenologists are engaged is a constant search for the unity (i.e. universality) of meaning in the subjective. This search establishes phenomenology's claim to be a science (Korosec-Serfaty, 1985).

Researchers who apply a phenomenological approach to the study of place in education ask: What is the everyday place experience of teachers and students in school? How are learning spaces implicitly structured to reveal paths and boundaries, private
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and public spaces? How is the temporal flow of the school day experienced as a mitigating influence on perception? How do children and adults differ in the way they make sense of a learning space? In what ways is a classroom set apart from or integrated with the school and community that extends beyond its four walls? What can be said of the emotional connection of person to place in education? How are selected learning spaces feared, longed for, or treated ambivalently?

The Geography of Place

It is possible to visualize a town as consisting only of building and physical objects...A strictly objective observer of the activities of people within this physical context would observe their movements much as an entomologist observes [the behaviour of] ants...But a person experiencing these buildings and activities sees them as far more than this...in short, they are meaningful....The meaning of places may be rooted in the physical setting and objects and activities, but they are not a property of them – rather they are a property of human intentions and experiences (Relph, 1976, p. 47)

A focus on meaning, reflection, and theoretical suppositions, rather than immediate, unreflected-upon experience, distinguishes the geographical perspective from the phenomenological tradition. Human geographers explore those factors and influences that bridge the distance between environment, culture, and individual
psychological processes (Altman and Chemers, 1980). Place is rooted in how particular places are invested with meaning on both individually and socially constructed levels. Human geographers ask: What is the nature of the emotional and semiotic relationship of person to environment which is evoked, often in a communal way, by particular settings? How are places constructed, navigated, symbolized, and otherwise conceived? Places are variously judged to be coherent, safe, aesthetic, appropriately scaled, and functional or alternatively critiqued for lacking these and other qualities. So too there is a clear biocentric line of thought running through this tradition which laments the loss of natural and aesthetically congruent places throughout the world.

Although the study of place in human geography often has unmistakable environmental overtones, there is also a strong focus on the urban living experience (e.g. Tuan, 1974). Place theorists have studied the strategies which city dwellers use to navigate and make sense of urban locales, public spaces, and common thoroughfares. So too aesthetic and architectural evaluations and environmental and health audits of city centers have been conducted (e.g. Archibugi, 1997). This and other investigations have made important contributions to urban renewal efforts, architectural and city planning, social psychological research, and public health initiatives. Efforts to demarcate residential and commercial zones within cities and choose appropriate sites for new schools make these urban planning studies relevant to education.
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The Sociology of Place

The physical environment can be understood as a system of three-dimensional, hieroglyphic symbols - a text that conveys information about the social, political, economic, and cultural relations of society. Places not only sustain individuals in a tangible way by providing shelter...they [also] tacitly communicate a way of life. (Sutton, 1996, p. xiii)

The aim of critical sociology is to expose the power relations within society that operate in a colonizing fashion to extend patterns of inequity, domination, and subjugation. By deconstructing the physical environment as a visual text - as a structural, rather than topographical narrative - places can be interpreted as cultural sites that are tacitly involved in the production (and reproduction) of social inequities and patterns of domination. Places are judged to be partisan and ideologically charged. They are not value-free or apolitical. The visual texts of places alternatively constrain or empower our potentialities as individuals by restricting access, encompassing various levels of environmental quality, and perpetuating other overt and hidden inequalities. Places shape our consciousness, social identities, behaviour, and attitudes. The forces of hegemony and resistance work against each other to reinforce and oppose these processes respectively.

In education, the critical sociological tradition has found expression through the critical pedagogy movement. In the passage below, Henry A. Giroux, writing in the
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foreword to Sutton (1996), argues for several of the basic tenets of a critical view of schooling:

Public schools cannot be seen as either objective or neutral. As institutions actively involved in constructing political subjects and presupposing a vision of the future, they must be dealt with in terms that are simultaneously historical, critical, and transformative...Critical educators need a language that emphasizes how social identities are constructed within unequal relations of power in schools...We [need to] address how schools can become sites for cultural democracy. (p. x)

In taking these pronouncements to heart, critical sociologists, such as Peter McLaren (1989), have focused on particular classrooms, schools, and neighborhoods as the settings for case studies which critique the hegemonic role of education in extending patterns of inequity and domination from one generation to the next. Although a focus on place helps to establish the scope and context for the social drama which unfolds in these studies, the construction of place is rarely in and of itself the sole or primary concern. A more focused study of school-as-place from a critical sociological perspective can be found in Sharp and Green (1974) who adopt a critical sociological point of view in mapping the discontinuity between educational philosophy and instructional practice in a British child-centered school. (Also see Valerie Polakow's (1992) study of early childhood education settings discussed in Chapter 4 of this thesis.) In 1996, Sharon E. Sutton argued for an environmental text of poverty and privilege in a study which
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combines narrative accounts of particular school settings with child and author commentaries on the structural foundations which inform such spaces. In her concluding chapter, Sutton asks, “if places are texts that instruct children about a way of life, what types of landscapes might enable them to take leave of their assigned ranks and roles in the hierarchies of the dominant culture?” (p. 197). As with other critical sociological studies, Sutton’s research incorporates both descriptive and prescriptive elements that together comprise the social reconstructive agenda of the critical pedagogy movement.

The Study of Home and School

The above commentaries on educational places notwithstanding, it is the study of home which accounts for much of the literature exploring the sense of place in everyday life. Place theorists have applied a number of theoretical understandings to a study of the phenomenology, territorial practices, and temporal qualities of home (e.g. Altman and Werner, 1985). In contrast to this, schools as everyday places which are invested with shared meanings fall more generally, in my view, within the purview of social constructivist accounts. Despite its close proximity to child and family life, it is the less place-specific and more institutionally, ideologically, and organizationally grounded aspects of school life, which tend to get foregrounded. More personal accounts of school life may emphasize the adult/child relational aspects of education (e.g. success stories of teachers working with special needs children), but the significance of particular settings is
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often ignored or assumed. Where place is emphasized, it tends to be specific examples, highly individualized narrative accounts of inner-city challenge and triumph (e.g. movies such as "Stand and Deliver", "The Substitute", and "Teachers"), which highlight the emotive relationship of person to place in education. Such place narratives may represent a fertile ground - even a familiar genre - for novels, movies, and popular culture, but they not-so-subtly reinforce the view that the study of place in education has no place except under extraordinary or perilous circumstances. In these and other educational writings, the larger patterns of geography and ideology that connect a broad view of place to the history and philosophy of education tend to remain unacknowledged.

The Meaning of Place in Education

Despite the above omission, a sense of place has never been very far afield from education. For over a century now, schools have held a special place in the public consciousness. Witness the never-ending public debate over the aims and methodologies of schooling. As specialized places dedicated to the education of the young we invest schools with both shared and contested meanings related to their role in shaping the hearts, minds, and skills of the next generation. Many of us also invest such places with our deepest sentiments and aspirations - e.g. the promise of equal opportunity for all, the hopes for a better future life for our children, and the promise of a socially responsible and highly educated citizenry. There is a general recognition, despite competing agendas
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for reform, that schools should formally inculcate each new generation into the norms and values of society. As formal, publicly-funded institutions, schools perhaps remain the last bastion of mandated community involvement in child socialization. As parents and citizens, we count on this bastion to mediate, counter, and offset the unchecked influence of other less formal institutions, such as the peer group, media, and popular culture, by providing a corrective or compensatory measure to our children's education.

Spatiality and Place

Within a single school are a multiplicity of places. Of course, there are classrooms, playgrounds, gymnasiums, auditoriums, music rooms, cafeterias, staff rooms, and myriad other spaces which are formally known by their purpose and function, but place in school is also something more than a simple topographic representation of a site. The meanings that students and teachers attribute to such spaces are also important in defining the culture of the school. How we make sense of a space - both individually and collectively - goes a long way in determining how we make use of that space. Our sense of place both empowers and constrains how we approach, utilize, and judge the spaces which surround us.

Some places are shared by groups of students, others are contested. Invisible boundaries separate student cliques on both the playground and in the cafeteria and in doing so reveal nested places with individual identities and activity patterns all their own. Other nested places have formal functions and scales of activities. Hallways are
highly trafficked public spaces, but they are also home to lockers, a student's lone private
domain in an otherwise public space. Speaking of private places, some spaces, such as
the boys' or girls' locker room and washroom are little known, but highly speculated
upon, by members of the opposite sex. Other places, most notably the detention area,
but perhaps also the staff room and principal's office, aim not to be known at all.

In schools, there are clear rules that dictate when to enter and exit a space, where to
situate oneself, and how to use a space. Individual classrooms have designated areas that
are accessible to all, accessible only with the permission of a teacher, or accessible to the
teacher alone. There are large spaces that are appropriately used for full class meetings
and individual desks which are the domain of each student. There are spaces for storing
things, completing work, doing 'time outs,' and rewarding oneself for work completed.

Temporality and Place

While it is more common to represent place solely in terms of its spatial elements,
place is significant not only in the way it constructs the physical make-up of space, but
also in the way it structures our temporal use of that space. Our notions of time
construct, limit, and otherwise contextualize the meanings that we attribute to places in
our everyday lives. In schools, certain times of the academic year, such as the first week
of school and the days leading up to exam periods, often seem to move at a faster pace
than other times. More generally, the temporal rhythm of the year is structured by
opening and closing weeks, summer and winter breaks, exam periods, and culminating
activities associated with school plays, competitive sports, graduation, and grade promotion. Carol Werner and her associates (1985) have applied selected temporal aspects of place to home environments, but their temporal constructs are also applicable to the temporal flow of the school year.

First, there is the linear flow of each school day with its familiar routine of arrival, opening and closing exercises, class periods, recesses, lunch break, after-school activities, and departure. (The bell as a marker of when to enter and exit a space is a unique, but often taken-for-granted fixture of schools that demands that we move to the next space at predetermined times, rather than when we are ready to do so.) Second, there is the cyclical flow of each week in which the daily routine is repeated. A cyclical routine establishes the continuity needed by younger children and the time schedules followed by older students. Another cyclical flow marks the transition between seasons which can have a marked impact on the experience of moving between inner and outer spaces in schools. Finally, there is the added academic notion of progressive time. The passing of each school year serves as a rite of passage which marks off each student's progress through their formal education. The temporal pledge of K-12 education is the promise of a better future life if only one will study hard and 'stay in school.'

Self-identity and Place

The above paragraphs notwithstanding, place-making in schools is not solely an exercise in the spatial and temporal management of space. One's sense of place is also
intricately related to one's level of self-esteem. In schools, students of differing aptitudes are confronted daily with explicit spaces that place unique demands on them. As a high school student with an adversity to athletics, for example, I dreaded my occasional visits to the school gymnasium. In fact, I avoided such visits at all costs. Instead I found solace in the music room where my talents were more fully appreciated. By the time I graduated from high school, I had visited the gymnasium so infrequently that I failed to develop a clear picture of what the gymnasium at my school actually looked like. (For a school so caught up with athletics this was an outright travesty.) Yet I had an intimate knowledge of the school's music room, its layout and functioning, and even came to view this space as a sort of safety net, a security blanket from which to escape from an otherwise intimidating environment.

I suspect that many adolescents have had experiences similar to my own. After all, gymnasiums can be threatening places for students who lack confidence in their athletic prowess. And yet it occurs to me that most students and teachers, to varying degrees, will likely develop an attachment to one or more spaces in their school - e.g. to a classroom, the cafeteria, the principal's office, the 'smoking corner,' or the staff room. As a high school student, I never once entered the staff room - it was 'unknown' to me and to most other students. A sign on the door made it clear that this room was off limits to us. Yet the staff room surely impacted on our teachers' experience of place. Indeed, for some teachers it likely provided the same feeling of security that the music room afforded me.
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Developmentalism and Place

The above observations are not limited to secondary school. In fact, differences in the ways teachers and students make sense of place may be most pronounced in elementary school where the age discrepancy is at its greatest. Consider, from the perspective of place, the playground experience of a young child and her teacher. The teacher is responsible for supervising the children at recess so he takes a wide view of the playground, watchful of the numerous clusters of children at play. He positions himself at a spot where he can best see a majority of the playground. As it is a wintry day, he is intensely aware of the cold and perhaps even keeping an eye on the time. Meanwhile, the young child's attention is focused on her immediate play environment, perhaps a favourite space where she plays each recess (Opie and Opie, 1969). She is active and engaged, impervious to the freezing temperature and the passing of time. Now ask that child and teacher to take you on a tour of the playground. Who provides the most detailed accounting of the space? Who appears to invest the playground with the 'most' meaning? The playground is the child's domain, regulated at a macro level by adults, but painstakingly managed at a micro level by small clusters of children at play.

Developmental Perspectives on Place

Differences in the way a teacher and child view a playground are related not only to the unique role which each plays within a school, but also to differing developmental
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levels. As public institutions dedicated to the education of the young, schools are unique in their intergenerational make-up. Children and adults share the same space and work, learn, and play alongside each other, yet each, to a certain degree, makes sense of the school in different ways. Unlike most other social institutions, place in education has not only spatial roots, but temporal or developmental roots as well. To ignore the developmental aspects of place is to fail to address the rich complexity of children's place-making experience in education.

Understanding how children gradually come to know the world as they mature is the domain of child psychology. Place theorists have made important contributions to the study of place perception in childhood by exploring children's construction of play spaces, their understanding of world geography (Wiegand, 1992), and their ability to decipher and design neighborhood maps (Hart, 1979), among other research agendas. The contributions of place theorists run the gamut from clinical analyses of children's spatial abilities (Sack, 1980) to holistic accounts of children's 'place-making' activities at various stages of development (Hart, 1979). Sadly, however, the results of these investigations have rarely been applied to educational practice. The irony, as will be pointed out in Chapter 4, is that educational reformers nevertheless make philosophical judgements about children's development which then have dramatic implications for the way classrooms and other educational spaces are organized.

Most developmental psychologists agree that the newborn, in so far as she has not yet differentiated herself from the objects and environments that surround her, has no conception of place as distinct from self. Recognizing the limits of one's body, where 'I'
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ends and the rest of the world begins may well be the first place lesson of childhood. Gradually, through taste and touch, the infant comes to differentiate herself from the external world. She begins to attend to the permanence and proximity of objects and the constancy of each object's size and shape. Although a sense of object permanency is well-established by the age of two, several more years will have to pass before the child has a complex, adult-like understanding of place. Asked to take another's perspective in describing a room that she is in, a child younger than six is likely to represent the room from her own point of view (if she offers any description at all). The ability to take the perspective of another is a basic conceptual skill that confounds the concrete, egocentric, and pictorial sensibilities of the younger child. Yet it is a necessary spatial ability if the child is ever to represent, transform, and otherwise 'act on' places, in a three-dimensional way as it were, in her mind. Only with the maturing faculties of mind, faculties that accompany her growth into and beyond middle childhood, will the child develop the place sensibilities of an adult.

The above paragraph represents the development of place perception as a gradual transition from the immature, pre-conscious place experience of the unborn child to a more mature place consciousness that matches the cognitive sensibilities of adults. This progressive view of place finds its roots within a classic Piagetian model of cognition. Within such a perspective, changing notions of place are judged to be a function of the maturing cognitive structures of mind. Such structures are both universal (i.e. innate) and individualistic (i.e. internally regulated by the individual child). Although the development of place perception is an active process (i.e. the child 'acts' on the world to
build up her mind), there is no role for language, the social context, or emotions within such a design. Rather, the child's development of mind - including her maturing understanding of place - is judged to be a purely cognitive, self-regulated, and accultural exercise. Within such a view, the language and symbolic systems of a culture, the uniqueness of particular settings, and the emotional and social lives of children play little, if any role in the development of place perception in childhood.

The above cognitive-developmental view of childhood represents the dominant tradition in child psychology. This perspective presents a detailed, if somewhat restricted view of child development in which the social context is of little relevance. Quite a contrary perspective is put forward by constructivist researchers who argue for a more holistic view of place perception in childhood, one that takes account of the richness of children's social, emotional, and inner lives and the cultural contexts within which children grow up. Many constructivists argue for an ecological model of place which highlights various institutional and community influences on child socialization (Matthews, 1992). Other place theorists focus on children's constructivist endeavours in forging a place of their own. Edward S. Casey (1997), in his seminal review of the philosophy of place, captures the implicit wonder of a child's first encounters with place from the vantage point of the holistic researcher:

Lived place thrives - is first felt and recognized - in the differentiated and disruptive corners, the 'cuts,' of my bodily being-in-the-world. This is why the child's experience of place is so poignantly remembered; in childhood we are plunged willy-

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nilly into a diverse (and sometimes frightening) array of places...The extraordinary sensitivity of the child's lived body opens onto and takes in a highly expressive place-world that reflects the discriminative and complex character of the particular places that compose this world. (p. 237)

Particularly during middle childhood (ages six to twelve), ritualized play often manifests itself in gang-like activities complete with secret hide-aways, club-houses, and forts. Here the spirit of play and place are bound up together in a unique fantasy world of secrecy, adventure, and challenge. The cross-cultural preoccupation of both boys and girls with secret meeting places, forts, and other "favorite places" (Sobel, 1993) - both 'discovered' and built by children - suggests that, like play, place "is structured differently in juvenile life than at later ages; it is much more critically defined. It is intensely concerned with paths and boundaries, with hiding places and other special places for particular things" (Shepard, 1977, p. 8). In middle childhood, such juvenile play space is often configured in its membership to both purposefully include and exclude, to provide "retreat, solitude, and disengagement" for the lucky few.

I suggested earlier that most educational philosophies draw a clear distinction between children's construction of place (which is relegated to play) and their formal learning (the function of school). Nevertheless, there have been a few lone attempts to harness children's need to construct place by turning children's place-making initiatives into quasi-formal educational programs. The Adventure Playground movement which gained prominence during the 1970s reflects this sentiment (Bengtsson, 1972). The
movement was founded on the belief that children should be encouraged to literally construct and take ownership of their play environments - i.e. their places - using a variety of building materials and tools - wood, nails, and hammers being of particular note. To this day, one of my most vivid memories of place in education arose from my role as a project leader supervising children at an Adventure Playground in Toronto. It was the uneasy realization that accompanied my standing on the roof of a two-story building - a building entirely planned and constructed by a group of eight to twelve-year-olds.

*Education and the Philosophy of Place*

A developmental perspective on place could on its own provide a wealth of material for the study of place in education. As educators, we might well ask ourselves to what degree we take into account the changing place experience of children in formulating educational programs for various grade levels. Indeed, a developmental perspective on place is central to the discussion in later chapters. However, so much of what happens in schools has less to do with our keen observations of children than it does with our ideological commitments to particular ways of teaching. Hence the need to acknowledge another important perspective on place in education - a *philosophical* perspective that addresses the ideological and curricular dimensions of teaching. For it is within such a context that many of the current reform proposals for education are being forwarded. Moreover, the impact of these reforms on our conceptions of place in education may well be significant as I shall argue in later chapters.
Imagine for a moment that you are visiting a particular classroom for the first time. What is the first thing you tend to notice? I suggest it is the arrangement of the students' desks. Are they arranged in rows or grouped together in clusters of four or five? Do they leave room for a carpeted area or other open meeting space? We deduce a lot from the arrangement of the desks. We tentatively draw conclusions about the educational philosophy of the teacher, the teaching methodology in use, the types of learning which are occurring, the activity level of the students, and perhaps even the performance level of individual students relative to their seating positions. Our glimpse of the layout of a classroom provides us with important visual clues about what life may be like in that class. In reflecting on our observations, we make provisional judgements about the going-ons in the classroom from the standpoint of our own philosophical leanings.

To what degree does the space, pace, and activity level of a classroom answer to a closely held philosophy of education? One possible response to this question can be gleaned from the experience of the British progressive schools during the 1960s. The progressive philosophy grew, in part, out of Dewey's pragmatic thought and although Dewey himself recognized the importance of allowing children "brief intervals of time for quiet reflection" (1938, p. 63), his more popularized view of cognitive development equated learning with purposeful activity. (This perhaps explains (in part) why an intense level of activity (and commotion?) has been judged by some progressive educators to be a primary characteristic of the successful child-centered classroom.) Writing nearly forty years later, John Holt's (1969) one major criticism of the British progressive schools was that children were expected to be constantly busy. These schools
equated long periods of sustained activity with success in learning and, in Holt's view, did not allow children to have sufficient aloneness time or opportunity for private reflection (also see similar criticisms in Sharp and Green, 1975). In such schools, according to these observers, the relationship between philosophy and place could not have been clearer. The progressive philosophy explicitly emphasized activity over contemplation and, in doing so, defined the successful classroom as a fast-paced learning environment with a plethora of play, learning, and craft materials that kept children constantly busy.

When made overt, an educational philosophy comprises a set of explicit beliefs about the nature of the educative process. In a general sense, an educational philosophy serves as an underlying rationale for the curriculum and methodology of a particular approach to teaching. It provides answers to questions relating to the purpose of education, the role of the school in society, and our obligations to future generations. It further makes clear the roles to be fulfilled by teacher and student, indicates what aspects of a student's life are within the mandate of the school or learning situation, and (often subtly) dictates whose values will dominate the educational process itself.

Throughout the 20th century, we have witnessed the rise and fall of several educational philosophies, each making their mark on education with varying degrees of success. Throughout the last twenty-five years, the two most dominant philosophies have been the back-to-basic and progressive education movements. Educational commentators often speak of the 'swinging of the pendulum' to describe the process by which these two competing ideologies contest gains made by the other and attempt to influence public
opinion. The popular media has tended to dichotomize the debate over the fundamental aims of schooling, pitting the merits of the back-to-basics call for a renewed focus on basic skills against the progressive philosophy's attention to the needs of the individual child.

Neither the back-to-basics philosophy nor the progressive philosophy addresses the role of place in education per se. Yet the notion of place is never very far removed from the underlying suppositions of these two competing agendas for reform. Both philosophies answer a key question which will be asked of a number of reform agendas throughout this thesis: How should places in education be constructed? The answer that each reform tradition provides both define and limit the role of education in the eyes of each philosophy and help determine how classrooms are organized.

Can educational reform movements be understood in terms of how they transform the geographical and ideological landscapes of education? What can the study of place in education tell us about the future of educational reform in a information age of technological innovation? How might our experience of place in education change in the coming decades? These are some of the critical questions that are posed throughout this thesis.
Chapter 3:

Architectural and Design Perspectives

It would seem logical to design school buildings by considering current issues in education and new developments in curriculum... But current volatile issues in education will soon become historical, and new trends will inevitably continue to arise. Buildings endure, and they must be able to serve changing needs over long periods, or they will quickly become obsolete. This suggests that we need to plan learning environments around foundational issues rather than current events - around basic understandings of children, how they learn, and most important, how their environment can enhance those learnings.

- Elizabeth Hebert (1992, p. 34)

What impact does the physical design of a school have on the quality of instruction which occurs in a classroom? At one extreme is the view that the educational setting is of little relevance to the teaching and learning process. All that is required is a teacher, a
student, and a log for both to sit on argued C. D. Lewis in 1937. At the other extreme is a fixation on the conveniences, design fads, and technological amenities of modern educational settings which can sometimes overshadow the attention that is paid to how these amenities actually contribute to the teaching and learning process.

To retrace the history of school design in North America is to follow the intersection of architectural style, educational philosophy, demographics, and budgetary realities through time. Some clear trends emerge: Over the last few centuries, class sizes in state schools have fallen sharply from hundreds of students to several dozen students, resulting in more classrooms per school. Flexibility in classroom design and seating arrangements have emerged as important considerations in the planning of schools. The creation of communal areas, such as gymnasiums, staff rooms, and other meeting places has given rise to the specialization of spaces in schools (Rieselbach, 1990). A concern for the school as a public institution has led to design initiatives that promote the public use of educational facilities by local residents - students and non-students alike.

The earliest schools (in the modern age) were church-run. Prior to such initiatives, affluent children were tutored in their homes. The less well-off, if they received any formal instruction at all, organized their own education on a per community basis. Of the first attempts at a state-run, public system of education, it is the 19th century one-room schoolhouse - some 700 are still in operation in the U.S. today (Gulliford, 1991) - which retains a special significance in the eyes of many. The one-room schoolhouse, with its multi-grade classroom and rote system of instruction, symbolized the early promise of a public and democratic system of education. In many towns and villages, it
was the church, with its protruding steeple, and the school, with its distinctive bell tower, that functioned at the social (and often political) center of town life.

During this early period, perhaps the most important change in public education, from an architectural standpoint, was the gradual shift from a non-graded, one-room schoolhouse to a multi-grade and, therefore, multi-classroom school. This was necessitated by a rising population, growing patterns of urbanization, an increasingly divergent school curriculum, and the influx of a wider age range of students into schools.

The first multi-grade public schools conformed to the instructional philosophies and educational practices of the time, a reflexive tendency which has continued to this day. Boston's Quincy Grammar School, built in 1848, was typical of the period. The four-story building housed some 650 students and included a basement and attic (Graves, 1993). The first three stories housed the twelve classrooms, each opening up into a common hallway, while the fourth floor hosted an assembly hall that could seat the entire student body. Individual desks for each student - an important innovation for the time - were bolted to the floor. The seating arrangement in rows supported the transmission and rote teaching approaches that were in near universal use. With few exceptions, this basic plan for the design of self-contained classrooms, each opening up into a common corridor, continues to be the most prominent design philosophy at work in schools today. Although punctured by occasional forays into more radical design initiatives, school planning until the late 1930s embraced a nationwide monotheism that Ben E. Graves (1993, p. 25) characterizes as "a brick box with holes for windows in a style that can only be described as neutered."
Although the exterior design and general layout of schools remained stagnant throughout the first decades of the 20th century, the interior design of classrooms underwent several reforms. The first decades of the twentieth century were marked by the rise of progressive education. Embracing the scientific and democratic optimism of the day, progressive educators argued for the need to foster an experimental temperament in students and incorporate more participatory approaches to learning in schools. In response to these pronouncements, the interior design of schools was transformed to accommodate the new instructional approaches that were quickly gaining acceptance. Desks were unbolted from floors. Open areas were created in classrooms for collaborative student work. Closet space for storing teaching apparatus and other materials became an important design consideration as the principle of 'learning by doing' took hold. Child-centered (and child-scaled) learning environments were introduced. Speciality rooms for so-called non-academic subjects, such as music, athletics, and industrial arts made their first appearance. Improvements to the basic infrastructure of schools, particularly in terms of heating, lighting, washroom facilities, and other health and safety factors were implemented.

In so far as it was educational ideology that influenced school design in the early decades of the 20th century, it was the sheer rapidity of changes to the demographics of the post-World War II period that ushered in the modern age of school design. The end of the Second World War marked the beginning of the baby-boom generation and educational planners responded to the impending influx of children into the educational system with a flurry of school construction that was unprecedented in the history of
education. In the late 1960s and early 1970s, even ambitious school construction efforts had trouble meeting the accommodation needs of a growing school-aged population. Many communities adopted a prefabricated assembly approach to school construction or purchased and renovated existing spaces in factories, supermarkets, and retail malls to expand their educational programs. Yet the influx of children into the school system was not to last. By the mid-1970s, the school-aged populations in the United States and Canada had begun to subside and many communities began selling off unused schools to cope with the budgetary realities associated with declining school enrollments.

The Model School

During the hey-day of the school construction craze in the 1950s and 60s, there was one school that epitomized for many the transition to the modern age of school design. Crow Island Elementary School, which opened its doors in Winnetka, Illinois in 1940, marked an early effort to design a school that was both innovative for its time and consciously responsive to the needs of the children and educators who would populate its halls for years to come. The single story school, which houses some 350 students, was planned with collaboration in mind and it was only after an extended period of consultation with educators, designers, and other stakeholders that construction began. The following letter written in 1938 to the architects from a creative activities teacher foreshadowed much of the aesthetic character that was to find
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its way into the final design of the school:

The building must not be too beautiful, lest it be a place for children to keep and not one for them to use. The materials must be those not easily marred, and permitting of some abuse. The finish and settings must form a harmonious background [to] honest child effort and creation, not one which will make children's work seem crude. Above all, the school must be child-like, not what adults think of children...It must be warm, personal, and intimate, that it shall be to thousands of children through the years 'my school.' (Presler, 1992, pp. 59-60)

The architects of Crow Island School, took their cue from the above and other visions put forward by members of the Winnetka school community. The Crow Island alternative did away with the imposing Victorian-inspired scale of traditional school design. Gone was the brick-box architecture and rigid egg-carton organization of classrooms into discrete learning cells. Instead, the architects adopted a residentially scaled and informal, but carefully crafted design that housed 'L' shaped classrooms in separate grade-level wings, each with its own distinctive character (Graves, 1993). In an effort to make the school child-scaled, light switches and other interface elements were placed at lower than normal levels. Ceilings were made nine feet high, rather than the more traditional, but imposing twelve feet. In order to complement the building's aesthetic character and child-scaled goals, the architects also designed the furniture of the school. In a nod to the historic role of schools as the center of town life, Crow Island
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features a clock tower which is positioned just slightly off center so as to underscore the nonformal design considerations at work.

In an effort to affect a seamless transition between the school and the world outside, the unopposing design plan for Crow Island was complemented by the use of natural lighting, including skylights and large wall windows judiciously placed throughout the school. In reflecting on his design work for Crow Island and other schools, Lawrence B. Perkins (1957) comments on the contrasting character of natural versus traditional lighting for schools:

Lighting can make the classroom come alive...Naturally, the first job is to provide proper seeing conditions, but this is not the only goal. Lighting must also contribute to the mood for learning, to the psychological well-being of the student. It must be a stimulant. Bland, coldly uniform, 'scientifically-planned' lighting usually has the opposite effect: It bores and depresses. A clue to the best answer can perhaps be found in the lighting of the fields and forests, where the eye evolved. So, too, the classroom can have a lighting that changes, that is a shifting interplay of opposites - warm and cool, light and shadow, soft and hard, level light, and accent light. This will give the interest and the stimulation that make the classroom a place to enjoy, an agreeable place to work and learn. (p. 37)

At its heart, the Crow Island design exemplifies Friedrich Froebel's 19th century vision of the school as "a garden of children." Wherever possible, natural elements are used to complement and augment the built environment of the school. In addition to
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incorporating natural light sources, each classroom opens directly into an out-of-doors courtyard. So too the exterior and interior rose-color brick walls of the school are trimmed with redwood and Ponderosa pine respectively. In a truly nontraditional move, three fireplaces adorn the school to create a welcoming and homely milieu.

Crow Island School was designated a national historic landmark in 1990 and has been twice nominated (in polls conducted by the Architectural Record) as one the most important buildings designed in the United States in the last 100 years. In 1990, a small group of educators and architects gathered at the school to celebrate its 50th anniversary and renew their commitment to innovative and educationally responsive approaches to school design.

Current Trends & Influences

Crow Island School is undoubtedly the most honored public school building of the last half century, but will the design considerations that contribute to its current prestige also underscore the design of the model school of the future? A brief survey of selected current trends and influences in school design suggests that while many aspects of Crow Island School may continue to be favoured by school architects, other considerations associated with changing societal and technological conditions also feature prominently.
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Budgetary Realities

In the 1990s, the same forces that contributed to rising school enrollments in the 1950s and 60s, namely increases in the birth rates in the United States and Canada, now coupled with the rise of the immigrant populations in large urban centers, have once again resulted in the need for new schools. Today, however, the public seems wary of ambitious, but expensive school construction projects. Gone is the implicit optimism of the post-war period and the public's infinite faith in the ability of public education to ensure equality of opportunity and a prosperous future for all. Throughout the last two decades, we have witnessed a flurry of attacks against the merits of public education and particularly its excesses in so-called non-academic areas by the self-proclaimed "excellence for education" movement and this has taken its toll on public support for innovative school reform projects.

So too, the public purse is no longer what it once was. As the school-aged population grew throughout the 1950s and 60s, so too did the populations of urban and suburban areas, resulting in an ever-expanding real estate tax base (Cook, 1996). Today, however, a general tax malaise has set in and this, coupled with an aging population with few direct ties to the public schools, has left many communities with limited capital budgets for school construction projects. Hence there is a need to reframe the priorities of school design so as to ensure efficiency of operation and garner public support.
Community Use Initiatives

How are schools to cope with the reality of declining school construction budgets at a time when school enrollment is on the increase? A popular tactic has been to try and win back public support for educational building expenditures by extending the services offered by schools to adults in the local community. Many schools have instituted community use policies in which selected spaces within schools - such as recreational areas, library/media centers, and auditoriums - are available for day and/or evening use by both individuals and community organizations. As well, some schools share their space with a local community center or public library. Finally, many schools now offer adult education classes in addition to their regular programs. In addition to being a source of extra income, community use programs and adult education courses also help to strengthen a school's connection to the local community and build good will with neighbourhood residents.

Clearly, a community use policy cannot be implemented overnight. There are administrative, policy, and personnel questions that need to be considered, as well as design issues that need to be addressed. Once a school begins to cater to the needs of the wider community of adult residents, concerns for the security of students and staff, the increasing flow of traffic through the school, and the extra wear and tear on the school itself begin to arise. To deal with these issues, many schools have adopted a strategic zoning approach to managing school facilities.Certain areas in the school are designated as being for public use and others are for the use of the students and teachers.
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exclusively. In newly designed schools, public areas tend to be clustered together and situated close to the main entrance of the school. This allows for more control over the ingress and egress of individuals and permits better evening access.

Community use initiatives and other efforts to improve the relevancy of schools to the local community have the potential to restore the historic 19th century role of the school as the social center of town life. (Such initiatives may help to strengthen the notion of public schools at a time when calls for the privatization of public education are gaining momentum.) Indeed, as Ben E. Graves (1993) has pointed out, the trend to adopt community use policies in schools is likely to grow, not diminish, in the coming years. Were it not for the community use initiatives which are being put into practice today, many of the schools which have been constructed in recent years could well be empty by the first decades of the 21st century as school enrollment once again begins to decline.

Accessibility

In addition to instituting community use policies, many school districts have also endeavored to broaden access to schools in another important way. One of the consequences of the current effort to fully integrate students with physical handicaps and other exceptionalities into regular classrooms has been a series of design initiatives for improving the accessibility of new schools and existing facilities that undergo renovations.
Proponents of the integration or mainstreaming movement in special education argue that the traditional practice of segregating exceptional students from their peers can adversely affect children's social development and level of self-esteem. As well, segregation practices are judged to be an equity issue in which exceptional children are denied the same academic experiences and opportunities for advancement as children without handicaps. Many school administrators cite similar reasons for supporting integration practices, but there are also budgetary realities which make segregated special education services costly to provide. Hence most school districts now integrate students with mild to moderate special needs into regular classes on a full or part-time basis. Where necessary, exceptional students are provided with additional remedial services and other support that complement the regular classroom program.

Among the many design initiatives for improving accessibility are handicapped parking spaces, wheel chair ramps, wide entrances and aisles, elevators for multi-story school buildings, accessible washrooms, and lowered blackboards, light switches, and other control mechanisms (Kowalski, 1989). Attention also needs to be paid to the design of the school furniture. Tables, for example, tend to be too low to accommodate wheel chairs. Likewise, lecture halls and auditoriums with fixed seating require open spaces for accommodating wheel chairs. For persons with acute visual or auditory exceptionalities, redundant visual and auditory cues (e.g. for fire alarms) are important design considerations.
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Integration / School Choice

At the same time as the integration movement gains ground in its effort to equalize the education children receive, there is also an effort under way to offer specialized educational programs that emphasize a particular subject focus or teaching methodology. Throughout the last half century there have been at least three waves of speciality school reform in North America. During the 1950s and 60s, in an effort to break traditional patterns of racial segregation, many large urban centers in the United States opened magnet schools, educational facilities which incorporated a unique subject focus and brought together students from a citywide area. Throughout the late 1960s and early 70s, public alternative schools, which embraced a more democratic approach to learning, gained increased favor among students. Since the 1980s, a number of speciality schools which incorporate a unique subject focus, such as the arts, science and technology, second-language immersion, business, or environmental studies, have opened their doors. The last few years have also seen new speciality schools which emphasize a back-to-basics approach to instruction. Some of these schools cater to male or female students exclusively.

Many speciality schools have unique design requirements related to their particular subject focus or instructional methodology. Performance art schools, for example, have professional stage, sound, and lighting requirements. Science schools, on the other hand, have special laboratory and equipment needs. (A Toronto secondary school with a specialized microbiology program can boast, for example, that it houses the only
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electron microscope in a Canadian public school.) As will be made clear in the next chapter, in reference to the Waldorf movement, certain schools which embrace a unique instructional philosophy may also choose to infuse that particular philosophy into the design of the school itself.

Multi-purpose Spaces / Expandability

Historically, the design of educational facilities incorporated clear and recognizable areas, each of which served a single purpose. Today, however, mutually compatible areas of a school, such as the library and computer resource center, are just as likely to be combined in order to ensure the efficient use of space and reduce overall construction and maintenance costs. This multi-purpose strategy also extends to underutilized areas of schools. Consider, for example, the auditorium and cafeteria spaces in many secondary schools. To function effectively, both areas require a large allotment of space which is then likely to be used only sporadically during the day. Would it not be better to combine these spaces in order to ensure efficiency of operation and reduce overall construction costs argue the proponents of multi-purpose space in schools?

Hugh Cook (1996), in taking this example a step further, distinguishes between two strategies for combining the auditorium and cafeteria areas of schools. Both strategies are selectively being implemented in schools today. The cafetorium is a flexible, multi-use space which can be alternately used as a theater or dining area. Although its main function is as a cafeteria, the cafetorium is equipped with stage curtains, which can be
concealed during dining hours, as well as a raised stage, portable seating, acoustical panels, and a pipe grid system for manipulating lighting, props, and scenery. From the opposite vantage point, the *auditeria* is primarily designed to be used as an auditorium for performances and other assemblies, although it can also double as a dining hall. Auditerias are equipped with tiered flooring and more professional theatrical rigging, lighting, and sound systems than that to be found in cafeterias.

In addition to incorporating multi-purpose spaces, many new schools are also designed with future expandability in mind. The influx of immigrants into urban centers and ever-changing patterns of human migration between communities have made it difficult for individual school districts to adequately make long-term enrollment projections. In addition to portables and relocatable units, school districts routinely rely on both attached and detached additions to existing school buildings. In the United States in recent years, it is estimated that just over 50% of the monies spent on school construction has been allocated for additions and renovations to existing school facilities (U.S. General Accounting Office, 1997).

*Year Round Schooling / Energy Conservation*

The traditional school year which begins in September and ends in May or June is currently being reevaluated in many communities as school districts look for ways to make more efficient use of school facilities throughout the entire year, including the summer months. In many school districts, rising school enrollment coupled with finite
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School space has resulted in the need for a staggered approach to school use in which some students are in class while others are on vacation (Inger, 1994). A multi-track approach to year round schooling places groups of students and teachers in separate tracks, each of which has several scheduled learning rounds (e.g. 45 days) marked off by short vacation breaks (e.g. 15 days). In addition to making more efficient use of schools, proponents of year round schooling argue that students in a multi-track system also retain more of what they learn compared to students who each year take an extended two or three month summer vacation (Jacobs, 1998). Furthermore, the year round approach to schooling is judged to be more conducive to contemporary lifestyle patterns and work habits, in contrast to the traditional school year which conforms to a largely antiquated, agrarian calendar.

In terms of efficiency, year-round schooling is something of a double-edged sword. While this initiative may make more efficient use of time and space, there are also concerns regarding increased energy use. Since both air conditioners and heating systems use considerable energy resources, it is not surprising that current budgetary realities have prompted many school districts to search for more efficient energy use strategies. In the name of energy efficiency, new schools, in sharp contrast to Crow Island and other pre-energy crisis facilities, are increasingly closed off from the outside world. Schools that can afford to have installed state-of-the-art environmental control systems to help further reduce expenditures associated with energy consumption. During the planning stages for new schools, low tech solutions which optimally orient schools to the sun and/or incorporate natural lighting and ventilation strategies have also proven successful.
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(MacKenzie, 1989). Such initiatives may well be worth the effort. The American Association of School Administrators estimate that an effective energy management policy could save American taxpayers just under $2 billion annually (Graves, 1993). To support such conservation efforts, some schools have begun to conduct regular environmental audits which track the flow of energy and waste products through the school.

Technological Infrastructure

Without a doubt, the design initiative which has received the most public and media attention in recent years is the current publicly/privately funded effort to modernize the technological infrastructure of schools. (This new technological mandate for schools is the focus of Chapter 5.) Since the mid-1990s, a growing number of school districts have sought to modernize the technical backbone of their educational facilities in an effort to provide Internet access to every classroom and networked access between computers in schools. Modernizing the technological infrastructure of schools requires the installation of computers, servers, and other hardware, the laying down of wiring cable to connect the computers, and software installation. To support such initiatives, school districts throughout North America and elsewhere around the world have organized "Net Days," short periods of intensive activity involving teachers, students, parents, technical experts, and volunteers aimed at installing the basic technical infrastructure needed by schools to provide Internet and networked access to classrooms.
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The NetDay web site (www.netday.org) provides the following overview:

NetDay is a historic grassroots effort in the classic American barn-raising tradition. Using volunteer labor, our goal is to lay all the basic wiring needed to make five classrooms and a library or computer lab in every school Internet-ready. If the same work were financed by taxpayers, it would cost more than $1,000 per classroom. Volunteers from businesses, education, and the community acquire all of the equipment and install and test it at every school site...By bringing together these diverse elements, NetDay establishes a framework for lasting partnerships among business, government, educational institutions, and local communities to provide ongoing support for our schools.

Unlike most other design initiatives, the cost of wiring schools does not cease once the physical infrastructure has been put in place. There are a number of ongoing post-construction costs associated with technical support, teacher inservicing, and hardware and software upgrading and maintenance (McCain, 1996). At the time of this writing, the U.S. government is scaling back its financial support for wiring schools (Mendels, 1998b) and concerns for the long-term funding of such initiatives are beginning to emerge (Mendels, 1998a). Nevertheless, the impetus to modernize both elementary and secondary schools remains strong and school districts are increasingly turning to the private sector to help support their technological infrastructure programs.
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Healthy Schools

The above overview of selected trends and initiatives in contemporary school design would seem to indicate that all is well with school buildings across North America. School districts across the U.S. and Canada are seemingly responding constructively to current budgetary realities with community use plans, multi-purpose spaces, technologically savvy designs, and other initiatives.

While it is true that significant attention is now being paid to the design of new schools, there has also been a dawning awareness among U.S. school administrators, elected officials, and the public at large that the same cannot be said of existing schools, many of which are currently plagued by poor maintenance and upkeep. (The notable exception to this pattern of inattention, albeit to a minority of existing facilities, is the upgrading of the technological infrastructure of schools reviewed above.) Throughout the last decade, a series of reports prepared by the Education Writers Association (1989), the National Governors Association (1991), the American Association of School Administrators (1991), and the U.S. General Accounting Office (1997) have raised serious questions about the deteriorating physical condition of U.S. schools. (Canadian schools would seem to be fairing somewhat better, although concerns regarding overcrowding and mouldy portable classrooms are increasingly garnering public attention (Toronto Star, 1998).)

Using data gathered in self-reports from a sample of school officials across the country, the U.S. General Accounting Office (1997) estimates that well over $100
billion are needed to bring existing schools into "good overall condition" and at least one third of U.S. schools need "extensive repair or replacement." Many American schools are suffering from incidences of peeling paint, crumbling plaster, leaky roofs, poor lighting, inadequate ventilation, and inoperative heating and cooling systems, among other problems (Frazier, 1993). About 60% of schools have at least one major infrastructure problem and over 50% of schools report at least one unsatisfactory environmental condition (U.S. General Accounting Office, 1997). The above reports conclude that only a massive financial investment in rebuilding the physical infrastructure of the U.S. educational system will provide an adequate long-term solution to the current crisis.

The reasons for the above problems are varied. Just under half of the schools in the U.S. today were constructed between 1950 and 1970 and many were not built to last. These older schools tended to rely on cheaper building materials and short-sighted plans which do not meet current safety standards. Next, there is the issue of overcrowding. Particularly in many urban schools, the student populations threaten to exceed the allowable maximums. Although school districts are responsible for the upkeep of school buildings, education is a state responsibility and the necessary state funds needed to upgrade a school district's educational facilities are not always forthcoming (Frazier, 1993). As well, many school districts have short-sighted maintenance and upgrading policies related to the aforementioned budget realities that pit the merits of costly school maintenance plans against the allocation of funds for academic programs and other (more visible) community infrastructure needs. Lisa Walker (1992) summarizes the situation in this way:
Declining populations in older communities and urban areas, and a loss of jobs and tax base have made it hard for most communities to invest the funds needed. Unfortunately, existing school buildings are with us for too long and are too unexciting for most of that cycle to receive good care and attention from public policymakers. If you can't cut a ribbon or win an award for it in this year, there are few arguments for building a budget around it. And for those communities experiencing a declining tax base, funds for new construction have been nonexistent. (p. 10)

In responding to the nation-wide school maintenance problem, President Clinton, in a speech on July 11, 1996, announced a federal initiative to rebuild the threatened infrastructure of U.S. public schools through a massive reinvestment of federal resources in school upgrading programs. The President characterized the crisis in these terms:

The [General Accounting Office] report shows that our nations schools are increasingly rundown, overcrowded and technologically ill-equipped. Too many school buildings and classrooms are literally a shambles. According to the report, one-third of our schools need major repair or outright replacement; 60 percent need work on major building features – a sagging roof, a cracked foundation; 46 percent lack even the basic electrical wiring to support computers, modems, and modern communications technology. These problems are found all across America, in cities and suburbs.
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Federal and state initiatives to improve the maintenance and upkeep of educational facilities could over time bring American schools up to spec in terms of their basic foundations, but there are also a number of other health and safety factors which are of relevance to the design of schools today. The discussion below briefly underscores the importance of three such factors: concerns for the physical safety of students and staff, the elimination of harmful contaminants from schools, and the need for ergonomically designed furniture.

Physical Safety

The Dallas public school system recently opened Townview Magnet Center, a high school occupying three city blocks and 375,000 square feet under a single roof. Built to accommodate 2,200 students, the school cost $41 million. Of that amount, approximately $3.5 million was spent on security. The school boasts 37 surveillance cameras, six metal detectors, and intruder-resistant fence that is eight feet high, catwalks in the cafeterias to facilitate student supervision, floodlights that illuminate the school at night...and a security staff of five full-time police officers. (Duke, 1998, p. 690)

In violent and impoverished communities across North America, schools have historically been viewed as refuges to which children could escape the danger and
uncertainty which might otherwise engulf their lives. Yet, in recent years, it has become readily apparent, particularly in highly congested urban neighbourhoods, that a school is not immune to the community violence which occurs outside its walls. Sharp rises in incidences of guns and knives being brought to school by students and highly publicized cases of assault and murder on school property - small towns such as Jonesboro, Arkansas and Stockton, California are now infamous - have prompted school districts to search for ways of combating the seemingly increasing streak of violence in schools. (This despite a recent U.S. report which counters this perception by arguing that violence in schools is actually on the decrease (Koch, 1998).) Some of these reforms involve changes to the physical infrastructure of school buildings, including the installation of metal detectors, entry check points, and physical barriers which control the flow of traffic in a school.

Although no plan can guarantee the safety of students and staff, there are a number of helpful design measures that are being adopted to reduce the likelihood of violence. Some schools have implemented a "crime prevention through environmental design plan" (Crowe, 1991, p. 81) which begins with a safety audit of a school's interior and exterior spaces. This audit comprises, in part, a use analysis of all spaces within a school, particularly those which are commonly identified as problem areas (e.g. hallways, washrooms, locker rooms, school grounds, and parking lots) because of their isolated or crowded nature. In conducting a safety audit, the Center for the Prevention of School Violence (1997) suggest that attention:
be focused upon the school's physical features, layout, and policies and procedures which are in place to handle daily activities as well as problems that may arise. The buildings and grounds of the school should be assessed. Access to the school should be reviewed, and policies, procedures, and technological devices, such as alarms and surveillance cameras, should be considered to minimize intrusions from outsiders...Determining if a school is secure begins by making sure that the above considerations are evidenced in the safe school plan and the school's implementation of the plan...[As well] perceptions of safety and feelings about safety reveal important information about a school's climate. Do students feel safe at school? Do teachers? Do parents perceive that the school is safe?....Answers to these questions initially provide baseline indicators for security, and over time the number of occurrences of these types of activities [and perceptions] provide measures of how secure a school is. (p. 1)

Once problem spaces are identified, appropriate steps can be taken to reduce the risk of potential conflict or victimization. A plan which combines a number of physical design initiatives (e.g. the installation of lighting, monitoring equipment, and/or physical barriers) with new programmatic and policy reforms can be implemented.

As with other secondary schools across the United States, Belen High School, near Albuquerque, New Mexico, has coupled changes to the physical design of the school with programmatic reforms that aim to keep students and staff safe (Lockridge, 1998). Working with experts from a nearby security firm, the staff of this school have adopted a three-pronged security plan which incorporates high-tech, low-tech, and no-tech
initiatives. From a programmatic perspective, teachers keep a high profile in the hallways in order to monitor the flow of student traffic between classes. Each hall monitor is equipped with a walk-talkie that can be used to summon help immediately.

Second, a strict parent pick-up policy is enforced at the school and every visitor to the school must first pass through an entry checkpoint. Physical changes to the building which support these safety measures include doors which are locked on the outside to protect the school from intruders, as well as the installation of a number of motion detectors and video cameras which monitor key areas, including the "penalty box" for disruptive students and the parking lot. So too transparent covers have been installed on top of the school's fire alarms to reduce incidences of false alarms. To prevent the concealment of drugs and weapons, all lockers have been bolted shut. Students now carry their belongings within the school. According to Lockridge, students originally did not buy into the security measures, but, over time, these measures have garnered increased support and students now report that they feel safer.

Classroom Contaminants

Over the past forty or fifty years, exposure to indoor air pollutants has increased due to a variety of factors, including the construction of more tightly sealed buildings, reduced ventilation rates to save energy, the use of synthetic building materials, furnishings, and chemically-formulated personal care products, pesticides, and housekeeping supplies. In addition, our activities and decisions,
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such as delaying maintenance to 'save' money, can lead to problems...Indoor air problems can be subtle and do not always produce easily recognized impacts on health, well-being, or the physical plant. Children are especially susceptible to air pollution...Air quality in schools is of particular concern. (U.S. Environmental Protection Agency, 1996, p. 3)

It is a sad truth that the issue of contaminants is featured so prominently in the history of school design in North America. Whereas physical hazards associated with poor maintenance and public safety are readily identified, invisible dangers such as poor air and water quality, inadequate ventilation, and chemical contaminants, such as poorly stored cleaning materials, can remain undiagnosed in a school for years. Historically, schools have been constructed with little or no attention to the impact that biological and chemical agents will have on the quality of indoor environments. Only in recent years, due to public and scientific scrutiny, has the problem of contaminants in schools risen to the fore as a long overdue public health concern. In addition to the well-publicized health risks, exposure to poor indoor air quality can negatively impact on student learning, achievement, and teacher productivity:

Most alarming is the effect of poor indoor air quality on school-age children. Research indicates that the quality of air inside public school facilities may significantly affect students' ability to concentrate. The evidence suggest that youth, especially those under ten years of age, are more vulnerable than adults to the types of contaminants (asbestos, radon, and formaldehyde) found in some school
facilities...It is unreasonable to expect positive results from students, teachers, and principals who daily work in an adverse environment. (Frazier, 1993, p. 2)

Without a doubt, the most notorious and pervasive contaminant in schools is asbestos. Due to its excellent thermal properties - it is fireproof and a good heat insulator - asbestos has been widely employed in building construction since the 1950s (Castaldi, 1987). In the post-war period, walls and ceilings in newly constructed schools were routinely built using a concrete mixture containing asbestos. So too, due to its insulation and sound proofing qualities, asbestos was sprayed on classroom ceilings and plastered around boilers and steam pipes. In its solid form, asbestos is relatively harmless, but once it becomes airborne, after peeling off walls, ceilings, and steam pipes over time, it functions as a cancer causing agent - a threat to all who inhabit a school.

In an effort to lower concentrations of asbestos and other air pollutants in schools, the U.S. Environmental Protection Agency (1996) has put forward the following control strategies:

- **Source Management**: Removal or substitution of the offending material. This is the most effective strategy short of preventing pollutants from entering the environment in the first place.
- **Air Cleaning**: Filtration of offending materials as they move through ventilation equipment before being released into the air.
- **Ventilation**: Dilution of contaminated air with cleaner (outdoor) air. Lowers the
concentration of offending materials in the air.

- *Exposure Control:* Relocation of offending materials to uninhabited storage locations. Rescheduling of contaminating practices (e.g. floor waxing) to off-peak hours of school use.

Beyond the above initiatives, school districts can take a number of other practical steps aimed at reducing the health risks associated with working in and attending school (Kowalski, 1989). Where absent, school district policy guidelines for contaminants should be drawn up and regularly updated. Schools should conduct regular environmental and air quality audits in order to ensure that local air standard policies are being complied with. Effective hygiene procedures should be put into practice by teachers, students, and custodial staff. Animal, plant, and microbiology specimens, as well as chemical agents used in school science labs, art departments, and industrial shops, should be securely stored in well ventilated locations (Kowalski, 1989). Where air quality problems are found, the necessary steps needed to rectify the situation should be taken immediately, regardless of cost, in order to avoid liability and ensure the long-term health of students and staff (Castaldi, 1987).

*Ergonomic Furniture*

While visiting a computer lab with my daughter and her grade two class, I watched while the children got a crash course in the use of various software programs.
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Although the chairs swiveled and were adjustable, they had clearly been made for adult bodies...Missing from the lesson was any guidance on correct hand and body posture at the keyboard. No one mentioned that the chairs were adjustable and could be made more comfortable for children of different sizes...The equipment was completely out of proportion for virtually the entire group of seven-year-olds. Consequently, all of these children spent the morning with their heads tilted upwards at the screen in a posture designed to put strain on the spine and give them sore necks. (Armstrong and Casement, 1998, p. 154)

It was noted earlier that the architects of Crow Island School paid close attention to both the macro and micro-level issues of school design. In an unusual move, the architects themselves designed the child-scaled furniture for the school, ensuring that it was both functional and aesthetically congruent with the larger design patterns at work in the school as a whole. Today, the decision to use custom-designed, rather than prefabricated furniture remains the exception, rather than the rule. Most schools purchase generic furniture which is then used for multiple purposes and age groups. (One teacher told me that he didn't so much mind the drab green or orange chairs which are in common use throughout North America, but he certainly dreaded being assigned a classroom each fall that had a combination of the two.) Yet there is a growing awareness of the need to ensure that the design of tables, chairs, and other furniture conform to ergonomically acceptable standards and that the specific purposes to which school furniture is put is both age and use appropriate.
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The science of ergonomics has emerged from relative obscurity in the early decades of the 20th century to highlight one of the most important technology-related health issues of the 1990s. As increasing numbers of adults spend more and more time in front of computers in offices and other workplace environments, there has emerged a pressing concern for the rising number of office workers who are afflicted with carpal tunnel syndrome, otherwise known as repetitive stress injury. And while it is the practical implications of ergonomics to the workplace which have received the most attention, there are also important lessons here for schools. Consider, for example, the redeployment of traditional desks and other furniture to serve as computer tables in schools (Buck, 1994). Many schools spend hundreds or even thousands of dollars annually to equip their computer labs and classrooms with the latest computer hardware and software, but the tables on which this equipment sits are often an afterthought. Although computers are now used by both younger and older children for increasing amounts of time each year, the desks upon which this equipment is placed are often of fixed height, putting the computer keyboard, mouse, and monitor at an awkward angle for those children who are too short or too tall to work comfortably with the equipment for extended periods of time. Moreover, the chairs that students sit on are unlikely to have an adjustable height. With the current influx of technology into schools, now may be the time to resurrect a concern for the design of furniture, to renew our commitment to making school furniture which is both ergonomic and age and use appropriate.
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The Philosophy of School Design

I opened this chapter by asking the question: what impact does the physical design of a school have on the quality of instruction which occurs in a classroom? If the above discussion is any indication, there would seem to be two opposing set of forces at work in North American schools - first, an innovative and cost efficient design strategy for newer schools and, second, a misguided and inattentive upgrading scheme for many older schools (Frazier, 1993). The first path is progressive, the second regressive. Yet both are united in a common guiding principle - that cost efficiency, driven by current budgetary realities, should be the primary criterion upon which school design and improvement plans are made.

Yet should budgetary realities be the only factors taken into account in designing schools? A number of school design advocates (Frankl, 1992; Sanoff, 1994; Duke, 1998) would beg to differ. These researchers argue that there are other important considerations, with demonstrable links to student achievement, teacher productivity, school morale, and social adjustment, that also need to be factored into school construction plans. In supporting such a view, this chapter closes by briefly reviewing the arguments of a key school design advocate. William Bradley teaches at the Thomas Jefferson Center for Educational Design at the University of Virginia and is a senior designer for VMDO Architects, P.C. in Charlottesville, Virginia.

The mission of the Thomas Jefferson Center for Educational Design is to highlight the role of the built environment in improving the quality of education in K-12 schools
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(Duke, 1998). Associates at the center include representatives from the fields of architecture, business, education, engineering, sociology, and technology. As an instructor at the center, William Bradley (1997) argues that there is a direct relationship between effective school design and quality education. In his quest to seek out exemplary models of educational facility planning, he has highlighted the following principles of effective school design.

- **Schools should be exemplary**: Educational facilities should model the values and ideals that educators want children to learn. Schools should be accessible to all, rather than restricted to able-bodied people. Technological amenities should be integrated into facility design plans rather than implemented as an afterthought. Instead of moving to a dedicated computer lab for instruction, computers should instead be incorporated into the design of each classroom so that students experience the physical integration of technology into every facet of the curriculum. From an ecological perspective, schools should emulate the environmental design choices that students will need to make as adults by incorporating environmentally-friendly energy use strategies.

- **Schools should direct**: Visual cues should be incorporated into the design of educational facilities so that schools can take advantage of the "fundamentals of architectural design to relay cues to a building's users subtly, naturally, and effectively" (p. 5). Bradley emphasizes that this is not an invitation to post more signs. On the contrary, the form and function of a school should incorporate
physical cues that capture the mood of the school, help navigate visitors, and encourage certain behaviours over others (e.g. walking over running).

- *Schools should evoke a spirit of place:* Ben E. Graves (1993, p. 25), at the beginning of this chapter, characterized the typical school as "a brick box with holes for windows in a style that can only be described as neutered." Bradley argues against this uniform, prison-like design of schools and for the place-conscious school, an educational facility that reflects through its design, the scale, culture, and pace of the surrounding community:

Our schools have taken on a distinctly institutional look. Too often in our rush to expedite design we have reduced educational programs to their lowest common denominator...uniform spaces [that] lack character and fail to provide a meaningful context for learning...[Schools should] be places in which students gain a sense of identity...Schools should reference the settings in which they are built. (p. 7)

- *Schools should teach:* The design of schools should foster in students an appreciation for their surroundings, including both the natural and built environments. The environment of the school should be thought of as a three-dimensional textbook for learning. Architectural education programs that emphasize themes of balance, order, symmetry, pattern, rhythm, form, space, and scale should be taught to children by way of reference to the school itself and the surrounding community.

At the root of Bradley's prescription for school design is an ideological vantage point
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that celebrates the school as a community of learners. From this holistic perspective, many of the considerations raised above may also extend to the design of the classroom itself. In the next chapter, we explore selected examples of classroom design and the ideological orientations which connect the organization of classroom space to the philosophy of education, developmental psychology, instructional methodology, and curriculum.
Chapter 4:

Visions of Dynamic Space

What would happen if classrooms weren't square 'just because'? How much better could our schools be if we taught students in learning environments that contributed to, rather than distracted from, the educational program? What would happen if we based our designs on the philosophy of the school and the curriculum being taught?


One of the most important decisions that new teachers make in preparing for their first year of teaching pertains to how the classroom itself will embody and promote their teaching philosophy and help to manage student behaviour. An initial concern is the arrangement of the students' desks. Will my classroom promote collaborative learning or a direct instruction approach to teaching? In the case of the former, desks are perhaps best arranged in groups. In the case of the latter, desks might better be organized in rows.
Next, there is the issue of meeting areas and other open spaces for student collaboration. Will my classroom function as a community of learners or emphasize the individual achievement of each student working on one's own? Collaborative work spaces can help to promote a cooperative learning ethic amongst students, but such communal areas may not always be appropriate if one instead wishes to promote a competitive ethic that places a premium on individual achievement.

The choices that teachers make in organizing the layout of their classrooms both promote and constrain the kinds of learning which occur in a classroom. Teachers who populate their classrooms with various arts and crafts supplies, manipulatives, and other materials for students to work with are actively promoting a participative, dynamic learning environment, but the opportunities for transmitting information in an explicit, systematic way are potentially reduced. On the other hand, teachers who adopt a direct instruction approach to teaching are likely to forgo opportunities for decentralized, participative learning in favor of an explicit, systematic teaching approach.

Yet beyond all of the practical tradeoffs of organizing a classroom in this way or that are the very real ideological differences which are impressed upon new teachers by public sentiment, teacher education faculties, boards of education, school administrators, colleagues, students, and parents. So too, by the time they have graduated, many beginning teachers have formed their own particular vision of what they would like their classroom to look like and this classroom ideal is closely connected to their teaching philosophy and professional goals.

This chapter addresses the connection between ideology and place in education by
exploring exemplary examples of the relationship between the philosophy of education and school and classroom design. The chapter is organized into two parts. Part one summarizes and (where appropriate) critiques four educational movements, each of which argues for a particular vision of place in education. These movements are: Montessori, Waldorf, open education, and school ground naturalization. Drawing from the underlying tenets of these positions, part two highlights a number of conceptual dichotomies that further frame the relationship between educational ideology and the construction of place in schools.

With the exception of the Waldorf schools, each of the approaches to the organization of classroom space discussed below arises in sharp contrast to the traditional layout of classrooms into rows of desks. (Waldorf and traditional approaches can be contrasted on other levels.) Despite going out of fashion in educational academia in recent years, the traditional arrangement of desks into rows is still in evidence in many schools today and cannot be discounted. The unique advantages which such a layout boasts over the more complex alternative layouts explored in this chapter may help to explain its longevity. By having students face the same direction and sit a part from one another, the challenges of surveillance and discipline are managed more easily. So too the arrangement of desks into cells makes for clearer pathways in and around each student’s desk (and metaphorically supports the notion of the individual as a discrete learning unit). Yet perhaps most importantly, the historic arrangement of desks into rows directly supports a traditional instructional approach in which teaching essentially involves the one-way transmission of content from teacher-as-lecturer to
large numbers of students. Within such an approach, students are judged to be the passive recipients of factual information which is in turn organized and presented by the teacher. Information is explicit, rather than contextual, objective rather than personal, and rarely open to dispute - hence there is no need for personal reflection or discussion. Instruction follows a linear flow and is carefully organized by the teacher in advance of the lesson. The effective organization and presentation of information is the hallmark of successful teaching within this tradition.

As noteworthy alternatives to the direct instruction tradition, my choice of the Montessori, Waldorf, open, and naturalization movements is not arbitrary. Each showcases a different (albeit innovative) direction for educational reform and the organization of learning spaces. The Montessori movement forwards a precisely structured, intellectually-grounded view of classroom space. The Waldorf movement counters this sentiment with an aesthetically-grounded milieu. The open and naturalization movements each aim to open up the learning environment by breaking down barriers to learning and targeting nontraditional settings respectively. Each of these movements takes the notion of learning settings very seriously. Indeed, in sharp contrast to most other educational movements, the idea of place is integral to a full understanding of each philosophy. Moreover, the underpinnings of each movement are representative of competing agendas for school reform – their underlying tenets are not reducible to each other. Despite having made recent inroads into public education, two of the traditions (Montessori and Waldorf) are fundamentally private school alternatives. One tradition (open plan education) has gone out of fashion while another
(school ground naturalization) is only now emerging as a grass-roots initiative around the world.

**The Prepared Environment**

Maria Montessori's (1870-1952) notion of the *prepared environment* may be the most explicit example of the intersection of philosophy and place in classroom-based education. The founder of the most widespread independent school movement in North America, Montessori originally trained in Italy as a medical doctor before gaining a sound reputation and international following for her work with developmentally challenged and non-handicapped preschool children. Montessori developed a theory of child development and a method of instruction that extends in large measure from her clinical and empirically disciplined study of the child in a self-directed learning environment. Just what Montessori meant by "self-direction" goes a long way in distinguishing this tradition from other alternatives in education.

Montessori posited the notion of the *absorbent mind* as a way of contrasting the young child's relationship to the world with that of the older child and adult. Only with a mature faculty of mind, argued Montessori, does a person know the world through conscious reasoning and abstract conceptualization. Young children, on the contrary, are absorbed in the concrete reality of their world. From birth to age six, the child builds up her mind and senses through the absorption of the environment, first, at the level of the unconscious, and later, through the willful manipulation of concrete materials in a
structured learning environment:

What [the child] wants to do is to master his environment, finding therein the means for his development...From the age of three till six, being able now to tackle his environment deliberately and consciously, he begins a period of real constructiveness....His hand guided by his intelligence begins to do jobs...that construct the basis of his mind...It is as if the child, having absorbed the world by an unconscious kind of intelligence, now 'lays his hand' to it. (Montessori, 1995, p. 167)

Impressions from the world not only penetrate the young child's mind, they also form it. The basic mental faculties that will support all subsequent learning are formed during this early sensitive period. Through instinctive (birth to age three) and willful (age three to six) interactions with the world, or more pointedly, actions on the world, the child develops a formative cosmology of the world and begins the long process of placing herself in relationship to it:

There are two tendencies: one is the extension of consciousness by activities performed on the environment, the other is for the perfecting and enrichment of those powers already formed...[At the age of three] the mind's power to absorb tirelessly from the world is still there, but absorption is now helped and enriched by active experience. No longer is it a matter purely of the senses, but the hand also takes part...[The child's] intelligence no longer develops merely by existing; it needs
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a world of things which provide him with motives for his activity. (Montessori, 1995, pp. 167-8)

The most striking example of learning by absorption is that of language acquisition, the universal process by which children all around the world subconsciously and seemingly without effort pick up their native tongue. Children everywhere learn the subtleties of language, including its grammar, syntax, and semiotics, in direct and intimate relationship with the world. Montessori argued that many of the same learning principles that hold true for language acquisition also hold true for cognitive development in the early years of child’s life.

First, cognitive learning is an individual exercise and cannot be taught. It is the young child’s self-regulated interactions with the world that spurs on cognitive development, not the explicit lessons given by a parent or teacher, nor a child’s social interactions with her peers. Second, young children delight in repetitive activity that subconsciously impresses and reinforces basic physical, spatial, and mental concepts on the mind. Throughout early childhood, independence and self-confidence are strengthened through the child’s achievements in these areas. Finally, all cognitive learning throughout this period occurs through the reciprocal interaction of environment, motor skills, and mind. In short, children learn by doing. Montessori posited the notion of the prepared environment as a constructed and ordered learning space, set apart from that of older children and adults, where young children could go to further their learning through repetitive and individualized hands-on exercises that
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promote cognitive growth:

The structured environment for learning involves the use of a wide range of didactic apparatus...Children thrive on learning when they choose those materials which seem to fulfill a specific need in them. The focus of the Montessori curriculum is on mastery of one’s self and environment...Repetition is necessary for the child to refine his senses, perfect his skills, and build up competency and knowledge...The child revels in repeating those things which he knows best and does well (Hainstock, 1986, p. 68)

When you first walk into a Montessori preschool, the first thing you are likely to notice is the orderliness of the classroom. Manipulative materials are carefully laid out along the walls and easily accessible to the children. Child-sized tables where two or three children can work independently alongside one another are placed throughout the room. The classroom is brightly colored, child-scaled, and clean, but most of all it is functional. The functional congruence of the environment with the cognitive developmental needs of children is of paramount importance and outweighs any “purely aesthetic considerations” (Standing, 1984, p. 268).

At its core, the Montessori method is straightforward and it is this straightforwardness which structures in advance the roles and routines of child and teacher. Upon arrival, the child goes to a shelf to choose a didactic material with which to work. She takes her chosen manipulative to a desk or floor space and puts it to
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repeated use for as long as she wishes, but in the exact way she has been instructed. At her discretion, she returns the material to its storage location and chooses another material with which to work. Meanwhile, the teacher carefully monitors each child’s progress, models appropriate sharing and courteous behaviour, handles discipline situations as they arise, prepares the Montessori apparatus, and, when developmentally appropriate, introduces one or more children to the proper usage of a new manipulative.

It is important to note that the description given above conforms to what might be described as the prepared environment proper. There is a whole other dimension to the Montessori preschool experience which incorporates practical life exercises, gardening, and playhouse like settings for role-modeling cultural activities. So too, in recent years, some Montessori schools have begun to compliment the conventional Montessori method described above with group activities that involve music, drama, and other social pursuits. Nevertheless, it is the prepared environment proper which forms the basis of all Montessori preschool programs, both historically and in the contemporary era.

The foremost aim of the prepared environment is to render the child autonomous and independent of the adult. Effective learning is the result of the child’s focused interaction with the Montessori materials, rather than the teacher’s mediation of that interaction. Teacher intervention (when the materials are being used correctly) is an obstacle to growth, rather than a contribution. The same holds true for the child’s peers. Cognitive learning is judged to be an asocial activity in early childhood. It is reducible to the quality of a young child’s focused interactions with the manipulatives that make up the Montessori curriculum.
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Not surprisingly, there are explicit rules that determine the usage of space and materials in a Montessori classroom. For example, children are taught to share and engage in courteous and orderly behaviour when moving materials to and from their shelf space:

Within the Montessori classroom there is only one set of didactic materials, unlike schools where there might be several sets of the same kind of toy. The didactic materials are arranged similarly in all Montessori schools...According to Montessori, finding things in their proper places and putting them back again satisfies the child's need for order...A child may take a didactic material from the place where it is stored and when the child has finished using it, the material must be put back in its place and in the same condition it was found. (De Jesus, 1987, p. 16; 27-8)

While children are free to change exercises as they wish and move about the classroom for the purpose of exchanging manipulatives, they are not free to use the Montessori materials in any way they see fit. This is because each manipulative has been carefully crafted and perfected, sometimes over the course of several years, to serve a particular purpose and impress and/or reinforce a specific concept on the child's mind:

The sensorial materials are each designed to convey an abstract idea in concrete form...A tower of cubes demonstrates volume and size; a series of rods, the concept of length...[Where] feasible the sensorial materials are composed of sets of ten
objects, giving the children an indirect exposure to the basis of the decimal system...The exactness of these materials appeals to the human tendency for precision and gives the children an experience of the realities upon which human technology is based. (Lillard, 1996, pp. 35-6)

The combination of a well thought out developmental vision and rigid learning environment has made the Montessori tradition something of an enigma in educational circles. On the one hand, there is a strong congruency between the prepared environment and Montessori’s carefully articulated cognitive developmental theory that endears the Montessori method to the progressive and holistic education movements with which it is commonly associated. Montessori’s developmental theory has much in common with Piaget’s theory of cognitive development which itself has been applied to modern progressive education. (Unlike Montessori, however, Piaget did not see a role for formal education in promoting cognitive growth.) Likewise, the more esoteric elements of the Montessori tradition are congruent with the holistic focus on the spiritual development of the child. Yet the issue of freedom, a tenuous notion in both progressive and holistic education (Hutchison, 1998), arises as a sore point for some observers of the Montessori system who have at times criticized the rigid and anti-social nature of the prepared environment – sometimes with apparent good reason.

Valerie Polakow (1992) is one such critic. As part of a larger inquiry into the state of child care in the United States, Polakow spent two years observing the interactional patterns of children and teachers in an accredited Montessori preschool located in a
suburban community. She focused particularly on the relationship of the prepared environment to teacher authority in the toddler classroom. Polakow’s observations echo the description of the prepared environment given above, but she also presents a revealing psychological portrait of the school which points to active defiance on the part of a few two and three-year-old children against the rigidity of the Montessori setting and routine. While a majority of the children in the toddler and preschool programs adhered to the Montessori prohibition on make-believe play and fraternization with peers, a significant minority of the children engaged in 'acting out' behaviour - misusing the materials and approaching other children’s work were common transgressions. - that often seemed aimed at involving other children in joint play activities and other forms of interaction. The following example is typical of the incidents which Polakow describes:

Jomo walked up to Celia’s table. Teacher Martha: “Joma, this is Celia’s work.” Celia did not seem to mind Jomo’s presence as she said, “Help me there.” Jomo put out his hand but Teacher Martha intervened. “Jomo, this is Celia’s work. Can you find something else to do?” Jomo wandered off to Bruce’s table and touched his work. Teacher Jackie: “This is Bruce’s work.” (p. 81)

In the Montessori classrooms Polakow observed, a child’s work area was her own domain and no other child, no matter how friendly his intentions, was permitted to 'intrude' on that domain. The prohibition on child interaction and the sharing of
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Manipulatives went so far as to prescribe that when a child was finished using a Montessori material which another child wished to use, the material should first be returned to its proper storage location rather than simply passed from one child to another. Gradually, a majority of the children in this program began to 'absorb' not only the cognitive lessons of the Montessori manipulatives, but also the ideological lessons of an inflexible, anti-social learning environment. For example, many children would shout "This is my work!" whenever another child approached their work area. Polakow writes that:

A climate of hostility and unfriendliness emerged among these children, which appeared to be related to the way in which they restructured the rules of their 'work' environment. Sociability, which often involved touching, was construed as work interference or potential work violation. The friendly child in this school structure began to be regarded as the interloper, the enemy, the threat to work sovereignty. (p. 85)

From the Montessori perspective, the above rules make sense. Restrictions on the use of materials, fantasy play, and child interaction support the view that cognitive learning, at this young age, is solely an individual enterprise that demands each child's focused attention. Moreover, each manipulative has been carefully crafted to impress a specific concept on the child's mind. The rigidity of the prepared environment aims to reduce not only child interaction, but also potentially distracting mediation by the
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teacher.

There is a form of environmental determinism at work here which works to control children's actions through the purposeful design, placement, and use restrictions assigned to the Montessori materials and individual work spaces. Yet for the prepared environment to function effectively as a surrogate authority for the teacher, it is necessary that its authority be absolute. Thus, children's efforts to transform their learning environment through fantasy play must be resisted. In the classrooms Polakow observed, "a child did not possess the history making power to influence her interpersonal environment, nor imprint herself upon the landscape, nor transform her spatial surroundings" (p. 99). A flexibly co-structured learning environment was foregone in favor of the promise that children, working within the context of a rigidly structured prepared environment, would develop independence, self-confidence, and an array of inner controls through their successful mastery of the Montessori materials. For children of a certain temperament, the plan seemed to work, but for others it did not.

The Aesthetic Environment

The notion of authority as concretized by Montessori's notion of the prepared environment is not echoed by the Waldorf educational philosophy, although Waldorf educators also see a role for authority in childhood education and take seriously the nature of the learning environment. In the Waldorf philosophy, authority is manifested in the strength of the child/teacher relationship, rather than the rigidity of a prepared
environment. In sharp contrast to the intellectual milieu of the Montessori classroom, Rudolf Steiner, the founder of Waldorf education, argued for the primacy of the aesthetic in designing learning environments for children.

Although there is no evidence to suggest that they ever met, Rudolf Steiner (1861-1925) was a contemporary of Montessori's. An eclectic writer and lecturer, Steiner was in touch with people from many walks of life. His contributions to the fields of art, architecture, agriculture, and theology are all well documented. Early in career, Steiner was a student of Goethe's spiritual science. Steiner embraced and further developed Goethe's ideas on form and color and applied each to sculpture, painting, and architecture. However, it is Steiner's endeavors related to education which have perhaps had the most pervasive influence. In 1919, he founded the first Waldorf school (so named for the factory in which it was situated) in Stuttgart, Germany. Today the Waldorf movement numbers several hundred schools in some twenty countries and represents to many the richest living example of holistic education in practice.

Whereas Montessori's theory of development and education was largely rooted in her clinical and empirically disciplined study of the child within the environment of the classroom, Rudolf Steiner argued that his understanding of childhood education (and other phenomena) emerged from a supersensory awareness of a spiritual world well beyond the material physical world which informed much of the scientific thinking of his time. It was Steiner's lifelong aim to bring the spiritual/artistic and materialistic/scientific communities closer together. Indeed, it is this spirit which perhaps best characterizes the basic philosophy of the Waldorf school movement right up to the
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present time.

The fusion of art and science, intellect and emotion, and materialism and spirit, underscores the design considerations at work in many Waldorf schools. From a purely materialistic perspective, a school is simply bricks and mortar, but to infuse a school facility with an aesthetic, or even spiritual dimension, is to build connections between the physical design of the school and the interior lives of the students and teachers who inhabit it. As Dennis Sharp (1966) writes:

Steiner’s architecture was really open sculpture; huge pieces of sculpture in which people move and have a new sense of being...[It was] an environment above and around which the primary spaces are created to invoke the response of the Spirit in man. With Steiner the interior spaces were all important...They were 'soul spaces' in which there was an important distinction between real space, which remains external to man, and soul space in which spiritual events, interior to man, were realized. (pp. 153-4)

Unlike most other traditions in education, the physical characteristics of a Waldorf school - including its shape, scale, orientation, interior colors, and material make-up - are themselves explicitly connected to the Waldorf curriculum and theory of child development. The twin foci of form and color particularly find expression in both the architectural and pedagogical principles of Waldorf education. Hence form is not only central to the Waldorf curriculum, through form drawing, clay modeling, and other
artistic pursuits, but also to the design of the Waldorf school itself. Ideally, argued Steiner, the architecture of the school will include archetypal transformations in the repetition of common motifs which, in turn, evoke a "metamorphosis of form" that echoes those similar metamorphoses of growth that characterize the development of the child (Dudek, 1996). The ideal form evokes an energy similar to those inner growth forces of the budding plant, the maturing butterfly, or the growing child - organic, dynamic, and archetypal. Likewise, children's experiments with color figure prominently in the Waldorf curriculum and color is itself judged to be related to children's temperaments (Carlgren, 1976). Yet color also has a moody and spiritual quality within the Waldorf philosophy which has design implications for the hue, texture, and lighting of rooms and corridors. Ideally, argue Waldorf educators, the built and natural environments of the outdoors, home, and school will each reflect and complement, through form, color, and other characteristics, the developmental experience of childhood. In short, the physical make-up of home and school are deemed to have a subtle, but important influence on the young child's development, her temperament, affective life, and psychic well-being.

Steiner argued that the surrounding environment permeates children's aesthetic and spiritual lives. He projected well into middle childhood a state of being similar to that of Montessori's own early childhood notion of the unconscious absorbent mind. Yet while Montessori concluded that this immersive period ended in late infancy, Steiner (1982) posited an extended period of environmental surrogacy which lasted until about age nine:
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The child is not in a position to distinguish clearly between himself and the outside world; even in his feeling life, the feeling of the world and the feeling of his own ego are not clearly distinguished...he looks upon what goes on outside him as a continuation of his own being (p. 81)

Through her subconscious, instinctive imitation of those around her and through the unconscious absorption of the environment, the child comes to know the world and further refine the basis of her identity. The child’s consciousness “extends beyond the sphere of her little body,” writes A.C. Harwood (1958, pp. 15-16). “In an impersonal, dream-like, or rather sleep-like, way the child’s powers of consciousness are living in her environment.” To support this child ideal of place, Steiner proposed something akin to Froebel’s original vision of the kindergarten as “a garden of children.” The interior of a Waldorf school, with its characteristic fleshy and earth-tone wall colors and beautifully designed spaces for music, dance, and handicrafts, would be purposefully crafted to complement the organic character of a natural setting, the aesthetic needs of the child, and the artistic focus of the Waldorf curriculum:

[In designing the Hartsbrook Waldorf School in Massachusetts] we focused on the curriculum and its appropriate enhancement through architecture and landscape. Our discussion considered such topics as the spiritual and philosophical foundation of the Waldorf education, the learning path of the child, the characteristic qualities
of each class year, and how these qualities may be embodied architecturally. We also explored the vernacular architectural impulse, the land, and its history. The relationships of classroom spaces to the immediate sites and distant views were carefully considered as were the spaces themselves, in terms of form, color, proportion, and detail. (As quoted in Sanoff, 1994, p. 103)

It is perhaps not surprising, given the organic epistemology of the Waldorf philosophy, that many Waldorf school communities favour rural locales over congested urban sites, a privilege not afforded to schools in most other educational traditions. The Hartsbrook Waldorf School, noted above, employs a farmhouse motif and takes its silo-like form from the common structures to be found in the neighbouring New England rural landscape. Studies in organic farming and seasonal festivals further reinforce the local community context. On the other side of the ocean, the Nant-Y-Cwm Steiner School in Britain is not only situated in a natural setting, but also purposefully set off from the surrounding thoroughfares. The long walk from the parking lot to classes aims to effect a transformation in children’s moods as they make their way on foot to the school each morning:

Children will have almost certainly traveled by car...having had a kaleidoscopic experience [of sight and sound]...The effect of this synthetic experience may be to make them raucous and tractious. They have therefore about a hundred metres of woodland walk, crossing several thresholds to leave that world behind them. First a leaf archway, then a sun-dappled cliff edge above this shining, singing river, then
shady woodland, then pivoting past the firewood shed, through a gate to a sunlit play-yard and sandheap. Then an invitingly gestured, but slightly asymmetrical, so not too forceful, entrance. Then a blue purple-green corridor, quiet, low, twisting, darker. (Dudek and Day as quoted in Dudek, 1996, p. 77)

Other features of the Nant-Y-Cwm Steiner School further endear it to its natural setting. Classrooms and corridors twist and turn to reveal irregularly curved and organic shapes. Walls taper out at their bases to create the impression of a school which is rooted in the earth. The roof is grass covered. Classrooms features homemade interior lights and nooks and crannies that await children's discovery. The building is paradoxically both innovative and homely at the same time.

A concern for the organic integrity of the Waldorf school as a whole also finds expression in the design of each classroom. First time visitors to a Waldorf school may be surprised to learn that, despite the Waldorf movement's holistic underpinnings, students, beginning in Grade 1, sit in rows and learn their main lessons in a participative, but teacher-directed fashion. (In part, this arrangement conforms to the Waldorf view on child/teacher authority alluded to above. Just as the surrounding environment is deemed to permeate children's aesthetic and spiritual lives, so too young children 'live through' parents, teachers, and other adult authority figures in their moral lives. Early childhood learning in a Waldorf school is as much about aesthetic, spiritual, and moral development as it is about intellectual development and children need the authoritative presence of a teacher they can look up to with reverence. (Contrast this with the open

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plan philosophy discussed below.) Yet upon closer examination, the Waldorf grade school classroom is also revealed to be an aesthetically crafted learning space. Poems on chalkboards are beautifully scripted using multi-coloured chalk. Handicrafts and artifacts which concretize the topics under study adorn the classroom walls. Rather than being copied from books and photos, many of these artifacts are original works. They are specially crafted by the teacher or other adult and always beautifully framed and presented. Yet Rudolf Steiner argued that the primary purpose of education in the elementary years was to draw out from children, through their imaginations, those images which support learning, rather than presenting pictures and photos as a fait accompli. Indeed, one could argue, that the most important 'places' in Waldorf education exist in each child's imagination. Such places are evoked through the telling of stories, myths, legends, fairy tales, and other narratives which are then utilized by teachers as the basis for lessons.

In contrast to the brightly colored, even synthetic character of many traditional learning settings, Waldorf classrooms favour an organic aesthetic that draws from and complements the varied textures, hues, and aromas to be found in nature. Early childhood learning environments in Waldorf schools favor nonfinished natural materials over manufactured toys whose functionality is limited by their intricate and specialized design. Children bring their own imaginations to nonfinished objects, which, in turn, preserve for the child the natural integrity, texture, and imperfections of the original material. Waldorf educators believe that elemental materials such as wood, stone, clay, sand, and water have an eternal quality which transcends that of 'man-
made' substances and works on a subconscious level to reinforce subtly children's identification with nature (Carlgen, 1976). Having natural materials in the classroom does not simply fulfill children's aesthetic needs. These materials also reach far back in time to embrace an age when the natural world provided the overriding context for human activity. With this in mind, the milieu of the Waldorf classroom aims to imbue a strong agrarian, mythic, and eco-dynamic quality that celebrates a continuity between human culture and nature.

On first reading, the Waldorf and Montessori movements would seem to be world's apart in their view of place in education. Although both philosophies put forward a detailed vision of child development, the pedagogical implications of their respective visions lead to very different prescriptions for the construction of educational spaces. The Montessori movement favours an intellectual milieu where young children work consciously to build up their minds. The Waldorf movement favours an aesthetic milieu in which a beautifully crafted learning space subconsciously influences children's affective development. Yet despite their differences, the Montessori and Waldorf traditions share at least one element in common. Both movements subscribe to the view that children require a highly structured and teacher planned learning environment. This is in sharp contrast to the open philosophy, to which discussion now turns, which supports a flexibly structured and co-planned setting for learning.
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The Open Environment

Albert Wicker School, erected in New Orleans in 1974, was originally designed as a three-level open plan school that by its supporters’ own admission would “put 1,000 students in the equivalent of one room.” As with many other educational facilities built or renovated during the 1970s, this school embraced a free and open design philosophy which was congruent with the romantic educational sentiments in vogue at the time. Beginning in the late 1960s, concurrent with the rise of the humanistic movement in psychology, affective goals in education began to gain prominence, particularly at the elementary level. A renewed focus on the individualized learning needs of children (an initiative that could trace its roots back to the child-centered reforms of the 1920s) led to a greater concern for children’s emotional and social development. The traditional definition of schools as sites for the transmission of knowledge was now expanded to include the culture of the classroom - now viewed to be a community - and the importance of the peer group to child socialization. Likewise, curricular activities and programs designed to raise students’ self-esteem and promote team teaching, collaborative learning, and interdisciplinary studies began making inroads into the classroom.

The term open education has at least two distinct meanings in the history of modern education. The phrase has been variously applied to the inquiry-based child centered movement which reemerged in the early 1970s and also to a particular architectural philosophy and style in the history of school and classroom design. Whereas the child-
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centered movement emphasizes methodological reforms - it proposes that children should direct their own learning within the context of a decentralized learning environment - the architectural manifestation of open education attempted to explicitly transform the physical environments of classrooms in the name of better teaching and learning conditions.

Open Plan Learning

Opening plan learning is rooted in the belief that students should be active participants in planning their education. This approach arises in contradiction to the direct instruction approach which argues that teachers should bear sole responsibility for organizing the learning experiences of students. Both movements claim a fundamental respect for students, but supporters of open plan learning interpret this respect to include the right of students to make genuine, but responsible choices about how they learn. In her survey of the open plan philosophy, Barbara Blitz (1973, p. 3) outlines a number of the open movement's basic principles:

- Children have the right to pursue their individual interests and activities.
- In order for meaningful learning to occur, children need to be actively engaged with their environment and other people.
- Children learn at their own pace and through their own particular learning styles.
Learning should be exciting and enjoyable.

The teacher's role should be that of diagnostian, guide, and stimulator.

Although open plan learning is at its heart a programmatic reform movement, manifestations of this progressive tradition have also influenced the design of learning settings, particularly at the elementary level. An important strand of open plan learning is the activity center approach in which students, working alone, in partners, or in small groups, move between carefully crafted spaces in a classroom, each of which is assigned a particular activity or subject focus. (The physical setup of such a classroom is roughly analogous to Montessori's prepared environment, but without the strict regimentation of the Montessori philosophy.) Individual activity centers are designed in advance by the teacher, sometimes with the participation of students. Typically, activity centers are organized so that each addresses a unique concept, skill, sensory experience, and/or subject area. In an effort to structure the routine of an activity center classroom, students may be responsible for completing one or more tasks at each activity center throughout the day.

Once a teacher chooses to adopt an activity center approach, making efficient use of the limited space in a classroom emerges as a critical concern. There is a need to find places (and containers) to store the dozens of manipulatives and supplies which make up the activity centers themselves. There are choices to be made in how these materials will be used and made available to students. There are choices to be made in organizing
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the classroom so students can work together (or alone) on tables, in open spaces, or activity areas. Lois Napier-Anderson (1988), in keeping with the open movement's support for participative learning, offers the following advice to teachers:

As soon as you try to set up centres and work areas, you run into the problem of space...Space will be at a premium so every piece of furniture must have a valid purpose...Desks have to be rearranged...Get your pupils to help you make a scale drawing of your room on graph paper mounted on cardboard. Cut out your essential furniture to the same scale and practice arranging the space by using the model. Children will love to help plan the space so that the best arrangement of furniture is assured - without the chaos of actually moving desks first. Make room dividers, or use shelves and other moveable equipment to divide off quiet corners.

(pp. 53-55)

The above choices are not to be confused with the open plan approach to school design which is reviewed below. A centers approach is typically limited to a self-contained classroom. Hence the space constraints noted above. Open plan schools, on the other hand, are the net result of a facility-wide revamping of the traditional egg-carton layout of classrooms into separate rooms. While both approaches have implications for learning and teaching, only the open plan school design directly impacts on the way students and teachers in multiple classes work and learn together.
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Open Plan Schools

In an effort to counter the stifling limits imposed by the traditional arrangement of classrooms into discrete and isolated cells, some proponents of open plan learning sought to complement their methodological plans for schools with architectural reforms that promoted team teaching, interdisciplinary learning, multi-grade grouping, and student collaboration. In taking their cue from post-World War II British experiences in progressive education, coupled with the support of architects who saw an efficiency and cost benefit to open plan designs (Lackney, 1994), many progressive educators began espousing the promise of 'schooling without walls.' Child education was to occur in large open areas in which multiple classes could simultaneously be conducted. Flexible learning spaces, complete with movable dividers, interchangeable storage components, and easily relocatable furniture, were to be the hallmark of modern education. An open and adaptable learning environment was judged to be key in providing an optimum setting for learning. Throughout the late 1960s and early 1970s, school administrators and architects took these pronouncements to heart. Close to 50% of new schools built during this period adopted an open plan design (Lackney, 1994).

A typical open plan school would place teachers and students in a large, often circular shaped room. Using portable dividers and shelving units, the carpeted room would be partitioned pie-style into individual learning spaces with each 'slice' belonging to a particular teacher, subject, and/or grade level. A common resource area where each learning space came together in the middle of the room would house library and audio-
visual resources for students and administrative space for teachers. Classes would be conducted simultaneously in each section of the room (commonly referred to as a “pod”) and the open and flexible layout of the space would encourage student collaboration, team teaching, and interdisciplinary learning.

In reviewing the merits of the open plan design, Basil Castaldi (1987) points to the following advantages:

The large expanse of space is psychologically liberating. One feels free in both movement and thought. Since partitions are often light, movable visual screens, the spaces for instruction can be changed in size and shape - at will and at once. The omission of walls allegedly reduces the cost of the building substantially. The open space plan lends a feeling of informality to the learning process. Students feel less regimented. There is likely to be a greater intermingling of both students and teachers. The open space plan facilitates the grouping and regrouping of students and tends to encourage change, experimentation, and innovation.

Although there is general agreement that open plan schools, when effectively implemented, promote peer interaction and cooperation between teachers (Gump and Ross, 1979), research on other aspects of the open plan tradition in education have resulted in (at best) mixed results. For example, a Canadian survey of over a hundred teachers working in open plan schools listed the sharing of ideas and materials, team teaching, multi-grade grouping, and enhanced support from colleagues among the
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strengths of the open plan setting, but this study also highlighted teachers' concerns related to high levels of noise and distraction, occasional disagreements with colleagues, and reduced spontaneity in teaching (Stennett and Earl, 1983). Similarly, while open plan schools were lauded for promoting team teaching and collaborative learning, the high levels of noise and distraction in these schools prevented such goals from being fully realized (Gump and Ross, 1979).

The open plan movement is today dismissed by most parents, teachers, and educational policy makers. At best it is judged to be a well-meaning, but poorly implemented reform agenda in an otherwise laudable history of educational innovation. At worst, it is a hopelessly misguided agenda that at one time jeopardized our children's educational future. In part, the contempt with which the open plan tradition is now held can be attributed to the revival of a more conservative agenda for schools, an agenda which critics argue views the classroom as a unit of economic productivity, rather than a community of learners. Yet this ideological rationalization does not begin to explain the numerous research studies which equate open space classrooms with reduced task involvement, poor academic performance, and eroded teacher support (Sanoff, 1994).

The basic criticism that has been made of open-space classrooms is that they were just too noisy and filled with distraction for students to be able to learn effectively (Bennett et al, 1980). Children with attention deficit disorder and other learning disabilities in particular found it difficult to concentrate for even moderate periods of time. When a lesson demanded concentration or was judged by students to be "boring,"
the more interesting lesson being taught on the other side of the room would often attract the students’ attention (Castaldi, 1987). So too, many open plan schools lacked semi-enclosed areas, set away from the high activity levels of other spaces, where children could go for privacy, to read a book, or work silently without distraction. In part, the lack of privacy areas was congruent with the basic tenets of the open philosophy which equated successful learning with observable activity and thus de-emphasized opportunities for privacy, contemplation, and aloneness time (Hutchison, 1998). As Henry Sanoff (1994) writes:

Opportunities for privacy, which are never substantial in traditional school buildings, were less available in open areas. Privacy has been shown to contribute to a child’s growth and development...and consequently opportunities for increased privacy, such as secluded areas, have been recommended especially for reading....[Although they] might prefer spaces that are not visibly isolated or cut off from view, students appreciate an environment that provides a variety of places to allow different learning experiences to occur.

Despite the severity of the above problems, the open plan design may have been doomed to failure for an even more fundamental reason. In an effort to refrain from codifying open education, many supporters of open reforms endeavoured to preserve the ambiguity of the term "open" as a way of building solidarity between a diversity of educational agendas. Rather than simply state what open education was, some
supporters instead chose to define open education in a negative way, in terms of what it was not (Spodek, 1975). As a result, the relationship between the programmatic reforms of open plan learning and the architectural reforms of open plan schools was never fully articulated. Opportunities to reorganize the traditional routines of open plan schools and harness the group dynamics of open classes were missed. Teacher in-servicing needs went unmet. Administrative leadership was lacking (Lackney, 1994). Without a clear methodological vision and adequate programmatic support, many teachers fell back on traditional instructional techniques. Yet these same teachers continued to believe that they were practicing open education since they were teaching in an open environment.

So too open plan schools were at times presented by designers and administrators as a fait accompli. The physical rearrangement of space in many of these schools represented the end - rather than the beginning - of the reform process. As Jeffery A Lackney (1994) notes:

The problem of what constituted open education and open classrooms became a stumbling block very early in the educational reform process for proponents, educational administrators, researchers and designers alike. No clear relationship has ever been presented between open education and the need for open classrooms...Once the open education philosophy took hold, so in turn did the construction of open classrooms. It could be argued that at times the reverse scenario occurred. Open classrooms were constructed with the thought that open education would [naturally] follow. This scenario constituted a naive environmental
determinism: that the physical environment can determine behaviour. (p. 53)

Although the impulse to purposefully design schools which “puts 1,000 students in the equivalent of one room” is no longer with us, the legacy of open plan schools nevertheless continues to have an impact on education today. Many schools that saw a return to a more traditional one-classroom-for-thirty-students design in the 1980s were required to implement such reforms in schools that were originally constructed to support open plan learning. Today, with the important exception of a few alternative schools, the legacy of open plan reforms in many school districts is a mixed bag of traditional and innovative school design coupled with renovations, additions, and space reallocation initiatives aimed at returning schools to their traditional 'egg-carton' layout.

The Naturalized Environment

Although the proponents of open plan schools radically overhauled the nature of school interiors, they never left the building to explore the learning potential of the open environment outside of the school. It would not be until the early 1980s that just such a task would be taken on by environmental educators, as well as small groups of parents and teachers intent on building stronger school/community partnerships in their local neighbourhoods. The school ground naturalization movement, a grass-roots ecological restoration program for schools, emerged from these early efforts and is today the fastest growing environmental education initiative in North America (Coffey,
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School ground naturalization programs restore all or part of the playground and other areas surrounding a school to their natural state through the reintroduction of plant species which are indigenous to the local area. In the last few decades, hundreds of elementary, secondary, and post-secondary schools throughout the world have initiated naturalization projects which aim to aesthetically enhance the school environment and provide quality outdoor learning experiences for students. Significantly, these projects have tended to be grass roots initiatives rather than top-down mandated reforms. Working together, teachers, students, parents, local businesses, and community residents have designed vegetable and herb gardens, bird and butterfly habitats, prairie gardens, woodland forests and built outdoor amphitheaters, tree houses, and other play and learning environments to complement these naturalized spaces (Evergreen Foundation, 1994).

Although school-based ecological restoration efforts have undergone a resurgence since the early 1980s, efforts to transform school grounds into naturalized spaces for children and adults are not entirely new. Since the mid-eighteenth century, naturalization initiatives in schools throughout the world have variously aimed to beautify school grounds, promote the healthy development of children, and provide integrated outdoor learning experiences that complement the education students receive indoors. At the turn of the century, school gardens shielded students and teachers from the heat of summer and the cold of winter and played a key role in teaching civic virtues through children’s gardening endeavours (Coffey, 1996). However, by mid-century,
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naturalized spaces were replaced with the formal planting of trees and grasses which perhaps reflected a post-war longing for order and control. Only in recent years, have school ground naturalization initiatives experienced a rebirth following decades of inattention. A revived interest in environmental education, coupled with mounting concern over declining natural spaces in cities, has prompted a renewed interest in the school grounds as a naturalized outdoor area for play, learning, and reflection. The success of the ecological restoration movement - over a third of schools in Britain alone now host naturalized learning spaces (Coffey, 1996) - has helped the school ground naturalization movement to quickly become one of the most influential environmental education strategies the world over.

Supporters of ecological restoration programs argue that such projects bring nature back into the city, provide students, teachers, and local residents with opportunities for daily contact with nature, serve as living examples of developing ecosystems, provide naturalized play and learning spaces for children, and serve as immediately accessible field study centres for hands-on environmental education activities (Evergreen Foundation, 1994). Above all, such projects help to foster a healthy appreciation of nature and enhance a sense of community in the surrounding neighbourhood.

There are also economic factors at work here. In many cities throughout the world, environmental education today faces serious setbacks as natural spaces within urban communities disappear and as school budgets are cut back significantly. Although environmental education is generally recognized as important on a philosophical level, the traditional practice of sending students on periodic day or overnight visits to outdoor
education centres is judged by some to be no longer financially feasible. Other options for environmental education need to be considered, especially a strengthening of environmental education programs within urban communities. School ground naturalization projects aim to complement periodic day and overnight trips to outdoor education centres, by bringing nature back into the city and functioning as year-round centers for ongoing environmental education in schools. Perhaps most importantly, these projects reinforce the idea that nature and humans can co-exist in cities and grow and flourish together.

It goes without saying that ecological restoration projects can have dramatic implications for the experience of place in (and around) schools. It is with an enhanced sense of pride that schools (often in the spring) show off a newly naturalized area of their site. Yet a naturalization project is never truly completed - school gardens require continuous care and maintenance - so it is the long-term involvement of teachers, students, parents, and local residents in the process of restoring and sustaining a site that often builds community. The challenge for many schools is to maintain the momentum once a project is underway. In part, this can be achieved by fostering strong curricular connections between a naturalized site and the rest of the going-ons in the school (Reading and Taven, 1996).

To help foster solid curricular connections, many naturalized spaces are purposely crafted to include a number of play and learning amenities which encourage the regular use of the site by students and teachers. Schools around the world have turned naturalized places into multi-use spaces by building outdoor classrooms, environmental
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science stations, tree houses, and amphitheaters. So too pathways and log benches for conducting site tours, lessons, and group discussions are integrated into the design of many sites. Some naturalized schools have implemented composting programs to put food scraps and other waste to good use.

In addition to articulating the curricular goals for the project, selecting an appropriate location for a naturalized space is a critical first step in any naturalization program (Evergreen Foundation, 1994). Experienced naturalization proponents advise schools to start small, perhaps focusing at first on a small corner of a chosen site, then grow the naturalized space over successive seasons. Perhaps most importantly, schools are advised to choose low-traffic sites which are unfrequented by students and staff. Naturalized sites which are located in the immediate vicinity of a main entry way, sports field, or parking lot may be more visible to students and the general public, but they won't necessarily fair well in the long-term.

Despite this advice, some schools have purposefully located naturalized spaces in high traffic areas of the school grounds, in effect transforming the daily place experience of students and staff. Elsewhere, I have compared the naturalized site designs adopted by three Toronto-area schools, one of which, in a rare move, chose to situate an ecologically restored site in the same location where children regularly play (Hutchison, in press). In contrast to most other site designs, the project leaders at BroadAcres Elementary School decided to integrate the play and naturalized spaces of their school, rather than locate the naturalized site in an out-of-the-way location, far removed from the play life of students.
There were two design philosophies at work in the schools that I visited. In addition to a naturalized space which is located in the school's courtyard, the BroadAcres school has also purposefully integrated naturalized spaces into the middle of the children's playground area. In this area, each class has cultivated its own garden plot and trees are protected by natural barriers - mini-gardens that surround the trees and protect their root systems from being trampled on by the children's play. Log benches with built-in checkerboards also add to the utility of this space. In contrast, the Old Orchard and W.A. Porter schools chose a site which was set off from those areas that attracted a lot of traffic in the daily going-ons around the school. The Old Orchard community naturalized the perimeter of their school, by turning the original concrete hill surrounding the playground into a terrace garden. The W.A. Porter community naturalized a corner area of their school that was enclosed on three sides, protected from the elements, and used infrequently by students. An out-of-the-way area where teachers and students could purposefully go to 'do naturalization' was found to be more preferable for these two schools. (p. n/a)

In one of the few studies to explore the intersection of children's place perceptions and school grounds, Wendy Titman's (1994) research of a number of British elementary schools found that naturalized sites were heavily favoured by children over the concrete playgrounds commonly found around schools. The various nooks and crannies of naturalized sites invited children's exploration. Grass was symbolic of "gentle
game space...trees of climbing...and flowers of aesthetic values" (pp. 35-39). Tending a
garden enhanced children's sense of pride and deepened their relationship to the school
as a whole. Titman concludes that all school grounds, whether naturalized or not, are
'read' by children as they would read any external environment - as places to value,
respond to, and utilize in certain ways. As with the other educational movements
explored in this chapter, ecological restoration efforts recognize the importance of
consciously designing learning spaces for children. Such spaces evoke a certain set of
responses in students (and teachers) and aim to be congruent with a particular
educational philosophy.

The Philosophy of Classroom Design

The Montessori, Waldorf, open plan, and school ground naturalization movements
each argue for a unique and innovative design plan for classrooms and other learning
environments. At their core, each shares a similar concern for the need to consciously
plan learning settings for children. Moreover, each philosophy explicitly relates this need
to their respective ideological points of view. The first principles of all four reform
traditions might fairly be described as follows:

- Young children require a planned learning environment and routine.
- This learning environment should be separate from the work and learning
  environments of adults.
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- Adults can construct such an environment to support children's learning.

The above principles reinforce the view that consciously planned learning environments for children are important. Moreover, the planning of learning settings for children requires special considerations related to children's developmental level and the unique curricular goals of child education. (That child education should occur separate from the education of adults is itself an ideological statement.) So too, each of the philosophy's reviewed in this chapter argues that adults are in a position to make decisions on behalf of children as to just what an ideal childhood learning environment comprises. (Even open plan schools, which historically valued participative learning, did not give children a choice as to whether or not they would be educated in an open plan setting. For these schools, the open plan setting was a given. What children and teachers collaboratively did to further define the open plan environment occurred within this given physical and ideological context.)

The above similarities notwithstanding, there are also a number of conceptual dichotomies that further frame some of the root differences between the four reform movements. By stepping back to view each movement from a distance - from a meta perspective as it were - one can further articulate the relationship between educational ideology and the construction of place in schools. This chapter closes by addressing three such conceptual dichotomies: positive vs. negative freedom, the explicit vs. implicit curriculum, and the organic vs. synthetic vs. functional aesthetic.
Positive vs. Negative Freedom

Throughout most of the 20th century, the debate over freedom in education has constituted one of the most controversial ideas in educational philosophy. The issue of just how much freedom students should enjoy in schools has been tackled by leading educational thinkers as diverse as John Dewey (1938), A.S. Neill (1960), and Paulo Freire (1984), among others. So too the idea of freedom is central to the four philosophies reviewed in this chapter, particularly those advanced by Maria Montessori, Rudolf Steiner, and proponents of open plan learning. It is perhaps ironic, given the concerns of her movement's critics, that it was Maria Montessori who arguably put forward the 20th century's most scathing critique of teacher authority in traditional education. In what might fairly be described as an overly dramatic caricature of turn-of-the-century education, Montessori wrote:

In all pedagogy up to our own time, the word education has been almost synonymous with the word punishment...Those delicate, trembling limbs are held to the wood for more than three hours of anguish, three and three of many days and months and years. The child's hands are fastened to the desk by stern looks...and when into the mind a thirst for truth and knowledge the ideas of the teacher are forcibly driven...the little head [lies] humbled in submission. (Montessori, 1936, pp. 281-2)
Yet just how immune is the Montessori method from similar criticisms that call into question the role of unbending authority in childhood education? It seems clear that teacher authority is not the issue, for teachers working within the Montessori tradition are instructed to make every effort to stay out of the way of children who are busy at work with the various manipulatives that comprise the instructional program; and yet, as was noted earlier in this chapter, there is an environmental authority at work in Montessori preschools in the form of the prepared environment which structures and limits child behaviour and fraternization.

As Valerie Polakow (1992, p. 82) notes, "Montessori believed that satisfying engagement and absorption in work led to the formulation of a system of inner controls, a sense of personal fulfillment which facilitated the development of an inner strength and self-discipline." This is the essence of positive freedom - the notion that restraint and sacrifice will over time nurture an autonomous learner who is free from the whim, caprice, and impulse-driven behaviour of the undisciplined child (Lankshear, 1982). This view of freedom is shared by traditional, Montessori, and, in some ways, Waldorf education and it rises in sharp contrast to the negative notion of freedom which underlies the relaxed authority of the open plan philosophy (and free schools, such as Summerhill). What Montessori and Steiner achieved in moving away from traditional education was to frame the need for authority in childhood education in terms of a developmental imperative rather than an ideological dictum. Montessori, in particular, articulated a detailed philosophy which equated freedom with a structured environment and focused learning materials. Discipline, intellectual focus, individual work, and mind
are all intricately interwoven in Montessori's early childhood philosophy, the effective implementation of which leads to a sense of self-fulfillment and a free thinking adult:

The [Montessori] environment and materials have controls built into them to eliminate obstacles, to encourage beneficial activities, and to correct the child’s errors. The spontaneous use of these auto-instructional materials enables the child to focus his attention upon the mastery of subjects and skills. Each child should be given the opportunity to work freely in self-chosen tasks commensurate with his needs. (Hainstock, 1986, p. 68, italics added)

The use of the word "freely" in the above passage betrays the notion of freedom forwarded by open education and other, more radical, free schooling traditions, but it reinforces the positive notion of freedom and authority that is supported by both Montessori and Waldorf education. For Montessori educators, freedom is rooted in the structuredness of the prepared environment. For Waldorf educators, freedom is rooted in the strength of the child/teacher relationship.

Explicit vs. Implicit Curriculum

In most educational philosophies, there is both an implicit and explicit curriculum at work educating students. Critical educators typically point to inequities in the choices and roles that are subconsciously assigned to students on the basis of class, race, and
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gender, but there are also other 'hidden' considerations at work, including an implicit
curriculum which comprises the subconscious influence of environmental design on child
behaviour and development:

Those who design spaces in which children will spend many hours a day, at an age
in which the brain, the body, and the feelings are so extraordinarily reactive and
undergoing rapid formation, must be aware of the possibilities that the space offers
children for expressing and developing all their genetic equipment, as well as the
restrictions created by the space and that which it denies. The spaces, materials,
colors, light, microclimate, and furnishings must be direct and integral participants
in the great alchemy of growing within a community. (Vecchi, 1998, p. 135)

The notion of an implicit or hidden environmental curriculum is most pronounced
in Waldorf education where the learning environment is consciously designed by
educators to deepen the interior lives of both students and teachers. The influence of the
Waldorf approach to school design on the interior life of the child is judged to be
subconscious and spiritual. Unlike the Montessori notion of the prepared environment,
it is not explicitly taught to children or consciously brought to their attention; rather, the
aesthetic character of the Waldorf school complements the arts-based instruction that
comprises the explicit curriculum. In this way, the aesthetics of Waldorf pedagogy and
place complement one another, by working towards a common goal on a conscious and
subconscious level respectively.
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For school ground naturalization proponents, on the other hand, the learning environment is the curriculum and this explicit curriculum is clear to all. Creating an outdoor learning environment, i.e. growing and nurturing the school gardens, constitutes environmental education which, in turn, infers a design partnership between teachers, students, and other adults. It can be said that the curriculum of a naturalized school literally grows out of the design of the learning environment. Choices are made to create this or that habitat, pathway, outdoor classroom, or other learning amenity and the garden itself serves as the impetus for further learning.

Organic vs. Synthetic vs. Functional Aesthetics

Ever since Friedrich Froebel's invention of the kindergarten over a century-and-a-half ago, there has been a strong affinity for the beautiful in childhood learning environments. This tradition continues with both Waldorf education and also the school ground naturalization movement which perhaps comes closer than any other educational philosophy in literally embracing Froebel's 19th century vision of a "garden of children." Froebel and other romantic reformers argued for a childhood aesthetic which embraced the romantic ideals of innocence and nature; hence the strong organic character of both Waldorf education and school ground naturalization. For Froebel, the marriage of childhood and nature served, in part, as an educational defense against the corrupting influence of society. This was a carry over of Rousseau's thought. Waldorf education, in turn, strengthened the child/nature relationship by situating it within the
context of a holistic developmental theory. In Waldorf education, as discussed earlier, the aesthetics of childhood, the learning environment, and curriculum aim to be one and the same, with each complementing the others.

Although beauty in non-Waldorf childhood settings is common, organic beauty is not. In our modern day petroleum-based culture, it is plastic that has come to define the aesthetics of most child care centers and elementary classrooms. Long gone are wooden toys and hand-woven dolls. The sandbox and water table take a back seat to intricately designed toys and manipulatives, such as battery-operated cars and play sets, that mimic their real-world adult counterparts. The organic aesthetics of natural hues and washed out water colors are replaced by brightly colored walls, toys, and posters and an organizational aesthetic that seemingly values presentation and efficiency over participation and imagination.

Still another environmental aesthetic - perhaps more appropriately termed an nonaesthetic - is embraced by the Montessori and open plan reform traditions which value functionality over beauty when it comes to childhood learning settings. The environments of both Montessori and open plan schools play a critical role in influencing teacher and student behaviour. The child's work with the Montessori manipulatives is directed by the construction of the prepared environment. Likewise, the tearing down of walls and the judicious placement of shelving units and other portable barriers aimed to effect a change in the work habits of both students and teachers in open plan schools. An attractive and well-organized learning environment was undoubtedly important to open plan educators, but there was no definable aesthetic
that framed the material make-up of open plan schools, their form, or color. Likewise, Montessori's chief biographer, E. M. Standing (1957), makes it clear that, for Montessori, the functionality of the prepared environment outweighed any purely aesthetic considerations.

Yet is this focus on the physicality of place warranted at a time when many educators are beginning to explore the teaching potential of non-physical places, namely virtual learning settings in the world of computers and digital technology? In an effort to begin answering this question, the next chapter leaves the 'real world' of classrooms and schools to explore the virtual universe of education in a cyberschooling age.
Chapter 5:
The Coming Cyberschooling Revolution

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I believe that the motion picture is destined to revolutionize our educational system and that in a few years, it will supplant largely, if not entirely, the use of textbooks...The education of the future, as I see it, will be conducted through the medium of the motion picture.

- Thomas Edison (1922)

A technological revolution is sweeping through the U.S. and world economies that is totally transforming the social role of learning and teaching. This learning revolution already has made the 'classroom teacher' as obsolete as the blacksmith shop...The nations that stop trying to 'reform' their education and training institutions and choose instead to totally replace them with a brand-new, high-tech learning system will be the world's economic powerhouses through the twenty-first century.

- Lewis J. Perelman (1992, p. 20)
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The previous chapter traced the ideological lines of thought which run through four educational movements. At the heart of each movement, it was argued, is a particular construction of place that is intricately related to a specific vision of childhood, learning, and curriculum. Yet despite their divergent educational proposals, each movement takes as its starting point, a common understanding of place. Learning, in the eyes of the Montessori, Waldorf, open, and naturalization traditions, occurs in the real world and is the result of face-to-face interactions between children, teachers, and curricular materials situated in physical learning settings.

Until the mid-1960s, only our imaginations would allow us to conceive of an interactive educational setting that was not based in the real world. Yet with the advent of computers, and subsequent advances in simulation, virtual reality, and digital communication technologies, the ability to educate children in virtual learning settings is being seriously studied and heralded by some as the harbinger of a new educational renaissance with clear implications for both pedagogy and place.

The Historical Roots of Instructional Technology

The computer is not the first instructional technological to make its mark on education. Early in the 20th century, proponents of instructional technology promoted the use of film and radio in classrooms and (as the opening quotation of this chapter indicates) some reformers foresaw a technological revolution in education stemming
Advocates of instructional technology saw an efficiency benefit to the use of film and radio in schools. As an outgrowth of progressivism and the scientific management of schools (Cuban, 1986), the application of technology to classrooms seemed ready to boost instructional productivity and lower the long-term costs of delivering educational programs (short-term startup costs for equipment notwithstanding). Just as the classroom computer became a symbol of cutting edge innovation in the 1980s, so too the film projector served as a symbol of classroom modernity throughout the 1920s and 30s. As with recent research into the use of computers in schools, early research on the effectiveness of film versus traditional instruction concluded that film instruction was either superior to or equally effective as direct instructional approaches (Wise, 1939).

Yet despite the positive research results (and Thomas Edison’s faith in the future of motion pictures), film did not receive the widespread adoption that its advocates had hoped for. School administrators and teachers cited a number of problems related to the use of films in schools (Cuban, 1986). First, many teachers lacked the necessary skills to operate film projectors. Second, there was the high cost of building a film library and purchasing and maintaining film projectors and screens. Finally, the high cost of equipment resulted in an unmanageable teacher to film projector ratio which made accessibility to film equipment problematic. These concerns, in so far as they relate to technical competence, cost, and accessibility, have changed little even as the focus of educational technology has shifted to computers in recent decades.

During this early period, radio seemed to fare somewhat better. By the late 1930s,
early technical problems with radio sets had been cleared up and over 50% of U.S. schools owned at least one set (Whoelfel and Tyler, 1945). For a short time, both local and national radio stations began to offer radio programs geared to schools. Nevertheless, the widespread adoption of a radio in every classroom was not to be. Only 7% of respondents in a 1937 survey reported that all classrooms in their school used radio (Atkinson, 1938). Still less in rural areas of the United States. In reviewing the early adoption of radio in schools, Woelfel and Tyler (1945) attribute the failure of radio to teachers' "indifference and lethargy, even antagonism toward this revolutionary means of communication" and the "fixed courses of study and rules of conduct" in schools, a critique that was to be given voice again years later by some cyberschooling reformers (Perelman, 1992).

Unwilling to give up on new forms of instructional technology, supporters of radio in school eagerly waited for the widespread adoption of educational television, an inevitability in one supporter's view that was sure to bridge the "blindness gap" that marred the early adoption of radio (Darrow, 1932, p. 266). Unlike film and radio, television received substantial support from the private sector, most notably, through the Ford Foundation, which throughout the 1950s invested over $20 million dollars in 250 educational districts across the U.S. (Ford Foundation, 1961). Financial support from the federal government soon followed so that by the early 1970s over $100 million had been spent on the development of educational television by the private and public sectors (Cuban, 1986). Such early partnerships between school districts and private enterprise would serve as early models for recent school/business partnerships which aim
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to equip schools with the latest in computer technology.

The Rise of the Net Generation

At their core, film, radio, and television share a critical limitation. They are noninteractive technologies. The transmission of information moves one-way from source to student. Just as overcoming radio's "blindness gap" was judged to be key in ensuring the success of educational television earlier this century, so too the need to move instructional technology into a new interactive learning realm in the 1980s (the nondigital teaching machines of the 1960s and 70s notwithstanding) signaled, for early cyberschooling proponents, a revolution in education from which we have yet to emerge.

Over the last two decades, there have been two computer revolutions of significance to education. The first occurred in the late 1970s and early 1980s with the introduction of the personal computer. Marketed first to businesses and, shortly thereafter, to homes and schools, the IBM PC and Apple II computers heralded the promise of an individually-scaled technology that could deliver one-to-one instructional programs to students. Throughout the 1980s, school computers were used for administrative purposes, to provide drill and remedial instruction to students, and to teach basic programming skills (i.e. using tools such as BASIC, LOGO, and HyperCard). Proponents touted the efficiency of computers and pointed to the technologization of the workplace as important rationales for introducing computers into the curriculum. So
too, computers were deemed to be infinitely 'patient' and, therefore, ideally suited to matching the varied learning paces of students. Current television advertisements from Microsoft continue to laud this benefit in particular.

The earliest personal computers served three basic functions: information storage, processing, and retrieval. Yet, with the exception of a minority of networked labs, computers were isolated from each other and missing a key educational ingredient: communication. For educators, the early promise of computers which could communicate with one another was heralded by a 1983 magazine advertisement from Apple. Featuring a contrasting mix of the traditional and innovative, the ad depicted a top-down view of a networked classroom, traditionally arranged into rows of students facing a teacher, but with a computer on every student's desk.

Despite the early forays into networked educational computing, the notion of the computer as a learning tool for communicating with the outside world did not really take off until the popularization of the Internet in early 1994. By simply adding an inexpensive modem to a computer system, even novice computer users could set up networked access to the outside world using a basic phone line. From there, access to Web sites, e-mail, and discussion groups was only an Internet provider and software download away. The Internet was originally designed in the 1970s to serve as a communications backbone for the U.S. defense industry and later, in the 1980s, university science and technology departments (Winston, 1998); but in 1993 with the release of Mosaic, the first user-friendly and widely available Internet browser, the World Wide Web took off as if satisfying some pent up public and private enterprise
need for a new world wide communications medium.

Today, much of the media hype surrounding the integration of computers into schools has less to do with computers per se and more to do with the Internet as a vast world wide resource for students. Hence, for educational technology advocates, the call for school wide access to the Internet represents the second educational computer revolution in as many decades. In the eyes of many cyberschooling proponents, the computer has been transformed from a one-to-one teaching machine into a specialized communications switchboard that allows students to browse for and publish information and communicate with peers and adults around the globe.

Visions of a Cyberschooling Future

Foremost among a variety of perspectives on the integration of computers into education are two proposals which call for a major overhaul of the educational process as we now know it. The first view extends from the current effort to wire the nation's schools and put a computer on every child's desk. The second and more radical view embraces the vision of a deschooled society in which K-12 schools are deemed unnecessary and purposeless.

Wiring the Nations Schools

The current effort to wire U.S. and Canadian schools was framed earlier in this
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thesis as a school design initiative aimed at modernizing the infrastructure of school buildings. Yet, at its core, this initiative is a philosophical, rather than an architectural reform, with significant implications for curriculum, teaching, and learning. In order to prepare children for life in the 21st century and future hi-tech employment, cyberschooling proponents argue that it is necessary to transform the tools of teaching from textbooks and chalkboards to computers and the World Wide Web. Typically, the rationale for school-wide Internet access goes something like this:

Technological literacy is a 'new basic' of American education and the Internet is the blackboard of the future. Yet thousands of schools find it difficult to provide the powerful learning opportunities afforded by technology because they lack the basic electrical wiring and phone lines necessary to plug in computers and connect them to the Internet. As we repair and replace dilapidated and unsafe schools, we must ensure that they are '21st century schools.' This means wires, electrical capacity, electrical outlets, and cable and telephone lines that will allow students to take full advantage of the learning opportunities that technology offers. (U.S. Department of Education, 1997, p. 1)

Or sometimes like this:

Technological literacy - meaning computer skills and the ability to use computers and other technology to improve learning, productivity, and performance - has become as fundamental to a person's ability to navigate through society as
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traditional skills like reading, writing, and arithmetic. Yet, for the most part, these new technologies are not to be found in the nation's schools. Students make minimal use of new technologies for learning, typically employing them for only a few minutes a day. Indeed, the hard realities are that only 4 percent of schools have a computer for every five students (a ratio deemed adequate to allow regular use) and only 9 percent of classrooms are connected to the Internet. In schools with large concentrations of low-income students, the numbers are often even lower. Research and the experiences of schools in the forefront of the current 'digital revolution,' however, underscore the enormous learning opportunities available through technology. (U.S. Department of Education, 1996, p. 1)

As the above quotations indicate, the U.S. government is on board as a supporter of the hi-tech wiring of schools. Indeed, the goal of Internet access for every classroom is among the Clinton administration's (1996-2000) top policy priorities for education.

The federal initiative to wire U.S. schools has four components (U.S. Department of Education, 1997). First, there is the basic effort, now underway in over 30 states, to connect every school to the Internet before the year 2000. Second, there is the goal of bridging the technology gap between rich and poor by ensuring that every child has access to modern computer technology. Third, there is the goal of providing teachers with technology-related training and inserviceing. Here there is a need to help teachers become comfortable using computer technology in the classroom. Instructional proficiency requires a degree of technical competence, but also a solid grounding in how to effectively incorporate new technological resources into an instructional program.
Finally, there is the goal of supporting the development of high-quality digital content in the form of instructional tools, multimedia titles, productivity software, and Web sites.

*Deschooling Society*

In the debate over the future of technology in education, the plan to wire North American schools represents the moderate reform position. Teachers, in the view of the above plan's proponents, retain a critical role in child education, as, to a lesser extent, do textbooks and other curricular materials which are rooted in the 'real world.' Children continue to go to school, so the physical infrastructure of schools as formal institutions dedicated to the education of the young stays in place.

The contrary position argues that the technological revolution our society is currently experiencing necessitates a full-scale revamping of the way children learn, including where and how they learn. In the future, so the argument goes, there will be no need for schools as we now know them. Each day, children and adults will log on-line to the information superhighway and participate, essentially as equals, in on-line discussion forums, virtual reality explorations, and other computer-based instructional pursuits.

This future technological vision of a deschooled society is forwarded most forcefully by Lewis J. Perelman whose 1992 book *School’s Out: Hyperlearning, the New Technology, and the End of Education* argues that schools are not and never again will be conducive to the technological revolution we are now experiencing. Perelman outlines his argument
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for a transformation in the conditions of learning as follows:

- Although learning and teaching used to be a solely human process, learning has recently become a transhuman process that partners humans with powerful neural networks, expert systems, and automated learning machines. As a case point, Perelman cites the example of car mechanics and other machine operators who today work with and through computers.

- Society used to be able to define education as something that occurred solely in the classroom, cut off from the rest of the world. Today, however, education permeates almost every aspect of a person's social, work, leisure, and home life. In the private sector, education is already a big business - witness the rise of private professional and technical schools, educational television networks, and teaching software. Succeeding within the world of work means committing to life long learning, including on-the-job training and the personal upgrading of employment skills.

- Learning can no longer be construed as the one-way dissemination of knowledge from teacher and textbook to student. In the information age, everyone is a learner and there are no teaching experts per se. So too, the shelf life of up-to-date knowledge has shrunk, in many instances, from several years to only weeks or days. A new global telecommunications system which can manage, update, and instantly deliver information to students is required.
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Educators might wish to counter each of the above points - Perelman does seem to subscribe to an antiquated notion of just what occurs in schools and he doesn't adequately address the unique psychosocial needs of children - but the allure of his proposals do attract a following among some business leaders, technological innovators, and critics of the educational establishment.

So just what does Perelman propose? First, he argues that public education must be privatized and deinstitutionalized. Perelman is a staunch capitalist and he sees public education as the world's last major socialist institution. Furthermore, he argues that if we retain the status quo, educational bureaucrats, teacher's unions, school districts, and educational faculties, will only slow down the pace of reform and stand in the way of technological and social progress. Instead, we need to transfer public monies that are normally spent on K-12 education into new technology innovation funds which will help to build the new on-line and privatized telecommunications infrastructure that will support learning in the 21st century. Second, Perelman argues that we need to outlaw credentialism, i.e. the right of employers to discriminate against applicants on the basis of the number of degrees they have. Credentialism, Perelman argues, is the primary means by which schools, particularly higher education institutions, extend their monopoly on learning and maintain the financial support of the public. With credentialism outlawed, employers would rely solely on merit and competence in their hiring practices as measured by assessment instruments and perhaps a single certificate of basic competency. Young people and even technology-savvy teenagers would be in a position to compete with older adults for jobs. As Perelman sees it, "public enthusiasm
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for paying exorbitant taxes and tuition for diploma mills would wane swiftly" (p. 307).

Place and Pedagogy in the Virtual Classroom

It is interesting to note that some of what Perelman calls for in his 1992 book, namely a global telecommunications medium and distance learning infrastructure, is now in place in the form of the Internet. As noted above, the Internet has become the de facto focus of a majority of cyberschooling proposals at present, particularly those which aim to capitalize on the agenda of getting North American schools on-line. The design and infrastructure challenges of incorporating networked computers into schools was addressed in Chapter 3, but the implications for pedagogy and place go far beyond issues of basic school design.

Visions of Dynamic Space

As with the educational philosophies reviewed in the previous chapter, there are choices to be made concerning the organization of computerized learning settings. Space is always at a premium in classrooms (Napier-Anderson, 1988) and introducing even just a few computers will place new demands on the infrastructure, routine, and layout of the educational environment. How computers are integrated into the classroom largely depends on the way the technology is to be incorporated into the everyday curriculum. If computers are to be taught as a separate subject, a laboratory

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model might best be adopted. Classes can book or be regularly rotated through a designated computer lab in a school. This approach helps to formalize the school-wide use of a limited number of computers, but it doesn't do much to effectively integrate computers into the everyday curriculum, a major priority of cyberschooling proponents.

A more integrated approach would situate one or more computer workstations in each classroom of a school. Ideally, each workstation will boast a number of amenities for printing documents, surfing the Web, scanning pictures, building databases, composing music, recording narration, and creating multimedia and video presentations etc. Within this scenario, computer workstations are defined less as learning tools and more as project studios that can assist students in completing various production-related tasks. When integrated into a whole language curriculum, the computer can serve as a final destination for students who are ready to produce the final draft of a story. Within such a scenario, it is important to build strong curricular links between computer project stations and non-computer related learning tasks. A system also needs to be put in place to fairly manage each student's access to and use of the computer workstation.

World at My Desktop

Coupled with a modem and Internet connection, computers are expanding the notion of where students learn. Before the rise of the Internet, formal education was restricted to the classroom and occasional excursions out into the community. Today, however, the world has opened up to children who can travel to distant lands and learn
about far away cultures by travelling the World Wide Web. Students can start pen pal relationships with children in other countries and participate in chat groups with children and adults scattered around the world:

At Rosewood Elementary School in Rock Hill, South Carolina, fifth graders are exploring science, history and culture the world with the help of the Internet. Over the last year they have engaged in numerous intercurricular computer projects by accessing KIDS '95, a free international networking service sponsored by the group known as KIDLINK. With its various international networking activities, KIDLINK has united more than 37,000 children between the ages of 10 and 15 from over 71 nations. Through one of KIDLINK's most popular activities, children and their teachers are united in topical discussions known as Internet Relay Chats (IRC's). A chat may cover a wide breadth of subjects, from current events and politics to books and music. By accessing KIDLINK chats, a user may join a conversation at any time, day or night, with children from across the globe. (http://edweb.gsn.org/stories.net.html)

As the above example makes clear, Internet technology is redefining the relationship between place and education in a way that has clear implications for both the scale of children's learning environments and the nature of the education students are likely to engage in. A common rationale for introducing Internet technologies into classrooms is that children can learn more about other cultures by interacting directly with children from around the world. With new technological innovations related to
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video conferencing and faster modem connections, students may soon be able to have face-to-face conversations with individuals the world over.

Virtual Learning Settings

When education moves from the real world of the classroom to the virtual world of the computer and Internet, several options for engaging students with new curricular materials and learning opportunities become possible. Below is a brief overview of four new and emerging digital innovations. Each is presented using the cursory, futuristic, jargon-filled tone of voice which tends to accompany such visionary pronouncements. Also noted is the way each innovation is likely to impact on education and our conceptions of place in the years to come:

• Information Superhighway: Improvements to the infrastructure of the World Wide Web, particularly the Internet backbone and transmission speeds, will improve the reliability of the Web and promote the widespread adoption of high bandwidth media such as video and audio streams.

Implications for Place: Place concepts such as navigation, cyberspace, Web sites, and chat rooms are already common Internet jargon. Navigating from site to site is judged to be digitally analogous to travelling from one place to another in the physical world. As people's reliance on the Internet for work, leisure, and education increases, so too our place identities may increasingly be intertwined with where we
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go in the virtual world, rather than where we go (or come from) in the real world. Improvements to infrastructure of the World Wide Web will propel the construction of virtual 3D worlds, such as storefront walkthroughs, and this will further strengthen our virtual place identities.

- Video Conferencing: In the near future, the technological infrastructure will be in place for teachers to provide distance learning instruction to groups of students who are separated by a wide geographic regions. As well, students around the world will be able to interact with one another, through live video, in real-time.

Implications for Place: The ability to graft a traditional instructional approach on to cyberspace may soon preclude the need for schools as physical buildings where children go to learn. Video streams of instruction can be delivered by teachers to students live, in real-time, or on-demand, in a just-in-time way as requested by each individual. Video conferencing and other interactive technologies will fulfill students' need for socialization and communication with peers and help to provide the basis for forming interest and video chat groups the world over.

- Virtual Reality: Simulation technologies will allow students to learn in 3D, through sight, sound, and touch. Students will experience the physical principles of science first hand and take guided 3D virtual tours of museums and art galleries.

Implications for Place: There may soon be no need to travel to physical places in the real world (e.g. supermarkets, sports arenas, and bookstores) since they will all be reconstructed and instantly accessible via the virtual world of the computer.
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(Physical purchases such as food and clothing will continue be delivered to customers in the real world however.) Virtual reality will allow students to explore both micro and macro-sized worlds, such as the microbe and universe respectively, through immersive experiences that tap into each of our senses to deliver a truly transformative experience.

- **Voice Recognition**: Speech synthesis technologies are continually improving and soon children will be able to interact with computers using their voice alone (no keyboarding skills necessary). So too computers will soon boast a speaking voice which preserves human intonation and phrasing.

*Implications for Place*: The design and construction of the personal computer and our interaction with it has historically been technically limited by the need for intrusive interface tools, such as the keyboard and mouse. To this day, the personal computer is viewed as a separate component, as well defined as a toaster, car, or other single-purpose amenity. Yet the personal computer is a general purpose amenity and its form and existence as an explicit component is a cultural construction. With the widespread adoption of voice recognition and speech synthesis technologies, the computer may soon fade into the background of our living, working, and learning environments. Wall monitors (and eventually holograms) will provide any necessary visual output, but the computer itself will respond to voice commands as, for example, we walk through the various rooms in our homes. The computer will be omni-present in virtually every place we travel to,
but, perhaps like billboards and school bells today, it will be a taken-for-granted element of the surrounding environment.

Challenges to the Cyberschooling Vision

The above view of place in a cyberschooling age comprises changes to the layout and organization of classrooms, the move from physical to virtual learning settings, and the expansion of the scale of children's learning environments. This account represents cyberlearning in a positive light and echoes the arguments of those cyberschooling proponents who only see good outcomes from the integration of computers into schools.

Beginning in the mid-1990s, however, a number of critics of educational computing (e.g. Robertson, 1998; Armstrong and Casement, 1998) began to articulate a contrary view. Their voices don't carry the same attention of cyberschooling proponents who are riding the wave of government and corporate support, but the popular media has nevertheless picked up on their arguments and begun to question the educational and financial costs of diverting huge sums of public monies and educational resources into educational computing. This chapter closes by briefly summarizing three specific objections to the cyberschooling movement, each of which directly relates to the construction of place in education.
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From Multi-sensory to Uni-sensory Learning

A computer in the nursery school could soon take its place alongside the clay, sandbox, fingerpaints, and building blocks. Clay, sand, paint, and blocks can all be touched and easily manipulated by the child. Perhaps they appeal to the child because the child can explore, be creative, and feel powerful when using them...Similarly, the ideal nursery school computer can yield to the touch of the child. Programs can be easy to begin and end; instructions and procedures can be clear to a child, even self-revealing. (Piestrup, 1984, p. 211)

Can the computer replace the sandbox in the kindergarten? This is the essential question which motivated me to explore the construction of place in schools. Increasingly, software titles are being marketed to ever younger children, including one and two-year-olds (Blackwell, 1998) and these titles boast painting environments which enable children to draw pictures and build animations and multimedia presentations. Computers would seem to be opening up a world of opportunity for children to explore the world of multimedia, but on closer examination computers rely on only one or two types of sensory interaction - sight and sound - and the conduits for each are generally restricted to the computer monitor and speakers. The tactile give and take of working with sand, clay, fingerpaints, or even a simple pencil, is replaced by the keyboard and mouse, general purpose interface tools whose properties do not adequately mimic the various real world materials that children play and learn with in traditional
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learning environments.

If our aim is to substitute the computer for the sandbox, paint brush, pencil, and other specialized tools, are we truly enriching the learning environment of childhood or diminishing child/media interaction through our sole reliance on the mouse and keyboard alone? It is has been generally accepted in developmental psychology for some time that it is the interaction between hand, mind, and environment which propels cognitive growth through early and middle childhood. This is the basis for both Piaget and Montessori's theories of child development and a first principle of progressive education. The intricate connection between the hand and mind calls into serious question the notion that the uni-sensory interaction of child and computer can replace the diversity of sensory stimuli and interaction that accompanies play and learning in the real world.

From Cultural to Computer Coding

Marketers of CD-ROM encyclopedias and other multimedia titles routinely argue that computers can bring the world to a student's desktop, but what exactly is it that such software titles and Web pages encode of the world? The aim of many cyberschooling supporters is to render unnecessary all non-digital forms of communication and to achieve this goal, all culture must be digitally encoded so that information can be retrieved, processed, and manipulated in schools the world over. As McClintock (1988) argues:
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As we translate the stuff of culture into binary code and create more and more powerful tools for working with such binary code...we have irreversibly initiated the transformation of a culture of remembrance into a culture of intelligence...All culture can be coded so that it can be operated on with digital computers, and the operation of digital computers is such that it will not only allow for the storage and retrieval of information through objects external to our minds, but will also permit the intelligent processing of that information in those external objects. (p. xiii)

In the above passage, the author confuses information with intelligence and, more pointedly, explicit information with contextualized knowledge. Can the total sum of a culture or locale be stored on a CD-ROM or other computer media? The question is not one of storage capacity, for the size of hard drives and other media are constantly growing. The problem is with the way information is digitally processed and just what is lost in the conversion process. Just as computers provide children with a simulated, unisensory experience of the world, digital information is processed in a uniform way - into a binary code that cannot capture the subtlety of human intentionality, emotion, communal memory, and context. All digital representations of information, including movies, audio, and 3D animations are, at their core, 1's and 0's. This is the only language which the computer understands. If we are to digitize the world's culture and then utilize the computer as the sole tool for information storage, retrieval, and instruction, all cultural information about people, places, and societies must be reduced
to this binary code. In equating the richness of undiluted cultural knowledge (which he terms analogue knowledge) with digital representations of that same knowledge, C.A. Bowers (1988) points to the following contrasts:

One can ask whether a culture can turn its back on the analogue knowledge that is the basis of its traditions...Analogue knowledge, it must be emphasized, arises from the realm of human relationships; digital knowledge, as now constituted, is modeled upon a mechanistic way of thinking. Analogue knowledge is communal, whereas digital knowledge is atomistic...Whereas analogue knowledge is part of the ground of memory, and thus a source of a person's authority, digital knowledge involves the assumption that individuals possess the rational ability to use discrete bits of information to create...Memory, and the power of perspective that it gives, is not as important as the ability to process more data. (p. 128)

Prior to the advent of high technology, cultural knowledge informed and guided human practices and orientations to the world. Cultural knowledge was part and parcel of an individual's identity. Purveyors of cultural knowledge in the digital world necessarily view cultural knowledge as explicit data to be stored and processed by autonomous individuals who generally live outside the influence of the information they are manipulating.
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From Public to Private Schools

In an indirect way, computers are now altering the place of education in society. Most school districts cannot afford to populate schools with high technology on their own and, even if they could, there are ongoing costs associated with hardware and software upgrading and teacher training that need to be budgeted for each year (Mendels, 1998a). Given the current budgetary realities noted in Chapter 3, many schools are turning to private sources of funding and support. Schools throughout the U.S. and Canada are forging technological alliances with hi-tech suppliers such as Microsoft, Apple, and IBM. As well, non-technological firms such as McDonald's and Pepsi are funding hi-tech programs in exchange for in-school advertising and promotional opportunities (Armstrong, 1998; Robertson, 1998).

The U.S. Department of Education (1996) estimates that it will cost well over $100 billion over ten years to carry out the federal government's plan to wire the nation's schools and support the new technological infrastructure though teacher inservicing, hardware maintenance, and software purchasing programs, among other expenses. (During the 1994-5 school year, U.S. schools spent about $3.3 billion on technology.) In reflecting on these numbers, the Department of Education concludes that only a partnership between public education and the private sector can bring this cyberschooling vision into fruition:

The conclusion that leaps from these numbers is that schools alone cannot meet
their need. It will take a partnership of the private sector, states and local communities, and the federal government to shoulder the financial burden of meeting these goals. Additionally, it will take careful planning to make certain that, in our reach for technological literacy, schools in all types of communities - middle income, lower-income, and better-off communities - have access to up-to-date technology in their classrooms. (p. 2)

What are the long-term consequences of an increasing reliance on private sector funding to support public education? Will public education over time lose its autonomy in the face of corporatist interests? What impact does in-school private sector marketing have on the short and long-term purchasing decisions of students and do such programs fly in the face of media literacy programs that encourage students to be wary consumers? Each of these questions point to the changing landscape of public education, a growing predicament in which public and private interests cannot be readily distinguished from one other in schools:

Schools trying to look and sound more like their prospective [private sector] consorts still face stiff competition as they try to snag a particularly desirable corporate partner. A technology partnership broker, who refers to such arrangements as marriages, tells schools to be prepared to give up some decision-making autonomy and to allow business 'to access students and teachers.' He says even if companies are denied on-site advertising, they will still expect their contributions to pay dividends in increased sales. (Robertson, 1998, p. 283)
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The move from public to private sector funding has significant implications for the idea of place in education. In light of the need to continually update the technological infrastructure of schools, the sanctity and autonomy of public education can no longer be assured. Private interests, economic growth, brand loyalty, and marketing ploys are increasingly the name of the educational funding game and this foci will continue to be felt in educational environments for years to come. It will be felt on a physical level, through billboard advertisements and sponsored curricula and on a virtual level, through corporate screen savers and Web banner advertisements. At issue is the place and role of education in society for the foreseeable future.
Conclusion:

The Dissolution of Place in Education?

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Our public schools were designed back when most people lived on farms and needed the summer off for harvesting. Then our schools evolved into Industrial Age slice-and-dice education factories, with children segregated by age and subject...Increasingly, parents are opting to school their children at home, because that's where, even before the Internet gets there, most learning goes on anyway, right?

- Bob Metcalfe (1998, p. 1)

It may be something of a misnomer to label these final few pages the conclusion while simultaneously tagging on a question mark at the end of the title. And yet, I believe, this is exactly what is called for since the points which follow go out on a limb, so to speak, in suggesting a number of possible future directions for the construction of place in education. While by no means conclusive, the points below are suggestive of
possible paths that education, schools, and society more generally might follow in the decades ahead. These points are gleaned in part from the arguments and discussion presented in previous chapters.

Prediction 1: The Physical Infrastructure of Schools Will Further Deteriorate

Budgetary realities and misplaced spending priorities will result in the continuing deterioration of North American schools. Although the crisis in unhealthy school facilities is gaining increased attention in both the U.S. and Canada, the massive investment needed to bring schools up to spec does not appear to be coming any time soon. As was noted in Chapter 3, proposed funds for the building of new schools and the upgrading of existing facilities in the U.S. was scuttled just prior to the 1998 congressional elections. Meanwhile, in Canada, there is little national debate on the school infrastructure problem. Quite the contrary, the Ontario government has instituted a new funding formula for school boards which restricts per-pupil capital expenditures and provides little financial support for the upgrading of school facilities or the removal of mould and other toxins (Toronto Star, 1998). The net effect of neglecting schools may well be a further deterioration in the public's perception of the school as a safe, healthy, and attractively crafted place to learn.
Prediction 2: Flashy Virtual Places Will Be Poor Substitutes For Impoverished Real Places

Does it matter if our schools are unfit places for learning, so long as we have attractive places to escape to in the virtual world of computers? Virtual places - such as chat rooms, Web sites, and VRML worlds - are certainly easier and more cost efficient to maintain and infinitely flexible in their construction and make-up. So too, they are enticing to people of all ages, including children (Taspcot, 1998). So just what are the psychosocial effects of spending time in a virtual community?

Not so good, if we are to believe the first longitudinal research project on the impact of Internet usage on psychological well-being. In a widely-reported study, researchers at Carnegie Mellon University used a standard questionnaire to measure the psychological health of 169 Internet home users, just prior to and again following a two-year study of on-line activity (Kraut et al, 1998). It was found that spending even a few hours on-line each week resulted in higher levels of depression and loneliness, a finding which was not anticipated by the researchers or the various corporate sponsors of the study. As Robert Kraut, a social psychology professor at Carnegie Mellon University, recalls:

We were shocked by the findings, because they are counterintuitive to what we know about how socially the Internet is being used...We are not talking here about extremes. These were normal adults and their families, and on average, for those
who used the Internet the most, things got worse. (Harmon, 1998, p. 1)

The participants in this study utilized a number of interactive technologies in their on-line travels, but also reported a decline in interaction with family members and a reduction in their circle of friends. The reduction in social relationships in the real world corresponded to the amount of time a participant spent on-line. The increase in feelings of depression and loneliness was statistically significant, but not unduly large. In their conclusions, the researchers suggest two possible explanations for the disconcerting results. First, in sharp contrast to the commonly held belief in the interactive potential of computers, the Internet, as it is now utilized at least, may instead function as a nonsocial medium, more in line with television viewing than a town hall meeting for example. Second, the Internet may substitute poorer quality relationships in cyberspace for richer, more personable relationships in the real world.

Although the study's results are tentative and require further investigation, such conclusions do not bode well for a cyberschooling vision of a digital age education for children via the Internet. So too, the study suggests that we should not assume that virtual places in the digital world of cyberspace are basically analogous in their social and psychological makeup to places in the real world.

Prediction 3: The Calls to Privatize Public Education Will Increase

Our time is called the age of globalization. There are a plethora of social forces that
are converging on one another and making the world a lot smaller. The sense of the global has come to us from two separate vantage points. The first point of reference took place over 25 years ago when we first saw the picture of Earth from outer space...[The second arose alongside] the global economy of transnational business. It is also referred to as the 'new economic order'. (O'Sullivan, 1996, p. 62)

In the intervening years between the end of World War II and present day, it is the sheer rapidity of technological innovation which has come to dominate the lives of the world's most privileged citizens. However, only now are the cultural and ecological implications of such advancements beginning to be fully understood. This situation is exacerbated by the move towards increased globalization on the economic and political fronts which has unleashed economic forces which no single nation can hope to manage independently. The move towards economic globalization is epitomized at present by the debt crises faced by many industrialized and developing nations and also by the rise of the multinational corporation, huge conglomerates which hold vast amounts of economic and political power and control a large proportion of the earth's resources and the world's labor.

Globalism is, at its core, a corporatist ideology which is propelled by the notion that an economic view of human experience can best explain the world and provide the vision, tools, and conceptual building blocks of a promising future world. As Lewis J. Perelman (1992) laments, public education is the last gasp and remnant of a socialist world view, a massive and ineffective bureaucracy, in his view, which threatens the
Afterword: A Pedagogy of Place

technological and economic progress of society. For many technocratic commentators, like Perelman, who see the world almost solely through a techno-economic lens, the very notion of public education is incongruent with the free enterprise economic order which is currently being ushered in by the Information revolution.

If it were simply a matter of ideology - Perelman’s philosophy versus the more moderate views of other business leaders, educational commentators, and the wider public - the future of public education might well be secure. Yet there are other factors at work in the shifting place of education in society. In responding to a perceived decline in educational standards, some parents, business leaders, and educational commentators have called for a voucher and/or charter school system in which schools compete against each other (like businesses) for students (who are now viewed as clients). Next, there is the increasingly commonplace view that the primary or even sole role of schools should be to respond to employers’ needs by training students to fill those skill and job vacancies which are expected to become available when students graduate. In a fast changing world, the relevance of ‘antiquated’ teaching approaches and subject foci are being challenged by those who would instead have children interacting with and immersed in the very latest in computer technology. Finally, there is a general public malaise for the expensive program of public education alluded to in Chapter 3. Most people do not want public education to disappear, but there seems to be a general unwillingness to commit the public monies needed to improve the infrastructure and curriculum of schools. So we are told by governments that we can have excellence in public education with less money, less schools, less resource personnel, and more computers. To fund such
technology investments, school administrators are increasingly turning to private enterprise, with all the trade-offs such a move brings, which has the potential to further erode the sanctity of public education.

**Prediction 4: The Above Challenges Will Revitalize Public Education**

I am an optimist at heart - the above comments notwithstanding. Although I believe the deterioration of schools, calls for the privatization of all things educational, and the promise of cyberschooling will set the agenda for the debate over education over the next several years, the end result may not be the dissolution of public schools as some are now predicting, but rather a rejuvenation of public education in the face of continuing criticism and challenge. For such a revitalization to occur, however, public education may well need to reinvent itself - as it essentially did at the beginning of this century - by reclaiming its original vision of education as a democratic process of socialization into a civic culture. Over the course of the next few years, teachers, educational administrators, parents, students, business leaders, and all other citizens will be faced with a stark choice that asks each of us to decide the future place of education in society. Will education remain a public responsibility or be turned over to private enterprise? Will children learn in the real world or through a virtual wonderworld of digital technology?

The path that we collectively choose to take will undoubtedly frame the construction of place in education for decades to come.
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