

**GROUNDS FOR LEARNING:
AN EXPLORATION OF THE URBAN SCHOOL LANDSCAPE**

by

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ABSTRACT

The primary intent of this thesis is to demonstrate how the schoolyard, through physical diversification focusing on a three-fold paradigmatic framework, can become a significant educational environment able to support the physical, cognitive and developmental skills in children. Research is used as a tool to inform and support the designs. Discussed in the first two sections are the history and evolution of school grounds, play and the environment, the effects of place-identity on self-identity, as well as the power of place in pedagogy. The design framework is supported by precedent studies, intending to reflect the design principles, programs, ideas and values of the ecological, curriculum-based and narrative landscape design layers. The final master plan design is an amalgamation of these three layers, representing an educational setting that will foster a dynamic interchange between children and their milieu.

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SECTION 1

INTRODUCTION

*There was a child went forth every day,
And the first object he looked upon, that object he became,
And that object became part of him for the day or a certain part of the day,
Or for many years or stretching cycles of years...*

Walt Whitman, *Leaves of Grass*, 1871

Schools aim to provide their students with learning environments that stimulate the mind, empowering them through scholarship and communication with a heightened sense of place within their community. Children's relationship with the urban school environment plays a significant role in the shaping of their future visions, values and character. Unburdened by affairs of the adult realm and indifferent to time, they experience the landscape through a unique lens, reflecting a world that evokes fantasy and imagination (Tuan 1974). A powerfully symbolic place that is read and deconstructed at the macro and micro level by its users, the school ground is a reflection of what the child could think, feel and do in that space (Titman 1994).

Children spend a significant time in their school environment. Both the quality of student life and the quality of education are directly affected by the quality of the school environment (Sanoff, 41). Although the very structure of children's lives have drastically altered since the inception of the North American playground in the early twentieth century, little has changed in the outdoor environment designated solely to the youngest members of society. Despite reevaluation of curricula and pedagogical theories inside the classroom, the tradition of segregating the programs of indoor/outdoor learning environments has continued to endure.

THESIS GOALS AND OBJECTIVES

The primary intent of this thesis is to demonstrate how the schoolyard, through physical diversification focusing on a three-fold paradigmatic framework, can become a significant educational environment able to support the physical, cognitive and developmental skills in children. There exist a myriad of issues surrounding urban school ground revitalization that range from providing a landscape of positive value on child development, to establishing a place with strong ties to the community. The primary objectives to be addressed within the scope of this project are as follows:

- ❑ To determine how children read and interpret the landscape as a key to developing a school ground that responds to their spatial and developmental needs.
- ❑ To apply knowledge of the childhood developmental process to the design of spaces for children.
- ❑ To examine the role of environmental education in contemporary society and its influence on the development of school ground settings.
- ❑ To explore the culture of play in childhood development and examine how the landscape can enhance learning experiences.
- ❑ To explore how educational principles and objectives can be translated into operative design concepts.
- ❑ To illustrate how a schoolyard situated in the urban environment can respond to and work with ecological, cultural and learning needs of children and the community to which they belong.

HISTORY OF PLAY SPACES IN NORTH AMERICA

An increase in urban playgrounds in late nineteenth century America lead to the belief that by providing children with proper play areas, not only could their behavior be controlled but foundations for a better society would be established. Imitating German models of play centres for children, a North American movement to enrich the environment for the city's youngest citizens by creating accessible public open space was formed. Social reformer Joseph Riis envisioned these areas as vehicles of social improvement, strengthening the bonds of the family

and preserving the dignity of the poor (Brett 1993). The era preceding World War I saw the institutionalization of the playground in American society. Despite a sundry of limitations, these organized play spaces acknowledged the presence of children in the city, providing them with places where they could be seen and heard where few such opportunities had existed before. However, the growing movement of organized play for children faced challenges that still hold relevance today. It has been contended that this movement toward standardized and structured recreation attempts to control the lives and experience of urban youth, thus limiting the opportunities for them to create their own experiences.

Historical Models of Urban School Grounds

Investigation into the original purpose of school grounds, from the inception of the school as educational institution, reveals an inclination to lean toward positivist reasoning and utilitarian planning. A diametrical stand over the roles of the indoor and outdoor built environments was established early on, with more value placed on the structure of the indoor classroom in comparison with the pedagogical merit granted to the outdoor landscape.

The outdoor school environment was primarily conceived as a place that would allow for children's physical development through team sports and character-building game activities (Stine 1997). Physical movement that took place during recreational hours determined the site configuration, which was pragmatic in structure and simple in design. The first half of the 20th Century gave rise to a militaristic schoolyard model that called for the control and containment of children within school boundaries (ibid.). A reflection of this Military Model is projected in the physical environments that constitute the majority of school grounds that exist today.

The post World War II era saw the rise of industrialization and its influence on schoolyard organization, where emphasis was put on production and achievement (Adams in Stine 1997). Children's landscapes were reflections of the ethics, ideologies and issues of the time, resulting in an expectation that equipment be durable, low-maintenance and free of liability. The influence of the military and factory models established precedents for educational environmental design that present-day schools have inherited, from the sea of asphalt paving to the chain link fences that encircle school grounds. As a result, potential for the school ground to

serve as an outdoor classroom and reflect a particular culture would not be realized. It would instead become a space where children could release the stresses of academic work.

PLAY AND THE ENVIRONMENT

Historical and Contemporary Influences of Outdoor Play Environments

The ideologies of pioneer play theorists informed the direction the playground movement would take in North America. The eighteenth-century Romantic Movement witnessed a change in the perspective of play, elevating it to an everyday activity that epitomized the essence of freedom. Play was seen as the key to unlocking children's potential, turning natural activity into one laden with purpose. However, Victorian society and industry defined play and leisure as a rare event that was categorized as abnormal in comparison to the normal work ethic of the time (Cohen 1987). It can be debated as to whether this view of play continues to endure in present day society. While early theorists focused on why children play, contemporary theorists have centralized their research on why play in childhood may be significant for growth and development (Hartle 1993). Formal research on play and its effects on the human condition began to develop in the late nineteenth-century with three main branches of play emerging from this research: the cognitive value of play, the emotional value of play and the social value of play in humans (Cohen 1987).

Once dismissed as superfluous behavior of the human species, educators, researchers and child development specialists are now recognizing play as a vital tool in shaping children's potential for cognitive, social, physical, and emotional growth (Bergen 1987; Kelly-Byrne 1984 in Hartle 1993). Evolving views surrounding environmental influences on play potential have contributed to the expanding interest of outdoor play environments and its significance on child development. The perspective shared by early play theorists Lazarus (1883) and Patrick (1916) stemmed from the belief that play was a recreational activity intended to restore and rejuvenate. Their position supported the view of the limited value attributed to play on cognitive development. Therefore, the school curriculum fostered learning inside the classroom and physical revitalization outdoors. Furthermore, the play theories of Spencer, Lazarus, Gutsmith, as well as Dutch student of human and animal behavior, Karl Groos, influenced tenets that

recognized play as a period of evolutionary development. The effects of these beliefs are reflected in existing apparatuses made of iron and steel over asphalt.

Groos (1901) saw play as functional and considered the adaptive purposes of play, connecting physical activities such as swinging and climbing, to various stages of evolutionary development (Hartle 1993). This thesis however has been disputed by other theorists, stating that the motives of play include the "desire of increased skill, the pleasure of make believe... to emulate, to excel" (Cohen 1987). Today, some branches of contemporary thinking postulates that play is an activity that is self-initiated, spontaneous and voluntary, demanding that children remain in control as it is building upon their cognitive structures and awareness (Greenman 1988).

Perhaps French philosopher, Jean Jacques Rousseau, was the first to uphold the theory that play acts as an important element in childhood development. In his work, *Emile*, Rousseau writes of his thoughts on the ideal education for adolescents; free exploration of the natural habitat would lead to enrichment of the imagination and building of bodily strength. The child should gain "easy and voluntary control of movement which nature demands of them... work or play are all one... provided that both are carried out with the charm of freedom" (Rousseau). Taking this view into consideration, educators such as Pestalozzi, Froebel and Montessori realized the positive potential of play as a learning tool on children (Cohen 1987). Recognition of play as a critical instrument on children's cognitive, social and affective development expanded with the influence of aforementioned contemporary theorists. Where Rousseau "rhapsodized play", (Cohen 1987) Montessori schools emphasized the potential for self-improvement, seeing play as a means through which formal skills could be taught.

Play and Culture

There exists an important relationship between children's behavior and the way in which their physical contexts affect their activities. Cultural-ecological models of behavior and development have emphasized three interacting layers of environmental influence on children's play: physical/social elements; historical influences; and cultural/ideological beliefs (Roopnarine, Johnson and Hooper 1994). Donald Winnicott speaks of the true purpose of play as the "intermediary process linking the child's internal life to her physical surroundings" (Cosco and

Moore 1999). As a prevailing activity that is experienced by children of all nationalities, play is an activity that both affects and is affected by cultural influences. One of the main bases of civilization, play can be viewed as a manifestation of culture, "an indicator and expression of childhood development" and an important context in which interaction and learning crucial to growth takes place (Bloch and Pellegrini 1989). According to developmental theorist Urie Bronfenbrenner (1979), environmental influences are powerful instruments in the construction of children's knowledge and perceptions. In social terms, development is defined as follows: "The developmental status of the individual is reflected in the substantive variety and structural complexity of the... activities which he initiates and maintains in the absence of instigation or direction of others" (Garbarino 1989). Childhood development takes place as an interaction among the child, the structuring of his surroundings and the complexity of interacting environmental systems (Bloch and Pellegrini.).

There is consensus among developmentalists and educators that the context in which play takes place influences play experiences (Hart 1993). Bronfenbrenner identifies how the forces of the social environment influence children's play within a framework of interacting environmental systems: the child's micro-setting and the mesosystem. A combination of the physical setting and the behavioral interaction in which children experience and create reality, the micro-system represents the places in which they live and the activities that occur in these places. Micro-modeling of places gives children a powerful understanding of their environment and the processes that surround them (Shaw 1987). The mesosystem embodies the relationships between microsystems such as relations between home, school and neighbourhood, an environment's cultural ideologies, values, social patterns and institutional policies (Garbarino 1989).

No one theory in particular can fully illustrate the diversity of play and sufficiently explain its importance in human development. They must be reviewed collectively to comprehend the psychological and social benefits that eventuate from play within the physical setting. These benefits include an awareness of the scope of adult roles; the ability to deal with emotional conflict; the discovery of physical processes; the principles of spatial relationships; establishing a sense of control over the environment; and the development of a sense of environmental competence (Shaw 1987).

SECTION II

CHILDREN'S EXPERIENCE OF PLACE

"A good place is one which is, in some way, appropriate to the person and her culture, makes her aware of her community, her past, the web of life and the universe of time and space in which these are contained."

Kevin Lynch, *A Theory of Good City Form*, 1997

CHILDREN'S REPRESENTATION OF SPACE

Spatial Theories of Jean Piaget

There exist various elements that should be questioned and clarified when considering the role of the physical environment's role in children's lives, such as the difference between space and place. Space embodies the physical properties that can be measured and touched: walls, fences, entries and exits. Place, as referred to by Kevin Lynch, pertains to identity and meaning. The significance of place emanates from the interactions between the users and their interactions with the qualities of the physical framework (Cosco and Moore 1999).

In a study conducted by Swiss genetic epistemologist and psychologist Jean Piaget and colleagues, they concluded that the understanding and representation of space occurs as a result of extensive manipulation of objects and from movement through the physical environment (Hart 1979). Knowledge of the spatial organization of landscapes is not only constructed from perception alone but from the coordination of actions as well. Self-discovery for children transpires through their transaction with both the physical and social worlds. The stability of the physical setting presents a valuable domain for the development of self-identity in children, as it resists change to a child's actions. It rather reflects the manipulations the child imposes on the environment (Shaw 1987). Enabling the child to transform the environment builds on his sense of environmental competence, which is defined as "the knowledge, skill and confidence to use the environment to carry out one's goals and to enrich one's experience" (Saegert & Hart in Ibid.

Piaget, whose basic epistemological tenets derive from constructivism, carried out the most extensive and inclusive theory of the development of children's understanding of spatial concepts. This theory assumes that what is perceived to be real is in reality, a construction of thought. From his theory on genetic epistemology, which "reveals the structure of knowledge empirically and developmentally rather than strictly philosophically," he concludes that all development is dependent on interaction between maturation, socialization and the relationship between the child and its environment (Hart 1979).

Development of Spatial Concepts

Piaget was able to distinguish the four structures of spatial organization in correspondence to the principal periods of child development. These are the sensorimotor period, pre-operational period, concrete operational period and formal operational period, with each cycle identifying with sensorimotor space, pre-operational space, concrete operational space and the formal operational space (Ibid). Spatial perception transforms with development, shifting from a multi-sensory perception of space to a visually oriented understanding in adulthood. While young children have a greater tendency to utilize all the senses in spatial perception, reliance on the visual field, based on distance, direction and height, minimizes the roles the other senses play in discriminating objects in adulthood (Bower in Hart 1979).

Piaget contended that the concept of adaptation plays an integral role as motivator for all biological and psychological development. Intelligence, as one form of adaptation in human beings, is not an innate quality but transpires through a complex interaction between the individual and his environment. According to his findings, experience can be initiated and structured by a child as the process of adaptation to the environment takes place (Hart 1979). A child's ability to reflect upon space is deliberated in Piaget's research on sensorimotor space or what geographer David Seamon has termed "bodily-lived space", which is the "notion of a pre-conscious space of action based upon bodily movements and actions" (Seamon 1977). It is important that children understand and relate with their surrounding landscape. Environmental images, as proposed by Kevin Lynch, help in implementing a strong relationship between people and their surroundings. They achieve this by acting as the basis for "activity and

knowledge, as material for common memories which bind a group together, and as spatial referents for sense of familiarity" (Hart 1979).

Spatial Perceptions in Childhood

Spatial relations between an individual and the physical setting rely on two variables: the child's idiosyncratic use of space and the environment's structuring (Fitt 1974). The spatial world of children takes on a critical role in determining their reaction to the environment. Character of space assumes some level of significance in the way children identify with their surroundings. Their sharp sense of discovery and curiosity allows for a far more direct and energetic response to the environment compared to the perceptions of an adult. Uncovering the dialectics of highness and lowness, nearness and farness, hardness and softness, light and dark in the urban environment exposes children to a dynamic world full of movement, transition and wonderment. It can be said that "prepositionally rich" spaces also enhance children's experiences in the physical setting. Places that are brimming with energy, allowing children to jump from, climb up, crawl into, be near, within, against, across from and beside objects, encourage physical interaction with the environment. Connection leads to participation, giving young people a sense of ownership over the landscape. Through the process of unraveling the mysteries of a landscape do children truly locate themselves within their surroundings - revealing a world of order, variety and complexity (Paterson).

It has been found that spatial quality in the juvenile years takes on a more critically defined structure compared to the way in which adults view their environment. In *The Child in the City*, Colin Ward examines the environmental perceptions of Lynch and Piaget, expanding on their theories of 1) cognitive mapping and 2) the developmentalist tradition of investigation. It was Lynch who conceived of the notion that the city concept be structured around paths, edges, districts, nodes and landmarks. The spatial impressions of children are also critically defined by a preoccupation with "paths and boundaries, with hiding places and other special places for particular things" (Ward 1990).

Children value paths they find or establish themselves versus pathways built by city planners. Wandering along pathways permits time for quiet introspection, social interaction and

contemplation of the surroundings. A slow journey down a path can expose a child to one thousand and one sensory delights, allowing them to experience the sights, sounds and smells of their urban environment. Continuity, topographical qualities and distinguishable characteristics play significant roles in how children identify with paths within their surroundings. Edges or barriers, which are "more or less penetrable," create separate spaces for children within each region (Lynch 1960).

In the early days of educational theory, Piaget expanded on a three-fold developmental theory that looked into children's concept of space. He discovered that after grasping the concepts of 'topographical' relationships, which include proximity, separation, order, enclosure and continuity, children are then able to understand projective space. This stage enables the child to negotiate alternative routes around the physical setting in which he/she lives. The third stage according to Piaget is the formal operational stage, at which time the child is able to comprehend Euclidean space. This allows for an understanding of spatial relationships in the abstract (Ward 1990). The cognitive mapping and developmental theories of Lynch and Piaget have laid the foundation for comprehension of children's spatial perceptions. However they remain open-ended, leaving more room for further study.

SELF-IDENTITY & PLACE IDENTITY

"Places and their descriptions within a society connote a set of images, values, and meanings about people which influence their development and their sense of themselves."

Wolfe & Rivlin, 1987

Environmental Context and Development

Human development relies on a number of factors that contribute to the natural progression from early childhood to adolescence. A child's physical setting plays a significant role in determining development through to adulthood; the contexts for development being the child's biological heritage, cultural context, social and economic context, the subculture and community as well as the surrounding environment (Sroufe, Cooper, DeHart and Marshall

1992). To be examined in this section is the environmental context, which implies more than the physical setting but "all external conditions and factors potentially capable of influencing an organism" (Greenman 1988). The landscape is the setting in which life takes place, the "sensual-intellectual perception of which constitutes meaning and value" (Corner 1991).

The physical setting is an instrumental force in shaping the form and nature of social contacts, as well as influencing feelings of identity and self-worth (Greenman 1988). As development reaches greater heights of complexity in play, intellect and word, the child's perception of the surrounding environment is constructed. Places and their portrayals within a society mark certain images, values and meanings about people, which in turn influence their development and self-identity (Wolfe and Rivlin 1987). The ever-changing framework of the urban environment changes the frequency, diversity and intensity of human relationships, as well as the physical setting. Home, school and community form places of greater complexity for the child which demands increased learning demands on the individual (Proshansky and Fabian 1987).

The Child and Place Identity

The field of environmental psychology has recently considered the manners in which children interpret the environment and how they derive meaning, purpose, form and structure from it. Spatial discourse results in a strong sense of place identity, which is understood by environmental psychologists "as a substructure of the person's self-identity that is comprised of cognition about the physical environment that also serve to define who the person is" (Proshansky and Fabian 1987). How their development shapes and influences the physical setting is also an issue that has brought about speculation in the domain of development psychology. It has been found that the process of socialization and self-discovery occurs incrementally, commencing with individuation. Sensory stimulation and perceptual experiences found in the physical setting plays a significant role in childhood formation. Places that reflect a certain familiarity, giving children control of their environment help to uphold the integrity of the child's sense of self, together with definition of that self (Ibid).

Children capture their environmental experiences through objects, places and spaces that fulfill their biological, social, physical and cultural requirements. Many of the social roles,

environmental skills and relationships are learned within the contexts of home, school and outdoor play areas. Through these settings, the child will later recognize, evaluate, create and manipulate physical settings and places (Ibid). The school setting itself plays an integral role in place identity development in the child. The impressions, attitudes, skills and views as a result of exposure in the institutional context help mould the identity of the young child. Connection to childhood places and spaces, according to human geographers Tuan (1980), Relph (1976) and Buttimer (1980), has been termed "place belongingness" (Ibid).

In childhood, the foundation for self-discovery begins with the surrounding environment (Cobb 1977). These are places whose content and meaning play a significant role in giving form and structure to a child's experience of the world (Norberg-Schulz in Relph 1976). The notion of perceptual space, or the egocentric space perceived and encountered by each individual is imbued with meaning and is centered on immediate needs and practices (Relph 1976). Space is discerned not only through the senses but is an entity unto which emotional ties are formed. For the child, space is complete with substance and meaning deriving both from human intention and imagination (Ibid).

Cultural Influences on Childhood Development

Human development takes place within a set of interwoven and interacting contexts: the biological context, the child's immediate environment, social and economic domains as well as cultural realms. The environment within which human development occurs is structured largely on a society's culture (Sroufe, Cooper, DeHart and Marshall 1992). Children are highly influenced by the subculture within the culture itself, taking into consideration the norms and values that surround them. An understanding of one's culture gives form to the children's identity and depth to their participation in society. However, it has been stipulated that modern education has tended to act as a homogenizing force that fails to promote locality in the modern curriculum (Orr 1994).

Culture can be classified as the learned behavior with a biological basis, and "results of behavior whose elements are shared and transmitted by members of a particular society" (Lang 1977). Born clean of any notions of cultural references, a child creates his own world image by

translating his innate biological cognitive perceptions into cultural terms. Before cultural interpretation is grasped and bears a broader and more profound control of meaning, the perception in childhood is general and poetic (Cobb 1977). The desire to learn by exploration and the necessity to link learning with growth peaks during the latency period, one of the 3 phases of childhood as described by Freud. This period of childhood (4 to 12 years of age) remains the fundamental, dynamic phase of human development.

For the child, the cognitive process is a "sensory integration of self and environment" that allows for recognition of the fact that "he makes his own world... his body is a unique instrument, where the powers of nature and human nature meet" (Cobb 1977). Human cognitive processes continue to be grounded in perception, where relations between systems in nature and systems of the body can be arranged into form and meaning. In childhood, the power of the body and mind and the energies of the environment merge together in order to adapt to nature, to culture and to the society man has created to embody this culture (Ibid).

PLACE AND PEDAGOGY

"Places are laboratories of diversity and complexity, mixing social functions and natural processes. A place has a human history and a geological past; it is a part of an ecosystem with a variety of microsystems, it is a landscape with a particular flora and fauna. A place can be understood only on its terms as a complex mosaic of phenomena and problems."

David Orr, *Ecological Literacy*, 1992

Power of Place

Good learning places can stimulate the imagination, combining nature, interesting architecture, materials and lighting in ways that are attune with our intrinsic affinity for life (Orr 1994). Place, defined by Edward Relph, is "the location plus everything that occupies that location seen as an integrated and meaningful phenomenon" (Relph 1976). The essence of place is tied to human consciousness and experience, settings that conjure a complexity of emotions and responses. In an essay composed in 1897, John Dewey proposed that the idea of place could be used as a powerful tool to educate children, one that would instill a sense of community and

culture into the curriculum. Being of the opinion that the educational framework had become highly narrow and specialized, Dewey intended to broaden its focus by strengthening its relations with the community. He proposed to make the icon of school into an embryonic community, creating a curriculum that would truthfully reflect the crafts and occupations of society (Relph 1976).

Reflection of Thoreau's *Walden* reveals similar attitudes toward the relevance of integrating the study of place in the curriculum. A proposal that invites observation and experimentation into education, *Walden* represents "the possible unity between personhood, pedagogy and place" (Orr 1992). In his interpretation of the present disregard for place in education, David Orr suggests that for displaced people, place is an obscure concept that no longer represents our source of "food, livelihood, recreation or sacred inspiration. The study of place enables us to widen the focus to examine the interrelationships between disciplines and to lengthen our perception of time" (Ibid). Place identity is seen as specific to the observer, not only in how it is perceived physically but the experience it evokes in the mind. Although the generation of place identity is given self-consciously or unselfconsciously by the individual, through cultural conditioning and interpretation, these identities are combined to form a common identity (Nairn 1965).

Children's Study of Place

A child's physical setting plays an integral role in shaping the young mind. Integrating the qualities of place into the curriculum would broaden one's intellectual scope, combining elements taught within the classroom with experience attained outside. The study of place encompasses various facets of intellect including direct observation, investigation, experimentation and skill in the application of knowledge. Lecture and discussion would find a companion in the application of practical and manual skills, from which would result logical thought, constructive imagination and a grasp of reality gained through this tangible experience (Nairn 1965). Patterns of place are mirrored in the cognition, creativity and personality of the observer. Therefore, to understand the roots of a place and one's role in that space is to be possess a strong sense of one's identity. Crucial to development is diversity of place content,

which initiates activity that, in turn imprints the times and spaces of experience in the memory of the child (Cosco and Moore 1999).

Children and the Built Environment

Recent findings in developmental and environmental psychology stipulate that the physical environment has a significant impact on children's behavior. There has been an attempt in these fields to establish theoretical relationships between the behavior and the experiences a person may have in the built environment. Children's interpretation of the physical setting plays a strong role in determining how they define themselves and their future relationship with the environment (Cullingford 1996). Qualities of the physical setting can influence the developmental process as much of the young child's time is spent interacting with the physical, rather than the social environment (David and Weinstein 1987). The environment in childhood education can be defined here as the "interpersonal climate or the organizational structure of settings" such as classrooms and schools (Gump 1975; Weinstein 1979 in Moore 1985). The built environment plays an influential role in early cognitive development and can be viewed in ecological, interactional and transactional terms. A child's ecological surroundings provide the setting for cognitive development, while development through a sequence of transactions with the socio-physical environment occurs at the same time (Moore 1985). The environment thus becomes a canvas within which the child may explore, discover, test and initiate new ideas and behaviors. As a result of this active participation within the environment does childhood development occur.

It has been theorized that children's behavior is a function of the interaction between the person and the environment (Hartle 1993). Among child developmentalists and educators lies a consensus that the environment in which play occurs influences the experiences encountered by the child (Christie and Johnsen in Hart, 1993). Landscape is an expression of boundless possibility laden with meaning that embraces the four domains of development. Deeply rooted in the physical setting are the meanings of places that can evoke memory, rapture, familiarity, sanctity, belonging, and reflection. Places that stimulate motor skill development, offer possibilities for decision-making and broaden the scope of fantasy play and constructive learning have repercussions on social and cognitive skills, determining how children interact

with their environment and each other. The school landscape not only constitutes the physical setting in which these skills and capabilities can be acquired and tested, it is a place that has the ability to express and support physical, cognitive, social and emotional development that are fundamental to the growth of children (Herrington 1997).

In a research study conducted by David and Weinstein, they focus on a twofold framework inquiry based on children and the built environment. First, the pair focuses on what is known about the nature of children's interactions with the physical setting and secondly, how knowledge about children and the developmental process can be applied to the design of children's spaces. The result of this investigation is *seven guiding propositions* to direct the exploration on interactions between children and the built environment.

- *"The built environment has both direct and symbolic impacts on children."*

A child may interpret the aims and values of the adults who control the setting through the nature of their environment by way of symbolic imagery and messages (Proshansky & Wolfe 1974). Cognitive development and self-image are affected by environmental influences.

- *"Study of the built environment and children's development will benefit from a multi-setting perspective."*
- *"All built environments for children should serve certain common functions with respect to children's development: to foster personal identity; to encourage the development of competence; to provide opportunities for growth; to promote a sense of security and trust; and to allow both social interaction and privacy."*
- *There are substantial individual and cultural variations in the use and interpretation of settings.*
- *Wherever possible, children should be active participants in the planning and arrangement of the physical settings in which they live.*
- *The impact of the built environment must be examined in the context of the social, cultural system.*

- *Children are not the only users of homes, schools, and special-care environments.*

A fear has arisen in modern-day society that its citizens have become passive receivers of prescribed information from secondary sources. Consequently, this has put a limit on opportunities for self-initiated interaction with the community. The onslaught of centralized systems such as mass housing, franchised systems and urban renewal are provoking what Richard Sennett calls "purification" of the urban environment. This purified thinking may lead to a reinforcement of the trend towards urban monoculture and an alienating mode of living (Moore 1986). Bias towards conventional play centres has created sterile, segregated spaces for children across the urban milieu. It has been said that the deficiencies in an urban environment can be measured in proportion to the number of playgrounds that exist in the city. These types of landscapes function within a fixed framework, only able to offer the child a limited range of sensory, physical and intellectual experiences. Traditional playgrounds have failed to make a valuable contribution to the urban landscape, having become dominated by prefabricated equipment on a sea of asphalt. Deprived of challenge and exposed to a world in which nature has been domesticated to make it a more intimate part of human experience puts limits on children's behavior and reasoning.

Multi-Sensory Environments

Public outdoor space is most widely used by children, frequently using it at a ratio of 10 to 1 to adults as a great extent of their free time is spent outdoors (Cooper Marcus 1974).

Environments that engage the mind and body provide children with versatile settings that encourage self-expression, creating places that support interaction with the external world. Place-enhancing processes, activated through play, define the environment beyond the confines of everyday life, helping children achieve a sense of belonging, identity, and ownership (Cosco and Moore 1999). The physical setting acts as the backdrop to children's activities. Its properties remain significant to the growth and development of the child, communicating a myriad of messages to its users. Supplying the context, structure and meaning to those who use the space, the physical setting is able to convey the culture of place through the richness of its contents (Titman 1994).

Physical interaction with environments vast in multi-sensory stimulation plays an essential role in the development and health of children. Space provides the domain in which the body encounters gravity and masters the use of kinesthetic (sense of movement), proprioceptive (sense of position) and vestibular (sense of gravity and whole body movement) senses (Cosco and Moore 1999). The interplay between the environment and the senses creates an arena that emphasizes multi-sensory development beyond movement as well: vision, smell, taste, touch and hearing. Perception of the surrounding landscape and the way in which it is acted upon presents contrasts between childhood and the adult realm. Capacity for vivid sensory experience is a quality that most adults lose as they age due to an actual measurable physical decline in sensitivity to taste, to smells, to colour and to sound (Ward 1990). Children, on the other hand, possess genuine sensory perceptiveness for different qualities in the landscape, whether it is a change in surface textures, the sweet fragrance of flowers or a variation in topography. Experience of place is heightened for the senses in urban environments that offer strong visual identity, sharp visual contrast, auditory variation and olfactory diversity.

The body-in-space permits the child to experience a physical interchange with the landscape through the senses. Complementary to the body-in-space is the body-in-time, which strives to develop an understanding of the play activity in space: the flow of movement, changing seasons, the familiar and the mysterious, the time of distance, the shadows of twilight, the light of the sun (Cosco and Moore 1999). The structure of the environment helps in determining play activity. The interplay between the child and the composition of the physical setting is instrumental in internalizing society, developing new skills, solving problems and building on social skills (Ibid).

The Power of Nature

Design that reveals the complexities of the natural world creates a sense of harmony and understanding with the universe in which we live. This perception of unity strengthens the child's sense of identity as an individual and as part of a collective group, which is a significant factor in childhood development. Design that is sensitive to nature's processes and their temporal cycles can give children access to a deeper understanding of the past and the future (Spirn 1988). In the presence of nature, more holistic attitudes are cultivated, allowing people to draw energy from the life of plants, trees and water (Kaplan 1983).

Biophilia has been defined by E. O. Wilson (1984) as an innate orientation towards nature and the "urge to affiliate with other forms of life" (Orr 1994). This love of nature begins in early childhood and resonates into cultural and social patterns. However, modernization has changed how humans regard the natural environment and our role in the world. It can be asked if nature as unorganized environment is attainable in the highly structured places of the urban world. Enlightening children to the benefits of biophilia will lead to a kinship for life that will nurture, validate the ties to the natural environment, and in turn, people and the community. Establishment of more natural places, replicating natural systems and functions, greater contact with nature may strengthen the will to reinhabit the surrounding regions, restore the local culture and restore the natural history of places (Orr 1994).

Comprehension of the dynamics of user-landscape interaction is key to child-environment relations (Moore 1986). Robin Moore continues these thoughts in his book, *Childhood's Domain*, by stating, "An emphasis on landscape diversity will lead to the creation of more viable child-accommodating open spaces-instead of mown grass and asphalt." In order to stimulate the senses of young urbanites, environmental variance is needed, which will in turn give them a balance of urban and rural elements.

CONCLUSION

The school ground continues and will continue to be a learning landscape for children of the urban domain. Young students draw upon their imaginations to capture the carefree spirit of play from an environment that is shaped with their physical, emotional and cognitive needs in mind. Total integration of children into the physical setting calls for in depth exploration of how school landscapes can be made more engaging and accommodating. The challenge lies in accomplishing this while meeting the economic, social and cultural needs of society at the same time. Creating places that reveal the complexities and delights of the urban schoolyard will inspire children to become a part of their school and community, and in the process, their landscape will become a part of them.

SECTION III

PRECEDENT STUDIES: FRAMEWORK FOR ECOLOGICAL, CONTEXTUAL & CURRICULUM-BASED LANDSCAPES

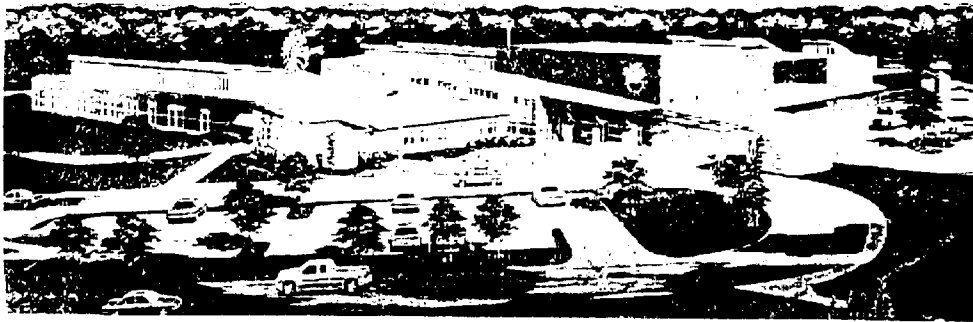
Designers of contemporary landscapes are attempting to delve deeper into the child's psyche in the pursuit to discover the ideal landscape that will inspire, instruct and invigorate. There remains a challenge for modern urban environments to satisfy all the requirements that will support the emotional, physical and perceptual needs of a child. Creating spaces that provide sensory stimulation, support a wide range of moods, energy levels and social development, focus on detailed ground surfaces, colour, and texture and accommodate the child's need to manipulate the environment is a formidable task that requires distancing from the adult realm of thought (Cooper Marcus 1998).

The following case studies were used as tools to propel the three-fold paradigmatic framework that will later be discussed in further detail. The schools, educational institutions and park explored here are environments that foster a dynamic interchange between children and their milieu. They reflect the design principles, programs, ideas and values of the ecological, curriculum-based and narrative landscapes that are explored in Section V.

1) ECOLOGICAL LANDSCAPES

Anne Spirn refers to the city as a "granite garden," where some parts are cultivated intensively, while other areas remain desolate and abandoned. Nature in the city constitutes more than boulevard street trees and green, grassy parks, it is the rain that falls from the sky, the air we breathe, the wind that whips across the sky. The urban ecosystem becomes a part of nature when human activity and the natural processes of the earth interact. Nature is one of the fundamental forces that affects how the city is built and sustained for the well-being of those who live in it (Spirn 1984).

- **Roy Lee Walker Elementary: McKinney, Texas**



P 1 Roy Lee Walker Elementary School

Developed as a prototype sustainable school, Roy Lee Walker Elementary incorporates principles of environmental conservation into the design of its site, teaching children about natural processes through direct interaction and observation of wildlife, solar and wind energy, hydrological cycles, and vegetation. The design of the sustainable school is woven into the curriculum, allowing students to comprehend its design and its impact on the environment. The building features a weather centre, classroom daylighting, rainwater harvesting, geothermal technology, with emphasis on water habitat, native plantings and the principles of recycling. Studies have found that introducing such elements into the school system not only impacts students' academic studies but is also beneficial for the physical and emotional health of children.

- **Washington Elementary School: Berkeley, California**

Revitalization of this site came with the central purpose of changing attitudes towards children's institutional landscapes through physical reorganization of the school ground. There was a desire to foster a deeper understanding of the relationship between children and the environment surrounding them. Designer Robin Moore established 2 levels of adaptation for this project: the first addressed children's behavioral response to daily transformations in the environment. The second focused on long-term modifications affecting children emotionally and physically, and

how these changes "initiated a shift in cultural values toward an integrated environment and childhood ethic" (Moore 1974).

The effects of urban wildlife on children as stimuli for generating development skills were seen as a viable alternative to the low development value of asphalt playgrounds. Observation concluded that individual expression was important in children's landscapes, which could be attained through environments that are ambiguous and open-ended that allow for physical manipulation. Environments set in natural frameworks support a range of imaginative activity due to their diversity and ease of manipulation. The outdoor school ground became an extended classroom with a focus on environmental educational programs. The environmentally-based curriculum "integrated play and learning, science and art, inside and outside, cognition and feeling, mind and body, heart and head, home and school, school and community, school yard and surrounding region, childhood and education" (Moore 1974). Greater exposure to nature and positive interaction with the physical setting gives children a more holistic view of their environment, enabling them to build values through direct experiences with life forms.

2) CURRICULUM-BASED LANDSCAPES

The following case studies reflect places that integrate curricular activities and the educational program into the design of their setting. Interaction with physical elements compliments indoor classroom learning, enhancing developmental processes with hands-on experience. Emphasis is placed on experiential elements where children can explore and discover by themselves. Identity and ownership of the environment were integral components in the design of these landscapes.

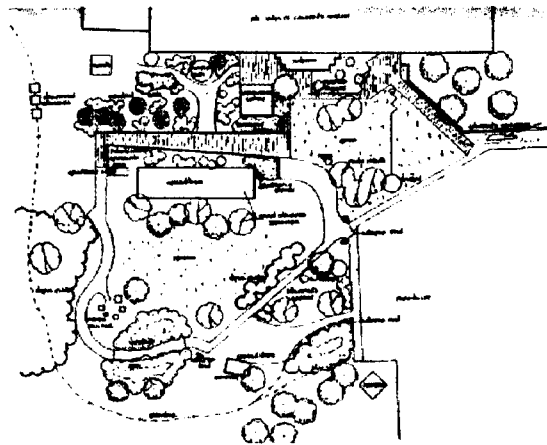
- **Gateway School: St. Louis, Missouri**



P 2 Gateway School

A playground for the mind, Gateway School's entire facility is entirely interactive, hands-on and query-based. The mission of the school is to "prepare children for a lifetime of learning through an interactive focus on science, math, and the technologies of the future" (Hammatt 2001). Serving as an outdoor classroom, the yard provides a constantly changing, interactive learning environment for independent and group study. The physical elements of the school give students an understanding of the outdoor environment and the role science and technology play to enhance and defend those natural resources. Programmatic elements include a math and physics playground designed to reflect geometric forms, intending to provide tangible visual aids for instruction. Workshops for hydraulic experiments are provided, demonstrating the effects of erosion and the hydrological cycle. Natural elements such as the forest, prairie, wetland, stream and pond were constructed to create a mini-ecosystem, which would demonstrate some principles of biology, ecology and botany. Issues of privacy and public gathering spaces were also addressed to give students the option of various types of play.

- **Santa Fe Children's Museum: Santa Fe, New Mexico**



P 3 Santa Fe Children's Museum

Children and the community were involved in the design process to transform this former warehouse into a children's museum. Young people are invited to discover and explore in this museum that strives to connect inside rooms and building forms with outside space and nature. The museum environment, both indoor and outdoor, is seen as something organic where people

respond to the overall design of the building as well as the landscape. The architecture structure was part of the educational element, demonstrating how exposed heating and water systems worked. One of the goals of the project was to ensure that the building and the outdoor physical setting functioned as a whole. Runoff from the roof and ground was collected and channeled through wetlands zones, filtered and carried to a holding tank by solar power and hand pumps. Exploration trails lead children to explore the various ecosystems of the Santa Fe area including wetlands, desert zones and a greenhouse for native plants. Time, flexibility and freedom to choose were driving factors behind the design and planning of this outdoor educational space.

3) NARRATIVE LANDSCAPES

Narrative landscapes refer to environments that enhance the developmental and educational processes in children through the physical, historical, sensory and temporal elements of the setting. The environment's characteristics influence what the senses perceive, which help create a deeper understanding of place-identity and self-identity. A strong sense self in time and place, as well as a connection to the history of place and community emanates from these settings.

- **Reggio Emilia: Italy**

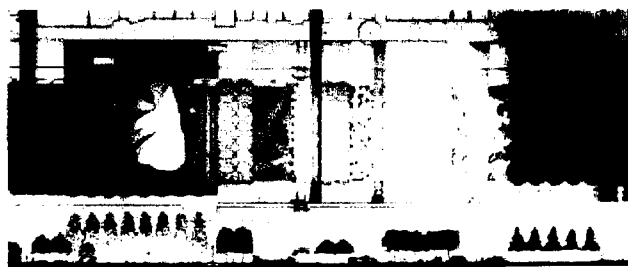


P 4 Reggio Emilia, The Diana School

Each of these schools interconnect the vision of educators, the physicality of the built environment and children's activities to create a school setting conducive to learning. This approach to teaching draws on the progressive educational philosophies of Froebel,

Montessori and Dewey, viewing education as a communal activity. The school is considered part of the urban fabric, where the environment and the school culture, constructed by the children themselves, becomes a part of the individual. Reggio Emilia schools can be described as unique, places where the vision, history and many layers of culture of the area are reflected. The physical environment carries messages about the students, the visions of the teachers and the daily process of learning. Emphasis is put on flexibility, enabling children to shape and form the landscape according to the concept of each school.

- **Village of Yorkville Park: Toronto, Ontario**



P 5 Plan of Yorkville Park

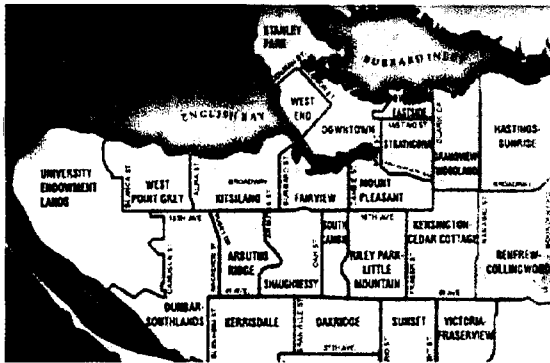
The park's design reflects the history of the Village of Yorkville and the diversity of the Canadian landscape, demonstrating urban ecology, local history and regional identity. Striving to "reflect, reinforce, and extend the scale and character" of the original Yorkville village, it provides a variety of spatial and sensory experiences through native plant species and other landscape qualities at the same time. The framework of the park took the form of a series of gardens that vary in shape, adopting the frames of the ancient row-housing lot lines that existed in the late 1950s. An array of distinct plant communities plays an important part in distinguishing each garden. Upland conifers, deciduous species, wetland plants are separated by a rock outcropping in the centre of the site, all identifying landscapes that are found across the nation.

SECTION IV

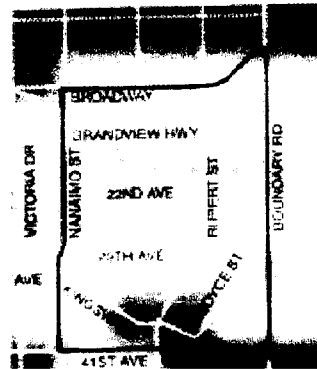
THE SITE: HISTORY AND CONTEXT

REGIONAL COMMUNITY CONTEXT

Collingwood: Regional History



M 1 Regional plan of Vancouver districts:
Renfrew-Collingwood

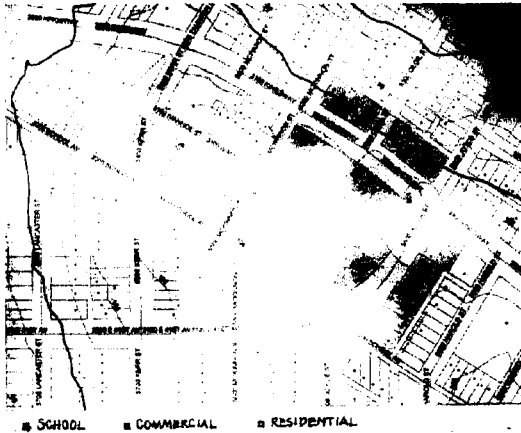


M 2 Renfrew-Collingwood boundary plan

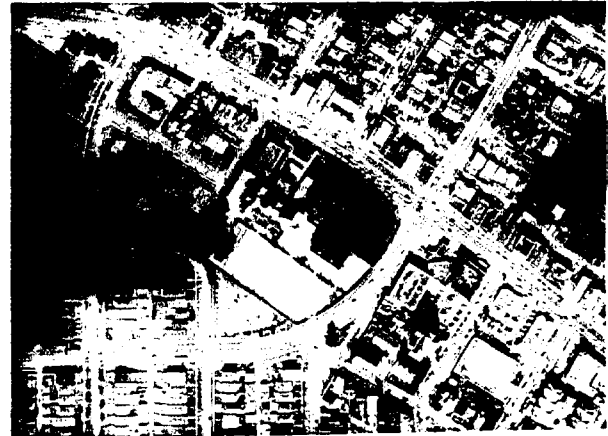
The district of Collingwood, amalgamated with the adjoining neighbourhood of Renfrew, is bounded by Nanaimo Street to the east, Boundary Road to the west, 22nd to the north and 45th Ave to the south. The family-oriented residential suburb on the slopes of east Vancouver has a rich history as a semi-agricultural community when many small orchards, ranches and farms populated the area. The earliest known settlers of the region may have been the Royal Engineers who came from Collingwood, Ontario to survey Westminster Road (now Kingsway). They arrived in this area, then blanketed by forest inhabited with various fowl, beavers, black bears, cougars, wolves and deer, in 1861. Thirty years later, the neighbourhood was named Collingwood following construction of the first Inter-Urban tramway system in North America, which ran between Vancouver and New Westminster. The present-day Skytrain route runs along this historic commuter corridor. Isolation from other neighbourhoods along the rail line and the small size of the district lead residents to develop a strong loyalty to the community and

the local school. Collingwood gradually transformed from a semi-agricultural district to residential and light industrial areas.

Community Planning & Development



M 3 Community Land-Use Pattern



M 4 Aerial photo of Sir Guy Carleton & area

The Collingwood neighbourhood is a community that thrives on cultural, population and housing diversity. Approximately 80% of the district's land area has been zoned for residential use, holding the second highest proportion of single family dwellings in Vancouver. Two important areas of industrial land lies within Renfrew-Collingwood's boundaries, created by the City as planned industrial districts for activities such as manufacturing and distribution. Commercial and medium density development can be found in smaller sections throughout the community. Among the residential and commercial districts of this neighbourhood, Renfrew-Collingwood maintains twelve parks on thirty hectares of park land distributed across the community.

CLIMATOLOGY OF VANCOUVER

Precipitation in Vancouver

The water balance in Vancouver greatly depends on seasonality. Heavy winter rains cause soil saturation, thus creating heavy runoff contributing to streamflow. Summer presents drier

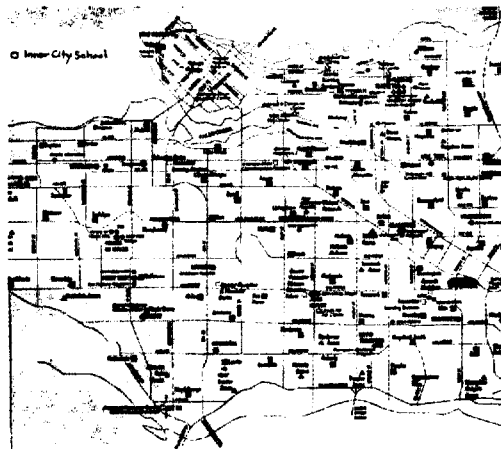
conditions with less precipitation and greater evaporation brought on by stronger solar radiation. The annual precipitation for the Collingwood area is 1600mm per year. The high median range in the Lower Mainland is 2000mm versus the low at 1200mm (Oke 1992).

Wind Speed and Direction

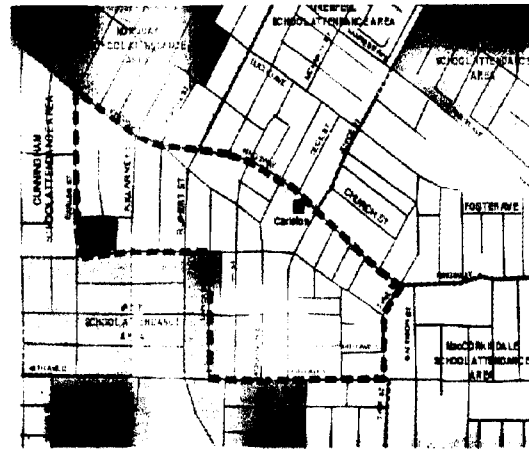
Wind data indicates that the dominant surface winds prevail from the east in the Lower Mainland region throughout most of the year. In the warmer months, there is an increase in winds from the west or northwest. The period from October to May present the strongest winds with seasonal variations.

SIR GUY CARLETON ELEMENTARY SCHOOL

History of the School



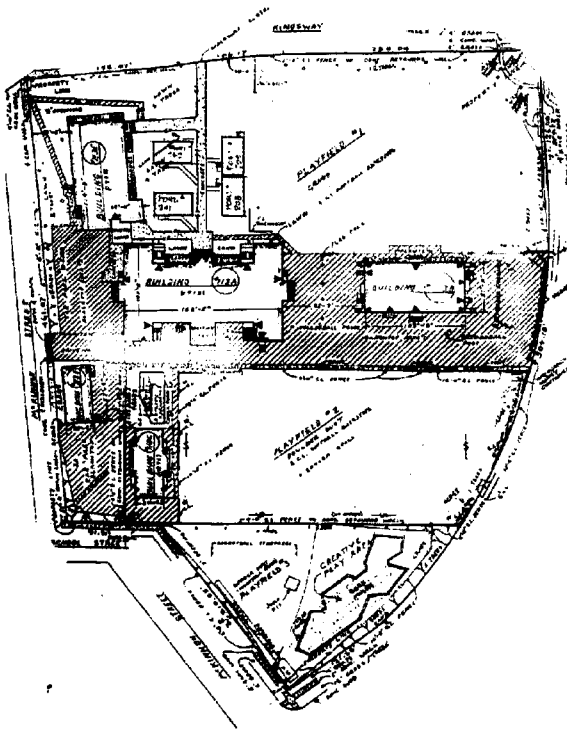
M 5 Vancouver School Board Reference map



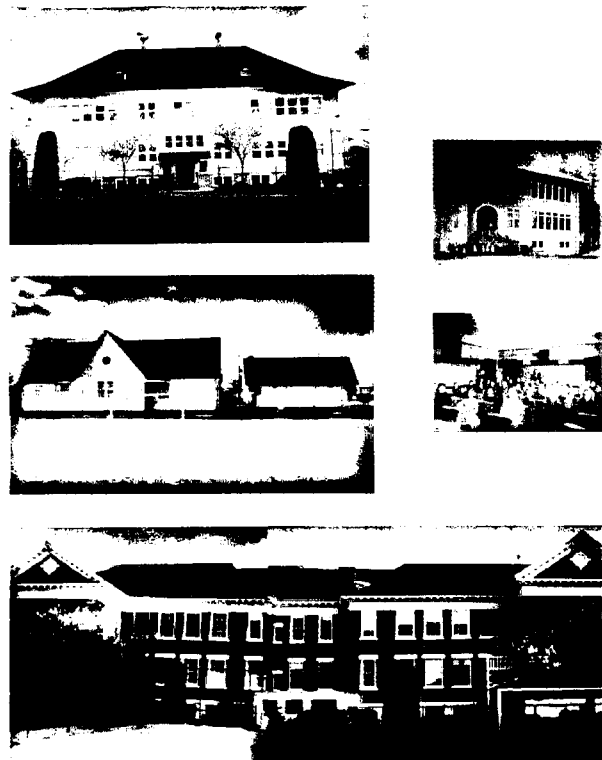
M 6 Sir Guy Carleton catchment area

Sir Guy Carleton Elementary School has been the heart of Collingwood since its construction in 1896 under the name of East Vancouver School. The one-room schoolhouse is still used today as the kindergarten classroom, making it the oldest school building in the Vancouver School Board district. There are four structures on the site, all of which have been designated various levels of heritage value including the Frame Building (1908), a two-storey Edwardian style edifice and the Brick Building (1910). This multi-cultural school has been given inner-city

school status, which provides "extra support and services to children who face obstacles to success at school for economic, social or other reasons" (VSB 2001). The goals of the inner-city program are to enhance the social development and self-esteem of students, to encourage parent and community involvement and to promote language development.



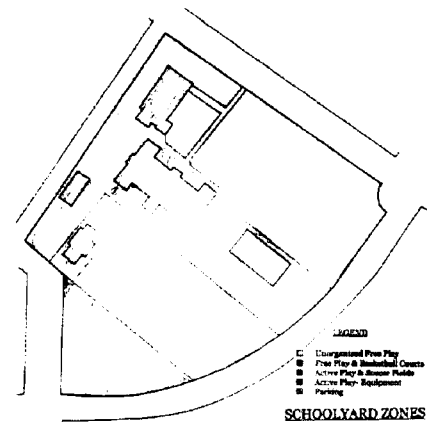
M 7 Existing plan of Sir Guy Carleton



P 6 Photos of school structures

Schoolyard Zones

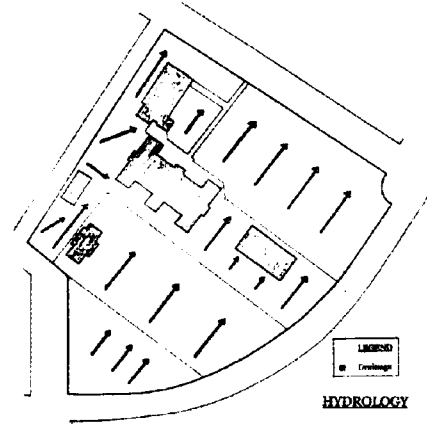
There are primarily three existing zones on the school site, which are used for different play activities. The front yard is an unorganized free play area on grass. Surrounding the two main building structures is an asphalt free play area, including basketball courts. The backyard consists of a boulder dust soccer field and active play area. Prefabricated play equipment is located on the upper play site.



M 8 Plan of Schoolyard Zones

Hydrology & Drainage

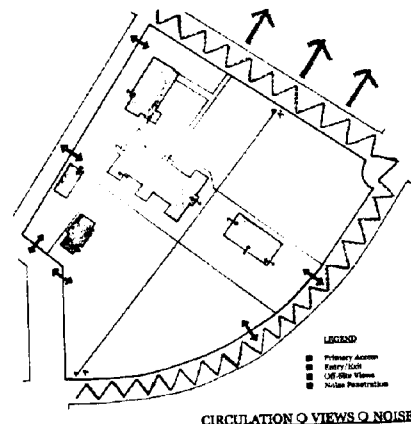
The school site is located at the highest point in the Collingwood district sloping northward. There is a two metre drop in grade between the southern upper portion of the site and the soccer fields, currently separated by a concrete retaining wall. This is due to the fact that this section of the site was previously a residential area, donated to Carleton School in the 1970s. Runoff therefore flows towards the northern end of the site to the grass fields.



M 9 Plan of hydrology & drainage

Views, Circulation & Noise

Good views are offered to the North Shore mountains from the school site. However, because the site is located on a major thoroughfare at the Kingsway/Joyce intersection, noise from traffic is heavy during school hours. The main circulatory routes, entrances and exits are located at the back of the site as a safety precaution against oncoming traffic. Staff or students do not use the main entrance on Kingsway.



M 10 Plan of circulation, views & noise

SECTION V

THE DESIGN: CONCEPT & PROGRAM

"An environment is a living, changing system. More than the physical space, it includes the way time is structured and the roles we are expected to play. It conditions how we feel, think, and behave; and it dramatically affects the quality of our lives."

Jim Greenman, 1988

The question remains whether the programming and design of educational facilities plays a part in the learning process, or if the school setting is simply a vessel in which the curriculum is taught (Bingler 1995). There is increasing evidence indicating that the physical settings of schools do affect attitudes, behavior and academic achievement in students (Moore & Lackney 1995). The architectural and landscape architectural settings designed to provide places in which the curriculum may be taught should also be used as a tool in the educational process. An understanding of the poetics of place can lead to landscapes that respond to the surrounding environment as well as to the people who inhabit it. Positivist attitudes lead to built landscapes that are experientially weak, lacking a clear grasp on spatial visions and the character of place (Corner 1991).

Although unique in their programmatic elements, the three layers that constitute the framework share similar educational and design principles as well as design criteria. The following is a listing of criteria used to inform the design of the ecological, curriculum-based and narrative landscapes.

Site Design Criteria

- ❑ **Diversity and Clarity:** The environment should stimulate the minds of children, encouraging exploration through complex yet clear play environments. A distinct overall image should be presented to the user, indicating access routes leading to principal gathering areas. Locating and juxtaposing settings in a way that will generate the widest variety of play activity patterns, and produce the greatest possible range of interactions and relationships is significant as well (Moore, Goltsman & Iacofano 1992).
- ❑ **Manipulable Settings:** Provide the opportunity for children to construct their own space and enhance the process of discovery that will keep up with their development. This will enable them to make their own decisions and provide a more holistic connection with the larger whole.
- ❑ **Permanence and Change:** Giving children the stability of an environment resistant to change provides stability and familiarity, leading to a connection with the physical setting (installations at entrances, trees, structures). It is also necessary to provide the option of dealing with transformation to demonstrate the cyclical and temporal changes that take place in the environment.
- ❑ **Multi-Sensory Stimulation:** Design that engages the visual, auditory, tactile, thermal, and olfactory senses provides a sense of identity with the environment. Exposure to various materials, climate, time, space, movement are also of importance to development.
- ❑ **Year-Round Usage:** Places that shield users from the elements such as wind, rain, sun, shade and noise will provide a comfortable atmosphere conducive to learning. Creating agreeable microclimates in which children may go about their activities in a secure manner will lengthen usage of facilities.
- ❑ **Variety of social spaces:** Different places ranging in size, public, semi-public and private domains are integral to support various-sized groups engaging in different social activities. These would include large areas for group play, semi-enclosed spaces, places for quiet exploration, and age-specific gathering spaces.

Site Design Criteria

- ❑ **Landmarks:** Landmarks are advantageous in helping children to orient themselves in space, providing memories of place and developing psychological independence (Moore, Goltsman & Iacofano 1992). Place identity is established through recognition of familiar elements in the landscape, creating a relationship between the child to the whole.
- ❑ **Undefined spaces for discovery:** Dramatic play is fostered in unprogrammed environments, stimulating creative and fantasy activities. Undefined elements such as rocks and sand can represent anything the child imagines.
- ❑ **Variety of spatial experiences:** Prepositionally rich environments help children understand spatial concepts such as over/under, in/out, up/down, right/left, depth/directionality (Moore, Goltsman & Iacofano 1992). Learning the capabilities of the body takes place in topographically diverse settings filled with various opportunities to jump, fall, etc.
- ❑ **Interaction with wildlife:** Design that fosters and intensifies the experience of natural habitats increases the awareness of the vital importance of ecological systems. An understanding of the interrelations and interconnections of the abiotic and biotic parts of the environment will be developed with first-hand experiences with wildlife.

The essence of the paradigmatic framework lies in the integration of independent layers of design, each layer conveying a distinct expression of site identity that seeks to instill a sense of place in the school ground. Its objective is to explore how the schoolyard can be designed as an integral context for learning so as to facilitate the attainment of skills in an environment that will stimulate cognitive, physical and emotional development. By filling the mind with empowering images, revealing natural processes and exploring the contextuality of the site, meaning is constructed into the physical setting. These are landscapes that should express mystery and delight, transforming with each passing season and changing with various cultural and personal interpretations.

ECOLOGICAL LANDSCAPE

PRINCIPLES

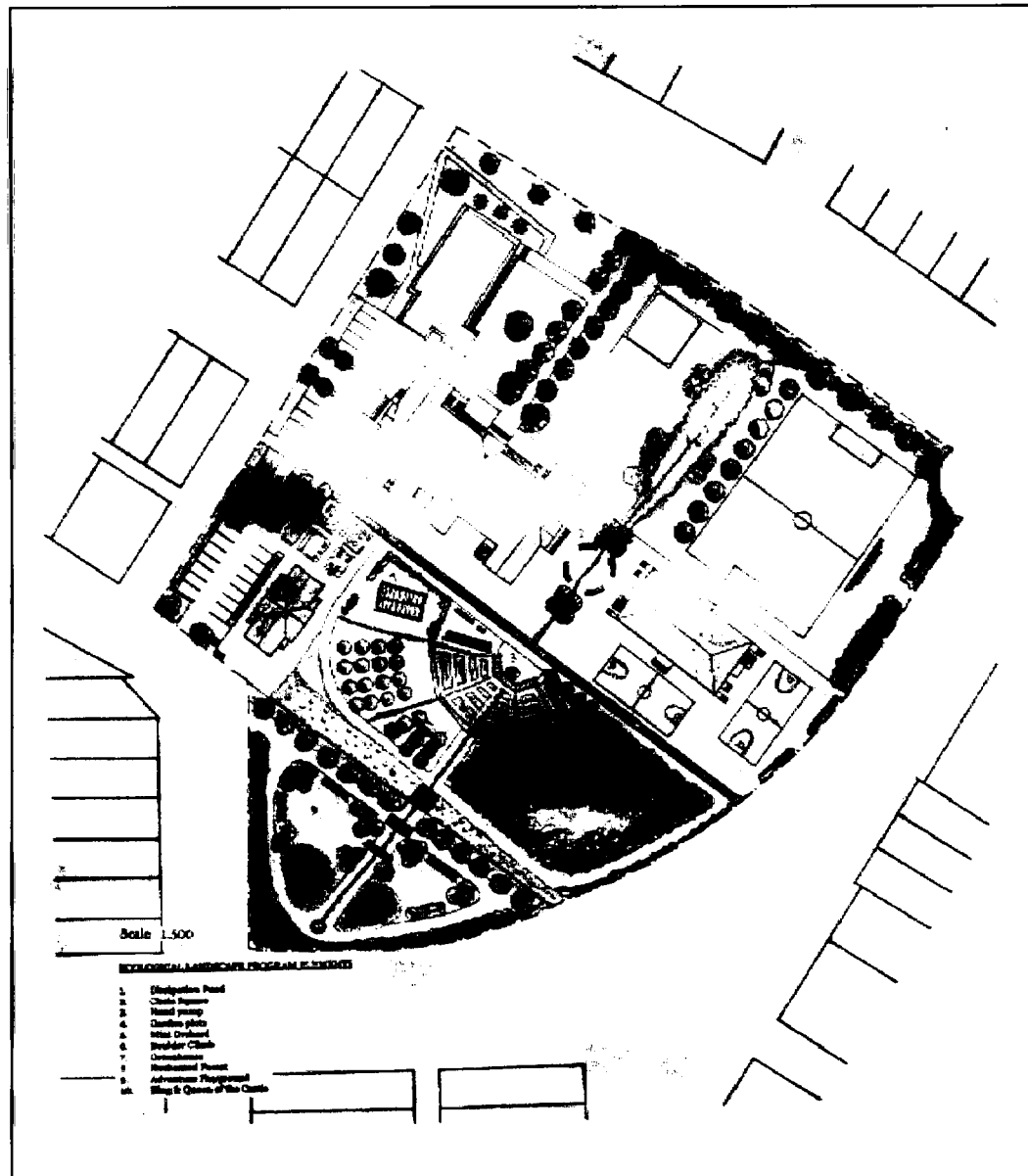
- 1) Provide places that allow for direct interaction with the natural environment, using constructed natural systems as stimulator and the foundation for educational material.
- 2) Design areas that provide opportunities for manipulation, exploration and experimentation of the natural environment.
- 3) Reveal the significance of energy management through the hydrological cycle and the reuse and recycling of waste materials, instilling a sense of connection between children and their environment.
- 4) Unravel the mysteries of food production by revealing the principles of urban agriculture, as well as the processes of planting and harvesting.
- 5) Create a rich and diverse habitat that reads as a child's environment, a world that responds to a child's own sense of place and time.

Design Elements

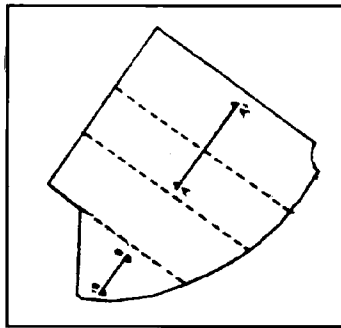
The Ecological Landscape reveals the hydrological cycle through sustainable stormwater management. Runoff is collected in a central north-south running swale across the entire site and deposited into a detention pond in the front yard, where it is infiltrated into the ground (see **Section A-A'**). The essentials of urban agriculture, food production and composting are also highlighted through garden plots in the central yard (see **Figure 1**) as well as a fruit orchard, greenhouse and Woodland Forest. A sunken Teaching Triangle, set next to the plots, provides an informal sitting area where classes may gather when working in the garden. A central courtyard provides the yards main gathering area, complete with benches and "stream" laden with recycled glass (see **Figure 2**).

Children interpret the landscape in their own special way, fashioning play areas from sites that have little formal connection to the traditional idea of a child's landscape. These spaces allow for the full experience of discovery, inviting them to leave their footprints on the rough ground and interpret the site with their own imaginations. Young minds find the need to learn for themselves and are motivated to interact with places that stimulate creativity and evoke a sense of historical interpretation. The Upper Yard is an undefined play area bounded by two mounds where children may create their own space (see **Section B-B'**).

ECOLOGICAL LANDSCAPE



D 1 Ecological Landscape Design Plan



Section Key

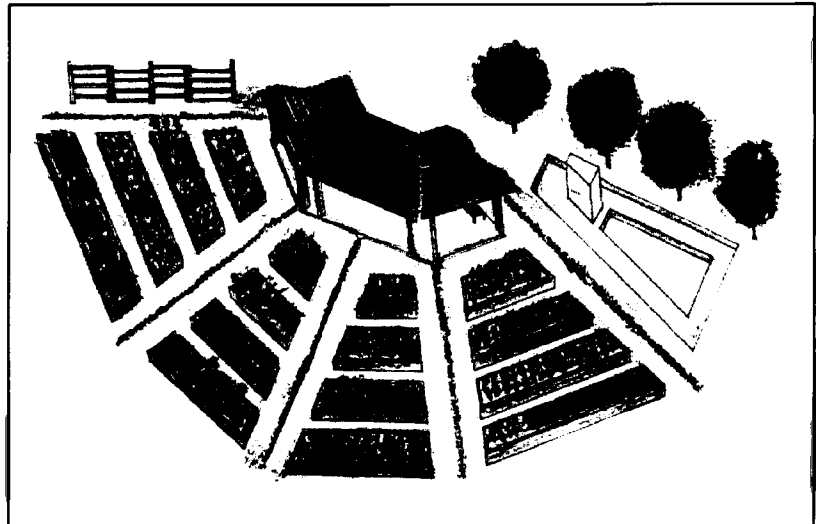
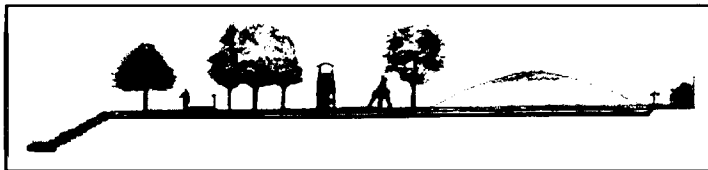


Figure 1 Garden plots and Teaching Triangle



Section A-A' Swale through Front Yard and Central Courtyard looking east



Section B-B' Upper Yard free play area with mound



Figure 2 Recycled glass stream in courtyard

D 2 Ecological Landscape Sections and Elevations

CURRICULUM-BASED LANDSCAPE

PRINCIPLES

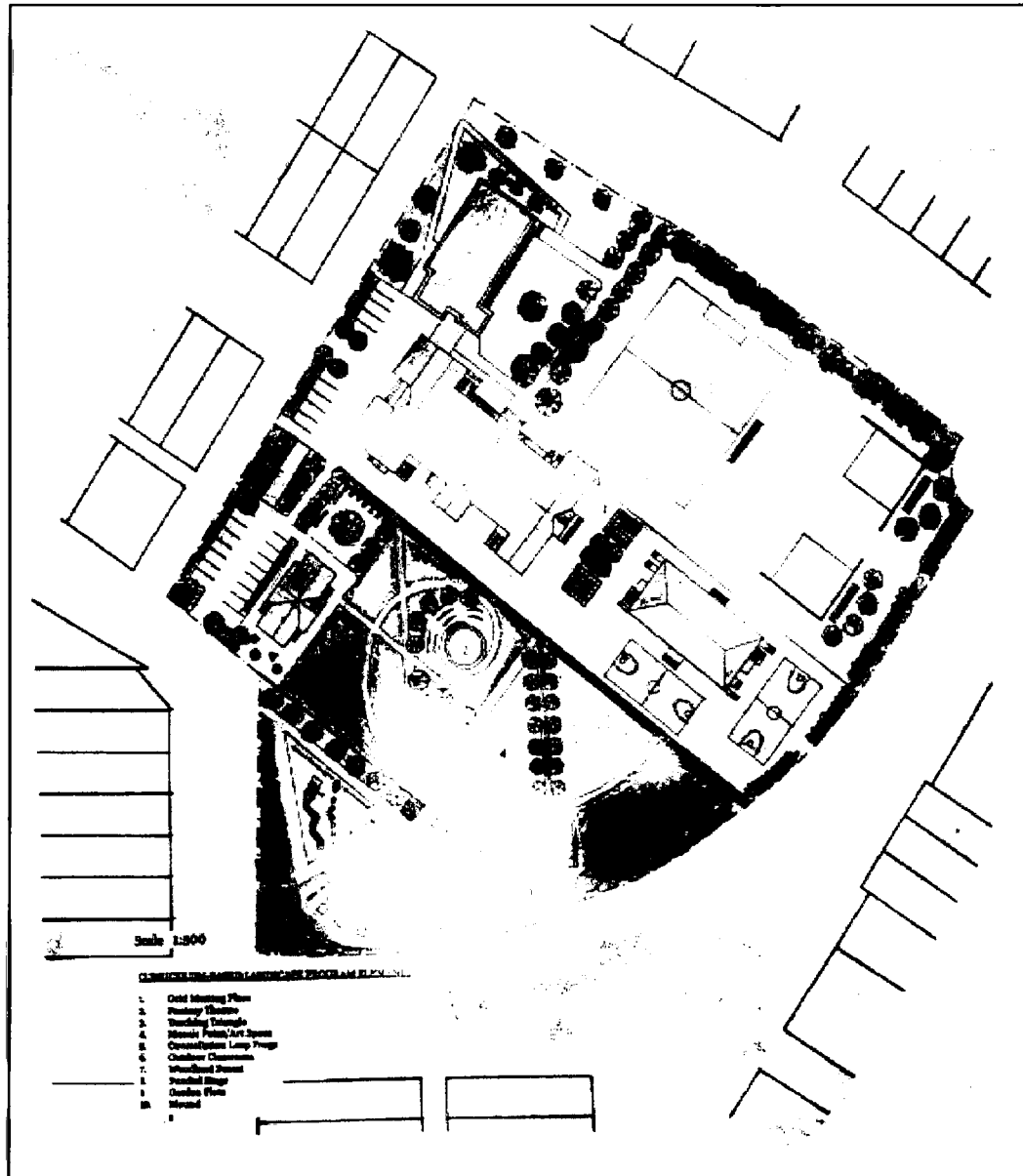
- 1) Blur the boundaries that separate the indoor classroom and the outdoor learning environment, creating a learning landscape that seeks to nurture the mind.
- 2) Explore how curriculum integration through interactive learning can occur at all levels.
- 3) Create places that support experiential learning, integrating living metaphors and visual aids for teaching into the landscape.
- 4) Support the notion of play as a source of learning, giving children the flexibility to shape their own environment through free-play and discovery.
- 5) Design an outdoor school ground that can be used throughout all the seasons.

Design Elements

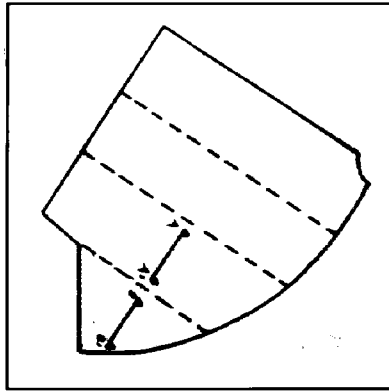
This design tries to incorporate the outdoor physical setting into the academic curriculum, promoting interactive learning in subjects from science to art. The dramatic arts play a significant in the curriculum and in extra curricular activities of this school. An informal outdoor stage will enable children to explore their creative side and develop their imaginations (see **Figure 3**). The main structure of the landscape is shaped around pathways, the central one taking the form of the Golden Curve. Pathways are experiences in themselves. "A meandering path between activities will allow the children to look over each potential activity and a bypass route would allow quick movement from one side of the room to another without disrupting those already engaged in activities (Osmon, 1971).

On the outer boundaries of this pathway is a forested area where the study of wildlife and native plant species may occur. An outdoor classroom is nestled in the wooded area, providing shelter and seating for students (see **Section A-A'**). Inside the pathway, forms of the constellations may be studied in a playful way with leapfrogs. The Upper Yard focuses on active play on various structures (see **Figure 4**) as well as interactive learning about solar direction using a sundial. Understanding the cycles of food production is achieved through south-facing garden plots (see **Section B-B'**).

CURRICULUM-BASED LANDSCAPE



D 3 Curriculum-based Landscape Design Plan



Section Key

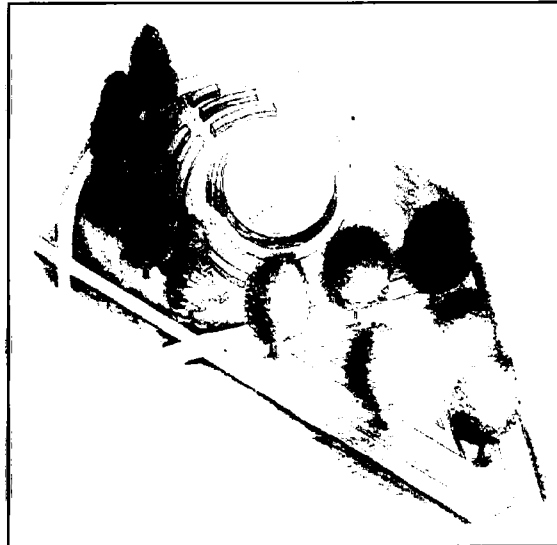
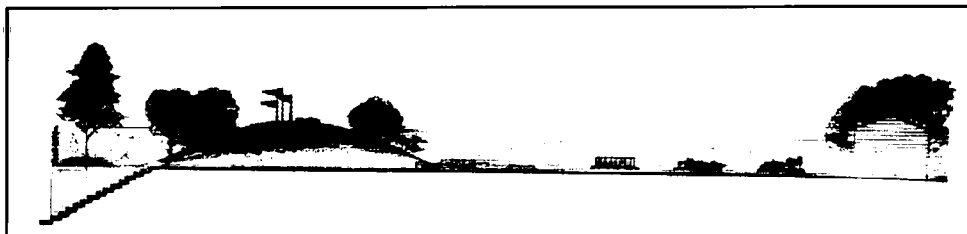


Figure 3 Outdoor stage and Gathering Place



Section A-A' Outdoor classroom, art area and constellation leap frogs against woodland



Section B-B' Upper Yard: Mound, sundial & garden plots



Figure 4 Climbing rock structure

D 4 Curriculum-based Landscape Sections and Elevations

NARRATIVE LANDSCAPE

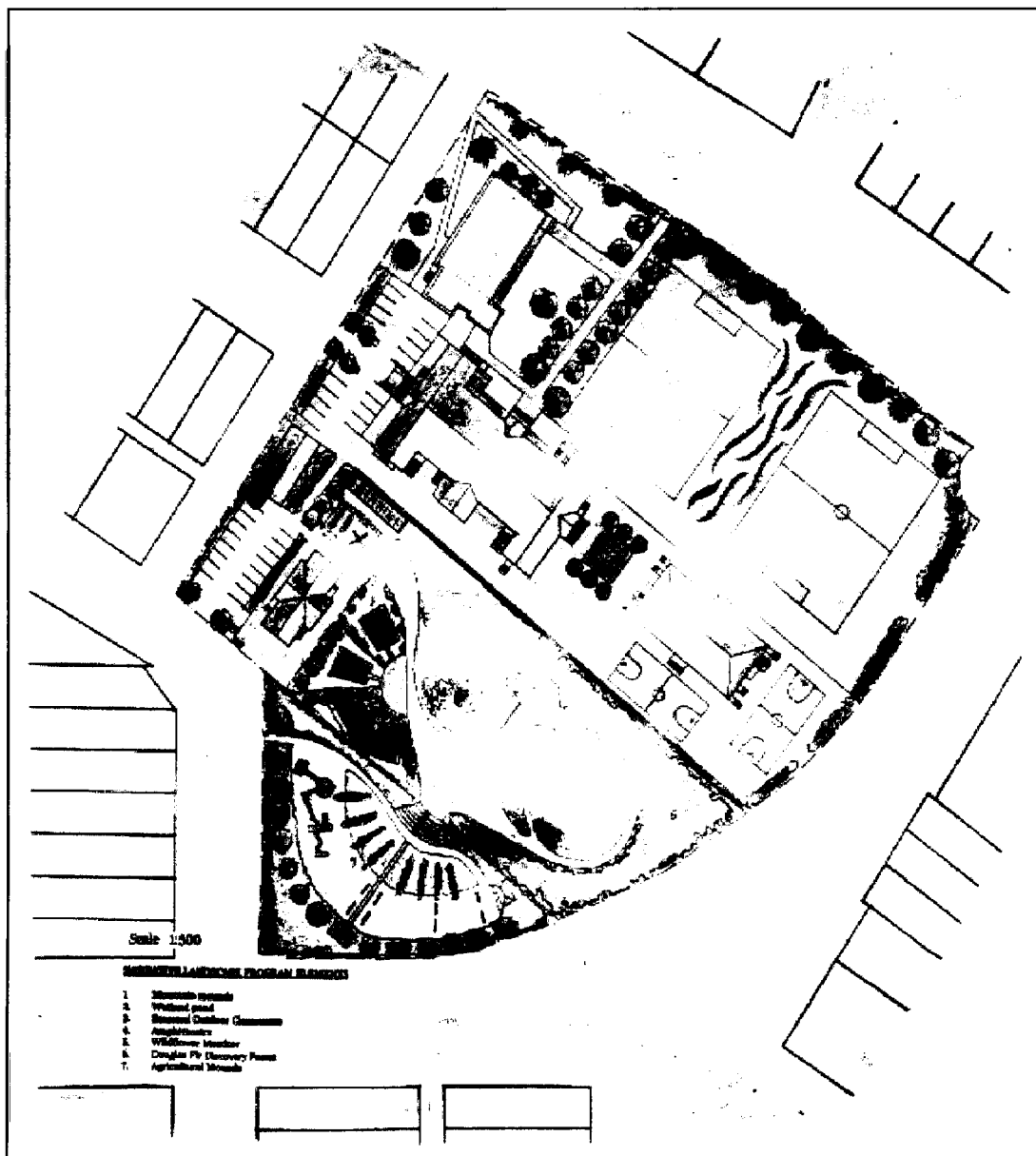
PRINCIPLES

- 1) **CONTEXT**
 - Reveal site conditions and regional memory to provide a sense of historical grounding to the schoolyard and the community.
 - Provide a landscape that becomes a backdrop to play, supplying content, context and meaning.
- 2) **PHENOMENOLOGY**
 - Express the value of the phenomenological environment - one that refers to the meanings children develop for the events they experience.
- 3) **CULTURE**
 - Explore place-enhancing processes in order to establish a sense of belonging, identity and ownership, revealing the culture of the place
 - Assist children in discovering self-identity through place-identity.
- 4) **MULTI-SENSORY SPACE**
 - Reveal the body in time and engage the senses through the cycles of nature, passage of seasons and ephemeral processes.
- 5) **VISION**
 - Provide an environment that may be arranged according to the personal preference, the goals and values of those who use the space.

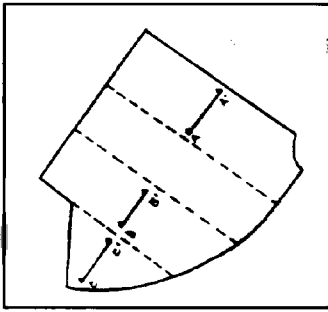
It is said that "rootedness" plays a significant role when nourishing the human soul.

Rediscovering local culture and restoring ties to the local history of place is one way of doing this. The narrative landscape reveals site and regional conditions through specific installations placed around the schoolyard. Reminiscent of the mountains that surround Vancouver, which are visible from the school site, mounds representative of this landscape separate the two soccer fields in the front yard (see **Section A-A'**). Temporality is expressed in the four seasonal rooms that each focus on the highlights and changes of the different seasons (see **Figure 5**). Native plantings may be studied in the Westcoast forest, which surrounds a circular wildflower meadow. An outdoor amphitheater for formal school gatherings (see **Figure 6**) looks out across a pond where various aquatic life may be observed (see **Section B-B'**). Upon entering the Upper Yard, giant furrow mounds greet the user, a strong reminder of the area's semi-agricultural heritage. Children can run up and down these grassy mounds into the free play area construction and building of objects is encouraged (see **Section C-C'**).

NARRATIVE LANDSCAPE



D 5 Narrative Landscape Design Plan



Section Key

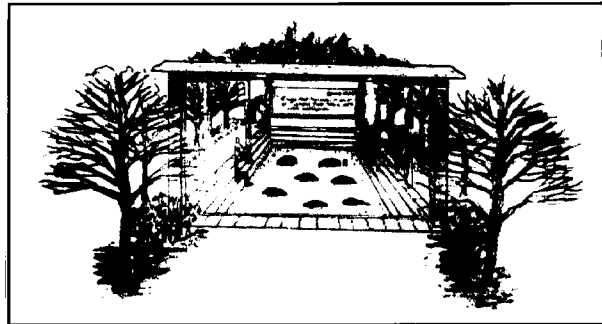
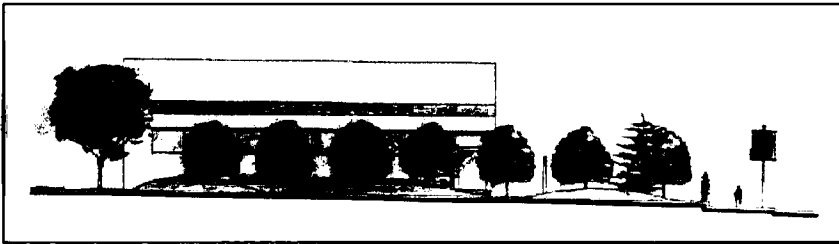


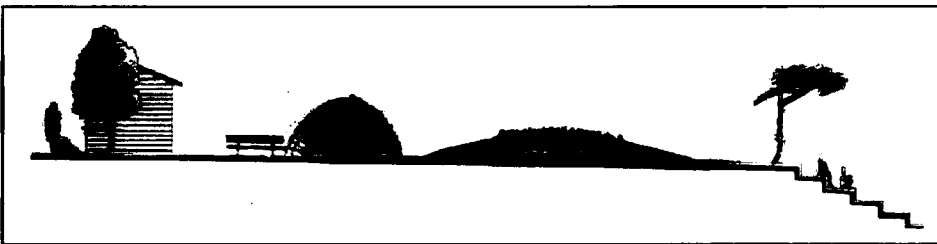
Figure 5 Seasonal Room



Section A-A' Range of mounds dividing soccer fields



Section B-B' Stage, Lookout and Pond



Section C-C' Amphitheater seating to furrow mounds and free play area

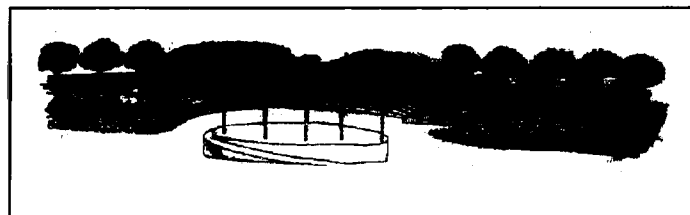
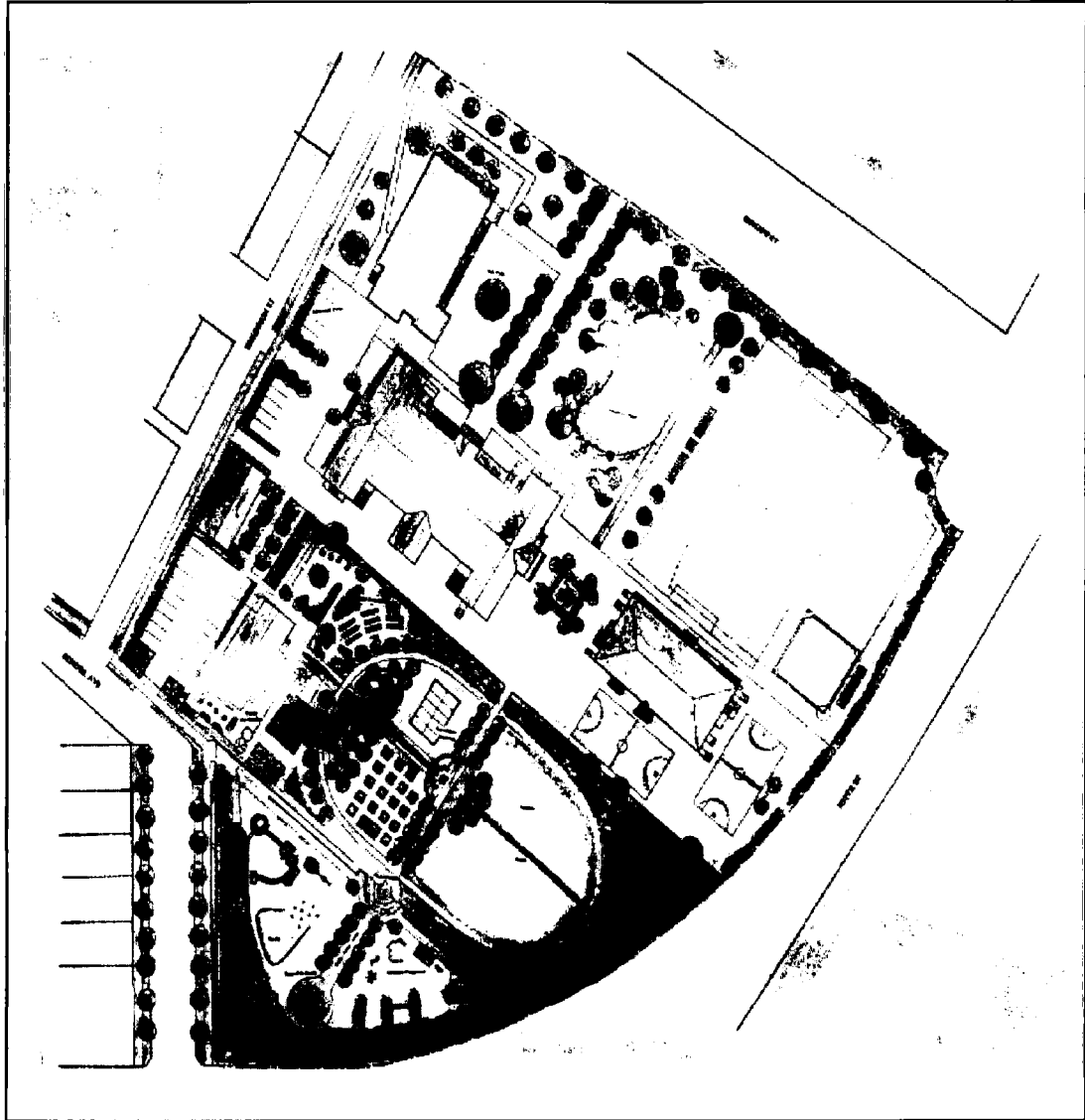


Figure 6 Outdoor amphitheatre

D 6 Narrative Landscape Sections and Elevations

MASTER PLAN



D 7 Sir Guy Carleton: Master Plan

MASTER PLAN DESIGN

FRONT YARD

The Front Yard is composed of an experiential learning centre and active play areas. Discovery Pond allows for direct interaction with aquatic wildlife (see Section A-A'), enabling children to cross the pond on a wooden boardwalk (see **Figure 7**). Gathering places of various sizes are strewn around the pond, providing for secluded activities or more public classroom gatherings (see **Section B-B'**). Research shows that privacy contributes to children's development and maturation. The secret spaces that children create allow them to observe and watch the world go by, while remaining hidden and undetected. At the same time, the experience of unearthing a unique space transmutes into a sense of personal uniqueness. These hiding places that children uncover protect them from the glare of the outer world, and they become environments that nurture the unfolding self (Sobel 1993). Such secretive spaces support the prospect-refuge theory, which assumes that "because the ability to see without being seen is an intermediate step in the satisfaction of many [environmental] needs, the capacity of the environment to ensure the achievement of this becomes a more immediate source of aesthetic satisfaction" (Appleton 1975). On the opposite end of the site, soccer and baseball fields are combined for active organized sports play. A bell and watchtower for watching games stands where Collingwood's first firehall once presided on the site (see **Section C-C'**).

CENTRAL YARD

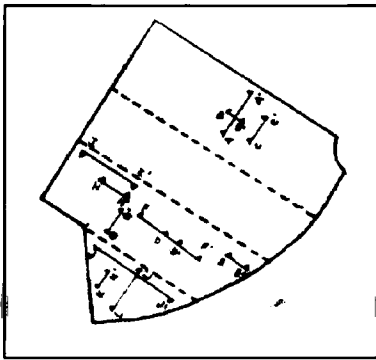
The Central Yard focuses on natural processes, demonstrating how these cycles interact and rely on one another. The central gathering area is composed of a concrete seating area that face oversized measuring blocks (see **Figure 8**). These blocks of varying heights teach children measurement, and can also be used as chalkboards by instructors. On the opposite side of the central pathway are troughs that will provide water for the garden plots from ground water runoff. A hand pump brings water from the underground cistern up through to the water troughs where it may then be collected and used (see **Section D-D'**). This teaches children about the value of energy conservation through water reuse. The eastern portion of the site features a Native Forest where children may explore, as in the Ecological Landscape design, wildlife and native plantings (see **Section E-E'**). **Figure 9** demonstrates the configuration of the community

garden plots, located across from the greenhouse classroom. A swale that collects water to be diverted into the underground cistern divides the plots, greenhouse and orchard areas (see **Section F-F'**). The mini-orchard separates the food production area from an outdoor and enclosed art space as well as a Sensory Garden. The art space consists of an enclosed outdoor classroom that is used for art classes (see **Section G-G'**). Each year, classes will contribute to the mosaic tiling that decorates the ground of this space.

KINDERGARTEN PLAY AREA & UPPER TERRACE

The younger children's play area is reserved for more tactile and sensory experiences that concentrate on developing their physical and cognitive skills. Accessible sand boxes for creative play, large rocks for climbing on, bars to swing on and a jungle gym made from sturdy tree branches (see **Section H-H'** & **Section I-I'**).

The journey up the amphitheater stairs leads to a pathway that ends with a majestic "King of the Castle" mound (see **Section J-J'**). The Upper Terrace remains an active play area divided into 3 sections: a play equipment-oriented area, a below-grade pit area (see **Section K-K'**) and an Adventure playground (see **Section L-L'**), all surrounded by a continuation of the woodland area from the Central Yard. City planners Lukashok and Lynch believe that in order to fulfill a child's needs, the environment must provide variety with some chance of adventuresome activity. There exists a strong urge within children to act upon their physical environment, to be stimulated by it and to realize imaginative fantasies through it (Hart 1979). These views are congruent to the theory of adaptation, which can be defined as giving a landscape order and meaning by physically modifying it. The concept of the Christian Sorenson's Adventure Playground accommodates this theory by acknowledging children's needs to physically alter, interact with and manipulate the environment. A type of formalized derelict play site, Adventure Playgrounds allow for rich opportunities of constructive play in high-density urban neighbourhoods which are focused on the community. The deconstruction, reconstruction and reinvention of this play landscape becomes a tool for the child in trying to better comprehend the world. At the same time, adventure playgrounds engage cognitive developments, develop social adeptness and focus on powers of perception (Michelson 1979).



Section Key

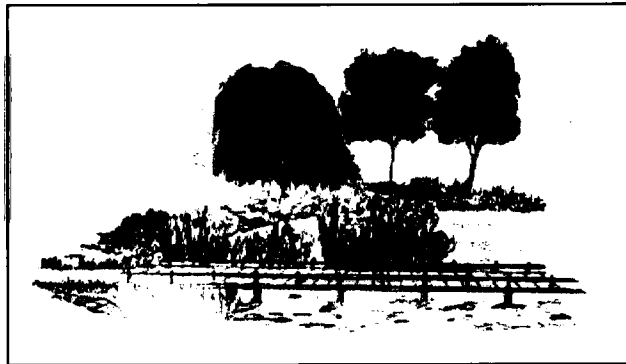
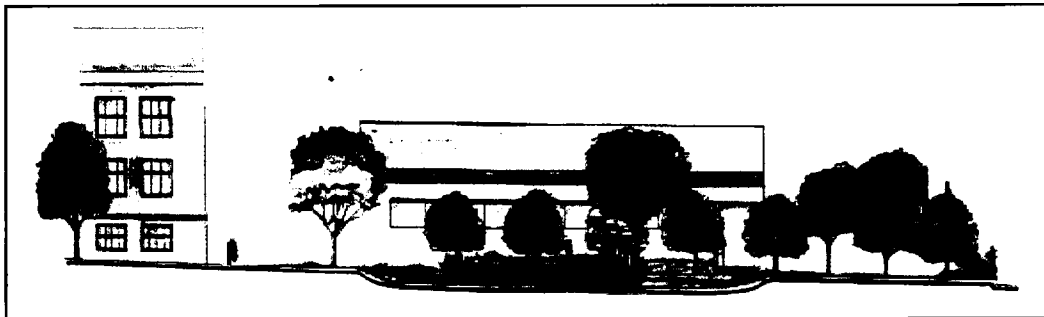
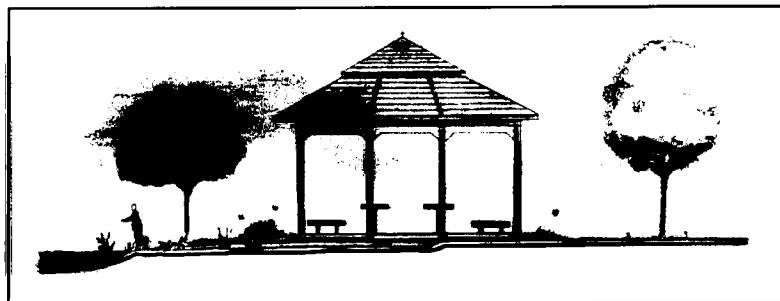


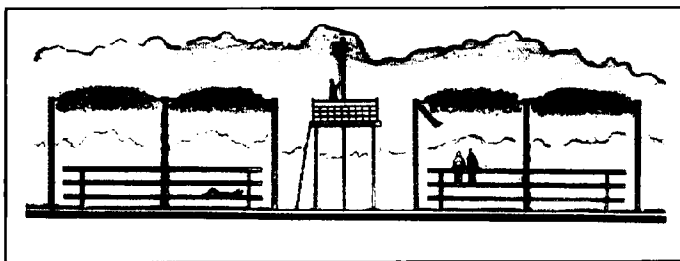
Figure 7 Pond Boardwalk



Section A-A' Discovery Pond



Section B-B' Gathering place overlooking pond



Section C-C' Firehall tower and bleachers



Collingwood Firehall

D 8 Master Plan Sections & Elevations: Front Yard

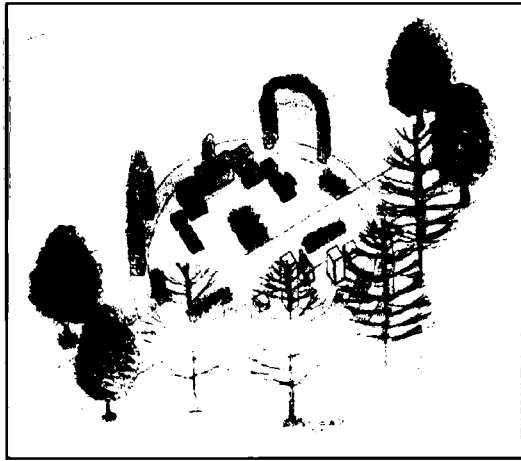
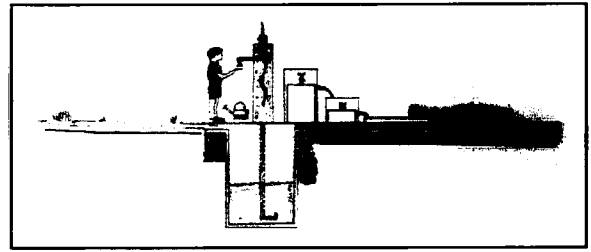
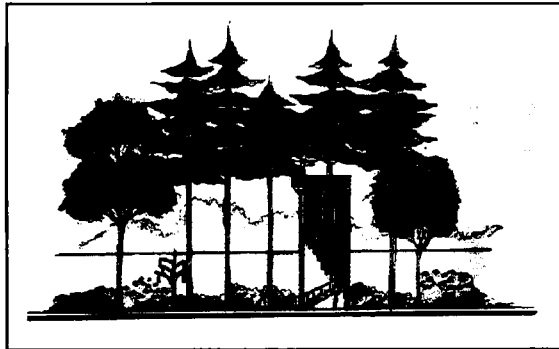


Figure 8 Central gathering area with water troughs



Section D-D\' Water pump and troughs



Section E-E\' Woodland Forest

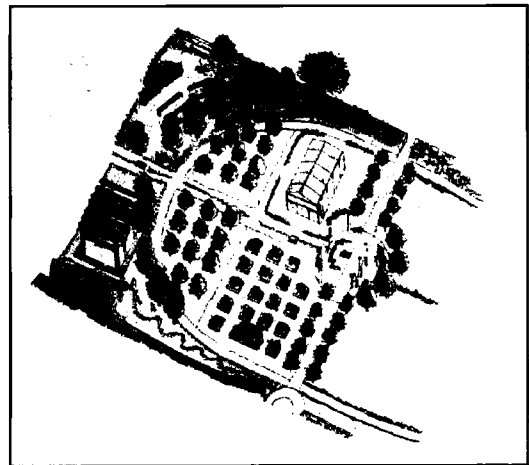
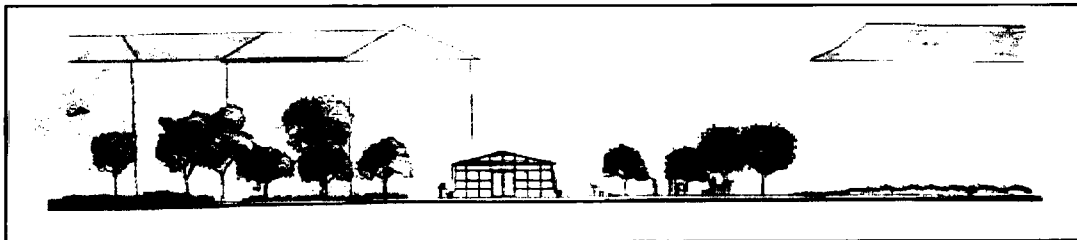
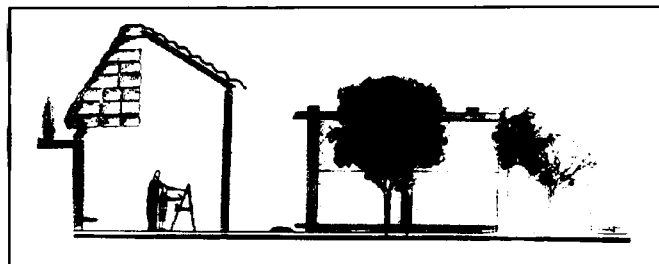


Figure 9 Axonometric of garden Central Yard

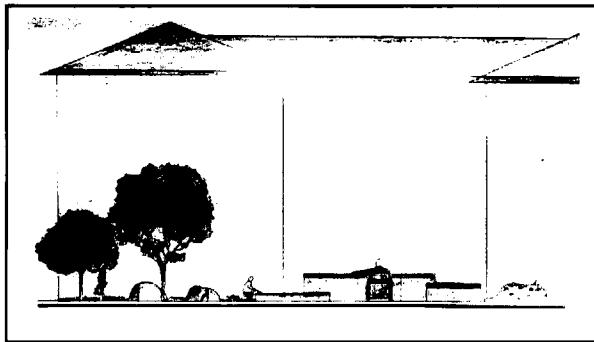


Section F-F\' View of orchard, greenhouse and central gathering area

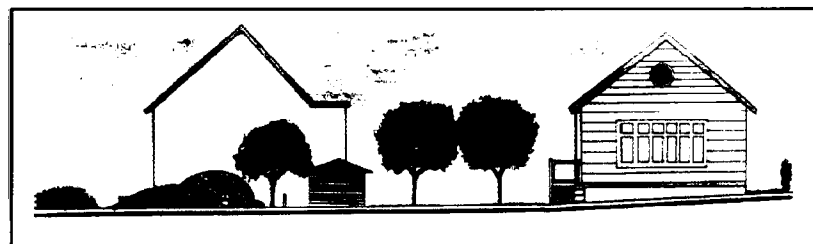
Section G-G\' Sheltered art space
and enclosed classroom



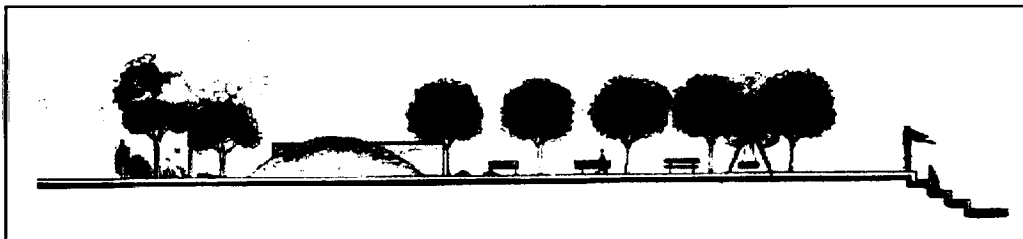
D 8 Master Plan Sections & Elevations: Central Yard



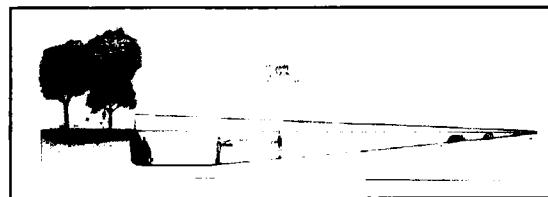
Section H-H' Kindergarten play area with sandboxes and rocks



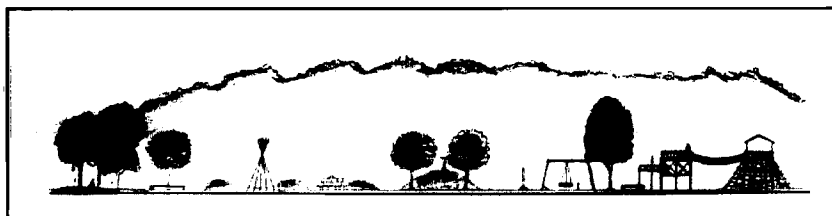
Section I-I' Kindergarten play area with climbing structure



Section J-J' Pathway leading from Amphitheatre to mound



Section K-K' Underground Pit area



Section L-L' View of forest, mounds and play area

D 8 Master Plan Sections & Elevations: Kindergarten Area & Upper Terrace

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