SPRING 2012 HONORABLE MENTION

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INSTRUCTOR’S FOREWORD

“Where the Wild Things Should Be: Healing Nature Deficit Disorder Through the Schoolyard” is a research-based proposal for action. Charlotte’s essay provides an original solution to a problem first defined by journalist Richard Louv in 2008: nature deficit disorder posits that many children of the developed world are alienated from nature. The documented results of this disorder can be dire and include poor health, including depression, obesity, and diminished cognitive capacity; impoverished ecological knowledge; and limited engagement with environmental activism. To mitigate this disorder, Charlotte proposes a transformation of the schoolyard, a space foundational to global childhood and one commonly recognized as an asphalt desert. Designed with adult needs in mind, schoolyards today are equipment dominated to allow children to “blow off steam” and hard scaped to facilitate monitoring.

Writing with confidence and imagination, and drawing on extensive reading in geography, science education, and biology, Charlotte envisions the schoolyard as a child-centered space in which environmental learning might occur. She proposes four tenets of Natural Schoolyard Design: integration of biodiversity, sensory stimulation, diversity of topography, and “loose parts”—such as sand, water, stones, leaves and sticks, which permit children to play inventively. Out of hardscapes, her essay urges, we might develop vibrant, engaging, natural environments. Her argument provocatively questions the opposition between nature and culture, demonstrating that man-made spaces such as the schoolyard can provide children crucial access to nature.

—Sarah Pittock

Where the Wild Things Should Be: Healing Nature Deficit Disorder through the Schoolyard

Charlotte Geaghan-Breiner

The developed world deprives children of a basic and inalienable right: unstructured outdoor play. Children today have substantially less access to nature, less free range, and less time for independent play than previous generations had. Experts in a wide variety of fields cite the rise of technology, urbanization, parental over-scheduling, fears of stranger-danger, and increased traffic as culprits. Even the environmental education movement is to blame, some argue, because it prioritizes abstraction over direct experiences in nearby nature. A growing body of research from the United States, United Kingdom, Mexico, Germany, Canada, Australia, Norway, Japan, and Spain has confirmed that this trend is a legitimate and pervasive phenomenon, though varied in scope and degree. In 2008 journalist Richard Louv articulated the causes and consequences of children’s alienation from nature, dubbing it “nature deficit disorder.” Louv is not alone in claiming that the widening divide between children and nature has distressing health repercussions, from obesity and attention disorders to depression and decreased cognitive functioning. Its implications for the future of the environment are equally disturbing. “What is the extinction of a condor,” asks naturalist Robert Pyle, “to a child who has never seen a wren?” (147). The dialogue surrounding nature deficit disorder deserves the attention and action of educators, health professionals, parents, developers, environmentalists, and conservationists alike.

This staggering rift between children and nature is not insurmountable. Experts have proposed solutions at the level of family and nation. The most practical and the most feasible solution offered, and the one on which this paper will center, involves
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the schoolyard. The schoolyard habitat movement, which promotes the “greening” of school grounds, is quickly gaining international recognition and legitimacy. A host of organizations, including the National Wildlife Federation, American Forest Foundation, Council for Environmental Education, Britain-based Learning through Landscapes, Canadian-based Evergreen, and Swedish-based Skolans Uterum, have committed themselves to this express cause. However, while many recognize the need for “greened school grounds,” not many describe such landscapes beyond using adjectives such as “lush,” “green,” and “natural.” The literature thus lacks a coherent research-based proposal that both asserts the power of “natural” school grounds and delineates what such grounds might look like.

My research strives to fill in this gap. I establish a theoretical framework for dealing with children’s geography, advocate for the schoolyard as the perfect place to address nature deficit disorder, demonstrate the benefits of greened schoolyards, and establish the tenets of natural schoolyard design in order to further the movement and inspire future action.

CHILDREN, GEOGRAPHY, AND NATURE: A THEORETICAL FRAMEWORK

Nature is a term notoriously difficult to define but essential for the purposes of this discussion. A common definition of nature can be found in the Cambridge Dictionary: “All the animals, plants, rocks, etc. in the world and all the features, forces and processes that happen or exist independently of people, such as the weather, the sea, mountains, reproduction and growth” (“Nature”). The Cambridge Dictionary reflects a widespread understanding of nature, which holds terrain even minimally designed by humans as inherently “unnatural.” This definition fails to account for the nature present in environments that have been influenced by humankind, such as national parks, farms, and preserves. A better approach would be to view all geographies upon a continuum of human design, from the untouched wild to the highly landscaped (Carver, Evans, and Fritz 25). My argument will rest on the assumption that nature, as the Cambridge Dictionary defines it, can be integrated into human-designed environments such as the schoolyard; human intervention and nature are not mutually exclusive.

Another assumption central to this research concerns biophilia, or our inherent affinity for living things. Since E.O. Wilson put forth his biophilia hypothesis in 1984, numerous studies have corroborated his claim: our evolutionary heritage has instilled within us the desire to connect with other forms of life. This affinity for nature is especially visible in children. Children have been shown to prefer natural settings for their play. Furthermore, their behavior in nature, such as seeking shelters and hideaways, is shaped by innate primal instincts (Heerwagon and Orians 52). Nature thus exerts a special psychological pull on children that must be nurtured and encouraged for healthy development.

A useful schema of children’s engagement with the natural world is proposed by architect Louise Chawla in her article “Learning to Love the Natural World Enough to Protect It” (see fig. 1). Through encounters with the environment, children progress in cycles of increasing competence and environmental knowledge (Chawla 69). Chawla’s cyclical model, when combined with Wilson’s biophilia hypothesis, highlights the indispensable role nature plays, or should play, in childhood.

Fig. 1: Children progress in “positive interactive cycle” with the environment (Chawla 69).

Any study of children and nature will inevitably overlap with ecological psychology, or the study of the relationship between individuals and their environment. The concept of affordances, a fundamental of ecological psychology, sheds light on the relationship between children and their geography. In 1979 psychologist James Gibson defined affordances as the “action possibilities” of an environment: in other words, what the environment offers the individual (127). A tree stump, for example,
might afford seating for a child, but only if it is free of splinters and the right height for that child’s body. The affordance of that tree stump depends on both the stump and the child. A school ground that meets the needs of its children must provide a diverse variety of affordances; thus it must be designed with children in mind.

The model of children as both subjects and agents of their geographies will inform my research (Matthews and Limb 68). While children do exert a measure of power and control over their environments, their agency is limited. For example, a child cannot single-handedly transform a concrete lot into a grassy knoll. Children are, to a certain extent, subjects of their geographies and the society that defines what those geographies might be. In a 1987 study of children’s place and behavior, Paul Gump coined the term “setting coercivity” to convey the profound influence that an ecological setting exerts on a child’s actions. A number of other studies have shown that the nature of the schoolyard shapes the nature of play (Titman; Moore, “Before and After Asphalt”; Moore and Wong). The schoolyard is therefore a land rife with potential, with the power to facilitate children’s free play in nature. Schoolyard design must acknowledge children’s dual role as both subjects and agents by providing the raw materials for natural play; children will then manipulate these materials as agents to suit their needs.

ASPHALT DESERTS: THE STATE OF THE SCHOOLYARD TODAY

As a formative geography of childhood, the schoolyard serves as the perfect place to address nature deficit disorder. Historian Peter Stearns argues that modern childhood was transformed when schooling replaced work as the child’s main social function (1041). In this contemporary context, the schoolyard emerges as a critical setting for children’s learning and play. The school playground, according to British psychologist Peter Blatchford, is a child-empowering geography. “Breaktime is one of the few occasions,” he explains, “when [children’s] play and social relations are more their own” (Blatchford 58). As parental traffic and safety concerns increasingly constrain children’s free range outside of school, the schoolyard remains a safe haven, a protected outdoor space just for children.

Despite the schoolyard’s major significance in children’s lives, the vast majority of schoolyards fail to meet children’s needs. An outdated theoretical framework is partially to blame. In his 1890 Principles of Psychology, psychologist Herbert Spencer championed the “surplus energy theory”: play’s primary function, according to Spencer, was to burn off extra energy (White). Play, however, contributes to the social, cognitive, emotional, and physical growth of the child (Hart, “Containing Children” 136); “[l]etting off steam” is only one of play’s myriad functions. Spencer’s theory thus constitutes a serious oversimplification, but it still continues to inform the design of children’s play areas.

Most US playgrounds conform to an abiotic equipment-based model constructed implicitly on Spencer’s surplus energy theory (Frost and Klein 2). These play areas feature sports fields, asphalt courts, swing sets, and jungle gyms; they relegate nature to the sidelines. The standardized playground so prevalent in the US drastically limits children, prioritizing gross motor play at the expense of dramatic play or exploration. An eight-year-old in England says it best: “Tarmac and concrete is boring, like seeing a film ten times” (Titman 44). Another points out, “The space outside feels boring. There’s nothing to do. You get bored with just a square of tarmac” (Titman 42). Such an environment does not afford children the chance to graduate to new, more complex challenges as they develop (see Chawla’s model of child-environment interactions, fig. 1). While play equipment still deserves a spot in the schoolyard, equipment-dominated playscapes leave the growing child bereft of stimulating, novel interactions with the environment.

Also to blame for the failure of school grounds to meet children’s needs are educators’ and developers’ adult-centric aims. Schulman and Peters’s GIS analysis of urban schoolyard landcover in Baltimore, Boston, and Detroit affirms quantitatively what many already know: urban schoolyards are sterile environments with inadequate tree canopy and low biodiversity, dominated by synthetic landcovers such as tarmac, asphalt, and turf grass (Schulman and Peters 65; see fig. 2). While these landcovers may be more conducive to maintenance and supervision, they exacerbate the “extinction of experience,” a term that Pyle has used to describe the disappearance of children’s embodied, intuitive experiences in nature. Asphalt deserts are major instigators of this “cycle of impoverishment” (Pyle 312). Loss of biodiversity begets environmental apathy, which in turn allows the process of extinction to persist; deep alienation from nature ensues.

Furthermore, adults’ preference for manicured, landscaped grounds does little to enhance children’s creative outdoor play. Instead, as Australian geographers Malone and Tranter point out, “By over-designing and regulating schoolgrounds, schools are designing out the capacity for children to engage in natural environmental learning” (Malone and Tranter). Such highly ordered schoolyards are constructed with adults’
convenience in mind; instead of rich, stimulating play environments for children, they are “neat and safe compounds” devoid of nature (Matthews and Limb 69). Therefore, despite important progress made by the schoolyard habitat movement, most schoolyards still have far to go.

THE GREENER, THE BETTER: THE BENEFITS OF GREENED SCHOOL GROUNDS

A great body of research documents the cognitive, psychological, and physiological benefits of contact with nature. Health experts champion outdoor play as an antidote to two major trends in children of the developed world: the Attention Deficit Disorder and obesity epidemics. A 2001 study by Taylor, Kuo, and Sullivan indicates that green play settings decrease the severity of symptoms in children with ADD. They also combat inactivity in children by diversifying the “play repertoire” and providing for a wider range of physical activity than traditional playgrounds. In the war against childhood obesity, health advocates must add the natural schoolyard to their arsenal.

The schoolyard also has the ability to engineer relationships among children, nature, and play. Studies demonstrate that greener areas foster higher levels of creative play than barren spaces. Habitats of life, inexhaustible in their novelty, offer infinite variety and stimulation. Instead of being prescribed a play structure with a clear purpose (e.g. a swing set), children in natural schoolyards must discover the affordances of their environment—they must imagine what could be. While children do enjoy traditional play equipment, too often these structures come to dominate the landscape. Sensory-rich environments, on the other hand, afford children “graduated challenges”—they grow with the child (Chawla 68).

In general, children exhibit more prosocial behavior and higher levels of inclusion in the natural schoolyard (Dyment 31). Landscape architects Herrington and Studtmann offer a compelling explanation for this phenomenon. They argue that in a schoolyard dominated by a grass monoculture and traditional playground equipment, social hierarchy is determined by physical prowess, while in a schoolyard with vegetative areas, where children are more apt to engage in creative play, the hierarchy develops based on linguistic and imaginative ability (Herrington and Studtmann 203). A 2006 questionnaire-based study of a greening initiative in Toronto found that the naturalization of the school grounds indeed effected a decrease in aggressive actions and disciplinary problems and a corresponding increase in civility and cooperation (Dyment 28). The greened schoolyard offers benefits beyond physical and mental health; it shapes the character and quality of children’s play interactions.

The schoolyard also has the potential to shape the relationship between children and the natural world. In the essay “Eden in a Vacant Lot,” Pyle laments the loss of vacant lots and undeveloped spaces in which children can play and develop intimacy with the land. When we develop these wild places, he argues, we rob children of the opportunity to develop natural literacy and intimacy through the spontaneous, intuitive experiences with nature that these grounds facilitate. However, Pyle overlooks the geography of schoolyards, which can serve as habitat pockets, enclaves of nature in an increasingly urbanized and developed world. Research has shown that school ground naturalization fosters nature literacy and intimacy just as Pyle’s vacant lots do. A 2012 case study of Forest School in Australia revealed positive influences of the natural schoolyard on children’s ecological knowledge (Ridgers, Knowles, and Sayers 49). A school ground greening program in Toronto also dramatically enhanced children’s environmental awareness, sense of stewardship, and curiosity about their local ecosystem (Dyment 37). When integrated with nature, the schoolyard can mitigate the effects of nature deficit disorder and reawaken children’s innate biophilia.

A less measurable but still significant benefit of the natural schoolyard is child empowerment. The natural schoolyard affords children more liberty to engage in...
play of their own invention. In a study of Australian primary schools, geographers Malone and Tranter remark, “In natural or un-designed spaces, structure and permanency are reduced to a minimum, which allows the environment to be flexible in the hands of the children” (Malone and Tranter). With minimal structural design, children will actively construct their own relationship with the natural environment. Involvement of children in the greening initiative itself, whether through designing, planning, or gardening, also boosts their self-esteem (Dyment 27). Moreover, when teachers recognize and utilize the schoolyard as an outdoor classroom, children can shift from being knowledge consumers into being knowledge generators. Natural school grounds thus restore agency to children.

BIOPHILIC DESIGN: ESTABLISHING THE TENETS OF NATURAL SCHOOLYARD DESIGN

The need for naturalized schoolyards is urgent. But how might theory actually translate into reality? Here I will propose four principles of biophilic schoolyard design, or landscaping that aims to integrate nature and natural systems into the man-made geography of the schoolyard.

The first is biodiversity. Schools should strive to incorporate a wide range of greenery and wildlife on their grounds. Trees, bushes, flowers, long grasses, and a garden, weather permitting, all deserve a place in the schoolyard (see fig. 3). Native plants should figure prominent in the landscape so as to inspire children’s interest in their local habitats. (One word of caution: avoid poisonous or sharp plants and possible choking hazards, especially in schoolyards for the very young.) Inclusion of wildlife in school grounds can foster meaningful interactions with other species. Certain plants and flowers, for example, attract birds, butterflies, and other insects; aquatic areas can house fish, frogs, tadpoles, and pond bugs. School pets and small-scale farms also serve to teach children important lessons about responsibility, respect, and compassion for animals (see fig. 4). Biodiversity, the most vital feature of biophilic design, transforms former “asphalt deserts” into realms teeming with life.

The second principle that schoolyard designers should keep in mind is sensory stimulation. The greater the degree of sensory richness in an environment, the more opportunities it affords the child to imagine, learn, and discover. School grounds should feature a range of colors, textures, sounds, fragrances, and in the case of the garden, tastes. Such sensory diversity almost always accompanies natural environments, but it helps to describe the natural schoolyard in opposition to a monoculture of grass, or worse, concrete, which afford comparatively little sensory stimulation.

Diversity of topography constitutes another dimension of quality in a greened schoolyard (Fjortoft and Sageie 83). The best school grounds afford children a
range of places to climb, tunnel, frolic, and sit. Natural elements function as play “equipment”: children can sit on stumps, jump over logs, swing on trees, roll down grassy mounds, and climb on boulders. Most importantly, the playscape should offer nooks and crannies for children to seek shelter and refuge (see fig. 5). Although such dens and hideaways increase the difficulty of supervision, they fulfill a basic biological impulse for safety and protection (Kirkby 7; Appleton 92). Educators must therefore compromise convenience for the sake of the children. While asphalt lots and play structures are still fun for children, they should not dominate the school grounds (see fig. 6 and 7). Once again, the greater the variety of topography, the more affordances the schoolyard provides to children.

Last but not least, naturalized schoolyards must embody the theory of loose parts proposed by architect Simon Nicholson. “In any environment,” he writes, “both the degree of inventiveness and the possibility of discovery are directly proportional to the number and kinds of variables in it” (qtd. in Louv 87). Loose parts—sand, water, leaves, nuts, seeds, rocks, and sticks—are abundant in the natural world. The detachability of loose parts makes them ideal for children’s construction projects. While some might worry about the possible hazards of loose parts, more conventional play equipment is far from safe: more than 200,000 of children’s emergency room visits every year in the United States are linked to these built structures (Frost 217). When integrated into the schoolyard through naturalization, loose parts offer the child the chance to gain ever-increasing mastery of the environment. Their plasticity allows them to develop with the child.

The four tenets proposed provide a concrete framework for the application of biophilic design to the schoolyard. Biophilic design of schoolyards, however, also requires a frame-shift. Children see and use land differently from adults, especially with regards to vacant lots and empty ground (Matthews and Limb 78). Developers and educators need to resolve the contradiction between adult preferences for well-manicured grounds and children’s needs for wilder spaces that can be constructed, manipulated, and changed through play (Lester and Maudsley 67; White and
Schoolyards designed according to the precepts of biodiversity, sensory stimulation, diversity of topography, and loose parts will go a long way in healing the rift between children and nature, a rift that adult-centric design only widens.

**GROUNDS FOR CHANGE**

In conclusion, we have shown that natural schoolyard design can heal nature deficit disorder by restoring free outdoor play to children's lives in the developed world. The four principles of biophilic schoolyard design challenge the conventional notion that natural and man-made landscapes are mutually exclusive. Human-designed environments, and especially those for children, should strive to integrate nature into the landscape. All schools should be designed with the four tenets of natural schoolyard design in mind.

Though such sweeping change may seem impractical given limitations on school budgets, greening initiatives that use natural elements, minimal equipment, and volunteer work can be remarkably cost-effective. Peninsula School in Menlo Park, California, has minimized maintenance costs through the inclusion of hardy native species; it is essentially “designed for neglect” (Dyment 44). Gardens and small-scale school farms can also become their own source of funding, as they have for Ohlone Elementary School in Palo Alto, California. Ultimately, the cognitive, psychological, physiological, and social benefits of natural school grounds are priceless. In the words of author Richard Louv, “School isn’t supposed to be a polite form of incarceration, but a portal to the wider world” (Louv 226). With this in mind, let us embrace the schoolyard as a land “richly simmered in promise” (Pyle 306) and restore to children their exquisite intimacy with nature: their inheritance, their right.

**WORKS CITED**


