

Carolina Planning

Summer 2010 Volume 35

A photograph of a paved walkway in a park-like setting. The walkway is made of grey bricks and is flanked by low stone walls. On the left, there are lush green trees and a black lamppost. On the right, there is a signpost with several colorful directional signs pointing in various directions. A man and a woman are walking away from the camera on the walkway. The background shows a green lawn and more trees under a bright sky.

Urban Greening

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From the Editors

For the 35th anniversary issue of *Carolina Planning*, we have selected a timely topic: “urban greening” – or the promotion of environmental sustainability through urban design. While the real estate development world has been abuzz about “green building” for decades, we have noticed a different trend in recent years: a renewed focus on the space *in between* the buildings.

For instance, the U.S. Green Building Council in 2007 introduced its Leadership in Energy and Environmental Design (LEED) rating system for Neighborhood Development, which awards points for brownfield redevelopment, wetland conservation, habitat restoration, connectivity, tree-shaded streets, local food production, and other environmental considerations in new real estate developments. Moreover, several recent sessions at both the national and North Carolina chapter conferences of the American Planning Association spotlighted urban greening practices.

To provide inspiration and how-to examples for green urban design projects in North Carolina, we have assembled a collection of articles written by professional and academic planning experts. Christopher De Sousa of the University of Wisconsin-Milwaukee introduces the importance of urban greening and the value to cities of adapting brownfields into parks. Planners from the Chapel Hill, N.C. office of Clarion Associates then describe the legal and regulatory challenges of implementing tree protection ordinances. Next, Robert Bush, AICP, summarizes the process of measuring greenway usage in Cary, N.C., outlining key steps that other communities may wish to follow.

Each year, *Carolina Planning* features the work of several members of the North Carolina chapter of the American Planning Association. In this current issue, we recognize four communities that successfully integrated water resource management into urban sustainability efforts. Karen Cragolin (Asheville) introduces the article with her thoughts on the pressing need for water conservation and management in our state. Susan Moffat Thomas (New Bern) describes the connections between riverwalks and downtown redevelopment in coastal cities. James Gordon and Will Wilhelm (Mecklenburg County) convey how stream restoration supports Huntersville’s greening efforts. James Brantley (Raleigh) wraps up by highlighting the historical, cultural and environmental significance of Raleigh’s Walnut Creek Wetland Center.

Next, Robin Moore, Professor of Landscape Architecture at N.C. State University, discusses the significant role that urban design plays in childhood development. And finally, an excerpt from an interview with Tom Murphy, former mayor of Pittsburgh and a current fellow at the Urban Land Institute, concludes our feature articles.

We also publish excerpts from the Best Master’s Project of 2009, continuing our long-standing tradition of recognizing exceptional graduate student work. This year’s paper, by Jun Huh, analyzes the potential environmental effects of the Songpa new town development in South Korea.

Finally, current master’s degree students in the UNC-Chapel Hill Department of City and Regional Planning report back on hot topics from the past year, with a round-up of campus and Research Triangle-area events and reviews of the latest planning literature.

We hope that you will enjoy this issue of *Carolina Planning*. As we embark on our 36th year of integrating planning theory and practice, we thank you for your enthusiastic readership and continued support.

Editors: Heather Schroeder and Brika Eklund

Carolina Planning welcomes your comments, suggestions, and submissions. Please contact us at carolinaplanning@unc.edu.

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Cover photo by Karl Wagner. The Green in Charlotte, N.C. was designed by Wagner Murray Architects in 1998 and construction was completed in 2002. Prior to serving as a multi-use park, the space consisted of a parking lot and two-story commercial building.

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Designing Green Urban Carolina Childhoods: Theory and Practice

Robin C. Moore, ASLA

With distant roots in work conducted when the author was an urban planning student, scientific research and design assistance in children's environments continues through the Natural Learning Initiative, N.C. State University, in specific contexts, many of them educational. They include schools, children's museums, zoos, botanical gardens, childcare centers, and neighborhood parks, playgrounds and pathways. Results are aimed at creating cost-effective demonstration sites that people can see and believe possible. The overall aim is to assemble the research evidence to influence built environment policy in favor of healthy child development – and thus the long-term health of all city inhabitants. An evidence-based, participatory community design approach utilizes the socio-ecological model and the concepts of territoriality, behavior setting, and affordance to create design programs that drive physical design. When successful, the process constitutes a dialectic that balances community change and continuity in a way that both builds culture and adapts to it. A number of past and current projects are profiled to illustrate the community design processes involved.

My purpose is to communicate a framework for thinking about relationships between healthy childhood and the urban environment in such a way that the intimate scale of settings of children's daily lives are seen as a design opportunity within the broader context of city planning policy. The background question is one I have worked with for decades: How can urban form and content be designed in favor of healthy child development? To focus attention on children and nature in the urban environment, in 2000 I founded the Natural Learning Initiative at the College of Design, N.C. State University with Dr. Nilda Cosco.

Background

While in graduate school in the 1960s, I pursued ideas about design as a process of generating form from human development objectives. By good fortune, a classmate working with the Boston Redevelopment Authority (BRA) connected me to their community development staff. As a step towards repairing their tarnished community image, the agency was considering building a playground on a one-third acre public housing site in Lower Roxbury, a predominantly African-American Boston community. Fortuitously, I found myself at the three-way intersection

of child development, built environment, and participatory design. My aim was narrow. I wanted to work with a group of kids as the foundation of healthy community development, to build a space to serve their daily needs for outdoor play – which the literature indicated to be a crucial aspect of healthy child development.

Lenox-Camden playground

The Lenox-Camden Experiment in Playground Design enabled me to develop research methods and produce a thesis (Hurtwood, 1972, pp. 72-79). In the process, I learned about the daily life of children in a low-resource urban community, about how the physical

Robin Moore, MCP, DipArch, ASLA, is an international authority on planning and design of children's environments. He is a professor of Landscape Architecture and director of the Natural Learning Initiative, N.C. State University, College of Design; former president of the International Play Association; former chair of the Environmental Design Research Association; and consulting principal in the design and planning firm of MIG, Inc., Berkeley, California.

environment afforded play opportunities – and how those offerings could be expanded by design. I began to learn, too, about the power of community and how to harness the ideas of residents as the basis of effective design decisions. The adolescents wanted a basketball court. Seniors wanted a comfortable place to hang out with peers and grandchildren. The community at large wanted a meeting place. The “playground” indeed became a community commons in the Karl Linn (2008) sense – first and foremost as a place for city children, where I was able to investigate their behavior in relation to different types of designed play settings.

Lenox-Camden was built, literally, for a few hundred dollars cash and huge amounts of sweat equity. Over time, the space became a place in the sense that a vacant, unused city lot was transformed into a well-used, highly valued place in the community. Use was calibrated by daily counts of different types of activity, in itself an expression of value, added to which were positive anecdotal references by mothers and children. Lessons learned included the role of advocacy planning, the possibilities of local partnerships coalescing around the needs of children and families, and how community energy could be focused on improving their environment. I also learned something about the challenge of advocating for children’s creative play and the types of environmental qualities needed to support it. Lenox-Camden led to the Environmental Yard Project in Berkeley, California, with education and learning at the heart of the project. This became the basis for the book, *Natural Learning* (Moore and Wong, 1997), which led to the founding of the Natural Learning Initiative (NLI) at N.C. State University, College of Design,¹ where we are still involved in community design related to children and family environments.

Childhood Use of the Urban(izing) Landscape (CUULS)

Many of the projects on which NLI works today are based on principles derived from the Childhood Use of the Urban(izing) Landscape (CUULS) project, a late 1970s project I led. The CUULS project explored children’s independent mobility – a complex factor in children’s lives (O’Brien et al., 2000; Barker et al., 2009; Mikkelsen and Christensen, 2009). It aimed to answer the question: “Under various urbanization conditions, when children are not at home and not at school, where do they go, what do they do, and how do they assess the local landscape they actually use?” The Bay Area CUULS sample (N=256) was distributed equally across an “ecotransect” of five urban conditions ranging from central city to rural small town (Moore, 1980). The English sample (N=96) was distributed equally among three urban neighborhoods: big city (London), new city (Stevenage New Town), and old, industrial city (Stoke-on-Trent) (Moore, 1986).

The intent was to understand the effect of urban density and physical morphology on dimensions of children’s development assessed through their freely chosen spontaneous play settings. The effect of culture

and parental controls on the breadth and depth of children’s local environmental experience was also explored. The studies employed a convenience sample of equal numbers of girls and boys 8 to 12 years old, stratified by urban context. The age group reflected literature on children’s autonomy and maturity levels for independent mobility. Eight years old appeared as the lowest feasible age for independent mobility (Prizza et al., 2001). Twelve was chosen as the upper, pre-teen limit, before the onset of puberty, when interests in the external environment tend to be replaced by concern for self-identity, youth culture, and peer group social acceptance. Data were gathered using a questionnaire administered to children (in school) and parents (at home), “mental maps” drawn by the children (at school), and field trips led by a subsample of “expert” children selected on the basis of richness of their responses to both the questionnaire and drawing.

Developing a Childhood Environment-Behavior Model ***The socio-ecologic model***

The CUULS project used a multi-level “social-ecologic” model, based on the one formulated by Urie Bronfenbrenner (1979), for understanding relationships between the built environment and child development factors. Bronfenbrenner well understood the importance of including the built environment and encouraged others to apply the model as a policy framework at multiple levels (from family to international factors) and varied sectors (health, education, recreation, urban development, etc.).² The four levels of the model can be applied to design policy as follows.

Microsystems include the day-to-day settings inhabited by children and the psychosocial relations they support. Typical environments include home, childcare, school, streets, playgrounds, parks, and other neighborhood micro spaces. NLI mainly works within these systems and conducts research, which may influence the mesosystems that may affect the microsystems.

Mesosystems include community and local level social structures, organizations, education policies, urban development regulations, zoning, etc., that may influence microsystems or be influenced by them. North Carolina is known for its progressive child development systems, specifically the Partnership for Children or Smart Start, launched under the leadership of former State Governor Hunt. NLI works directly with this system, which provides an influential platform for NLI to effect change at the micro level.

Exosystems include societal, economic, legal, political, and religious institutions, etc., that may influence mesosystems or be influenced by them. NLI has benefited from national research funding systems such as the National Institutes of Health and private philanthropic organizations such as the Robert Wood Johnson Foundation. In theory and hopefully in practice, the results of NLI-sponsored research at the microsystem level, together with the published findings of allied

research efforts, will influence policy at local and national levels.

Macrosystems include global economic, legal, political, religious institutions, etc., that may influence exosystems or be influenced by them. The U.N. Convention on the Rights of the Child (CRC, 1989) is an example of a significant international treaty affecting childhood policy and provision serving as an important frame of reference for NLI – for example, Article 31, which recognizes the child’s right to have play, recreation, and cultural experience.

The *cronosystem*, the fifth dimension, runs vertically through all four levels and signifies the temporal factor common to all ecosystems, which by definition are constantly changing and adapting to new circumstances.

The utility of the socio-ecologic model derives from its ability to connect policy to the specifics of children’s environments and institutions. Investigators working in the interdisciplinary field of health and environment have used the socio-ecologic model to frame issues in such a way that a variety of disciplines are able to apply their expertise to a common, problem-driven research agenda (Stokols, 1992). An example of application is street systems, which are usually designed without full regard to pedestrian use, particularly of children whose means of independent locomotion is limited to feet, bikes, and skateboards. Children’s ability to move freely and safely with peers around the micro-system of neighborhood settings, by walking or biking to and from school and engaging in 60 daily minutes of healthy physical activity as recommended by the Centers for Disease Control (2008), is severely limited by antiquated street engineering. Street design standards constitute a macro-issue, which directly limits territorial range and the child health affordances of urban neighborhoods (as discussed below).

Territorial range development

Factors affecting children’s territorial range were articulated by Roger Hart (1979) as an outcome of research of children in a small New England town. The CUULS project explored these factors further in the urban context (Moore 1980, 1986). Territorial range development recognizes that maturing children make sense of their expanding world through direct experience, including learning spatial skills (Moore and Cooper Marcus, 2008; Moore and Young, 1978; Hart, 1979). This potentially dynamic relationship

with the environment can be supported by design so that children are constantly expanding their known world: first, with accompanying adults; and later, through independent mobility, usually with peers or “best friends” (Moore, 1986). For this to happen, spaces must be designed with extendable boundaries so children are constantly challenged to take safe risks through which they can learn. Higher levels of environmental diversity will offer a wider range of challenges and discoveries to children of multiple ages and experience. Such environments should hold a child’s attention through repeated visits.

Behavior setting

Behavior setting is a concept developed originally by Roger Barker (1979) to describe the weekly routine or “standing patterns” of behavior of inhabitants of a midwestern town. Although explication of the full theory is quite complex, in essence it suggests that in daily life individuals and groups follow repeated patterns of behavior in space and time. As defined by Barker and his colleagues, behavior settings consist of predictable relations between objects, people, and events. As the concept connects components of the physical world (objects) to behavior (people and events), it is very useful for urban designers. It provides a means for disaggregating environments into their functional parts and can be applied in both research and design related to children (Moore and Cosco, 2007).

Behavior mapping data can be used to assess the behavioral value of different types of child behavior



Heritage Park Natural Learning Area. Community social setting. Photo courtesy of Robin Moore.

setting (Cosco, Moore, and Islam, 2010; Moore and Cosco, 2010). For example, empirically established levels of use of different settings can be compared to investment costs and provide facility managers with information to shape management decisions. In park systems, for example, the effectiveness of a playground can be measured in relation to its settings (manufactured play equipment, sand pit, water play setting, pathways, social gathering spots, open lawn settings, formal games areas, and so on), compared to measuring behavior in the play area overall. Setting-based data can guide managers more exactly about where to invest scarce public dollars.

Affordance

Affordance is a concept developed by James Gibson (1979). Affordances are the detailed features of settings that individuals, including children, “read” in ways that motivate action (Heft, 2001, p. 297). Affordances are functional properties that exist as relationships between users and environments and help us understand which particular attributes of a setting motivate which particular types of behavior. For children, these relationships are highly dynamic as new affordances are constantly discovered from the total potential or “unrealized” affordances of a given setting. Adults may perceive a tree as an object of beauty; children will see it as “climbable” (or not); on a hot day both groups may see it as affording shade. On a winter’s day the same children may respond

to the affordance of “kickable” fallen leaves. As children pick up such information afforded by the layout, objects, and events in behavior settings, they learn the possibilities for action that over time become embodied knowledge expressed in habitual behaviors.

If a health objective of urban design policy is to attract children to spend more time outdoors engaged in physical activity, then policy could be driven by an understanding of which behavior settings and attributes afford that type of behavior. In this regard, the Lenox-Camden playground experiment demonstrated that manipulable settings afford diverse activities and attract diverse groups of children for longer periods of time. This type of “adventure play” activity using scrap material and discarded objects was measured in hours versus minutes of activity on fixed equipment (Moore, 1974). Empirical evidence identifying affordances can provide valuable source data for designers by focusing attention on the detailed features and characteristics of components that motivate user behavior.

Together, territorial range development, behavior setting, and affordance provide a trio of closely linked environment-behavior constructs (Heft, 2001; Gibson and Pick, 2000; Gibson, 1979), which may begin over time to generate an evidence base for childhood urban design and offer a basis for measuring its effectiveness as a “layer” in the digital design system along with layers that delineate related systems (pathways, vegetation, surface drainage).



Kids Together Playground, Entry Plaza. Cary, N.C. *Photo courtesy of Robin Moore.*

Design programming

Design programming is the process that includes creating the “childhood layer,” which has been developed by NLI in the last 10 years as the outcome of participatory design processes linking stakeholder objectives and user needs to designed settings. To generate schematic designs, user needs are interpreted into behavior settings and affordance attributes described in detail. Prior to face-to-face participatory workshops, online surveys are used to gather reliable stakeholder information from representative groups, including those otherwise unable or unwilling to attend face-to-face workshop meetings.³

Community-based design programming serves as a project focus, bringing key stakeholders and user representatives together during an intense, short-lived decision-making period. If the process becomes spread out so that design decision-making is diffused, clarity of program vision is likely to be lost. On the other hand, for many projects, while funds are raised, a temporal lapse occurs between the end of the design programming and schematic design phase and the beginning of design development and construction. A completed design program provides crucial continuity, so that during this period continuity of vision is supported for both the community and the client group, even though the individuals involved may change.

For small-scale projects such as childcare centers and schools, with highly detailed programs serving many functions that directly serve the stakeholders (educators and children), a hands-on design workshop can save time – a scarce resource for educators and for other stakeholders involved. Using construction paper cutouts, a design can be rapidly created as directed by the design program – even in a single day.

Carolina Case Examples

Following are four selected NLI North Carolina urban projects that exemplify the design programming process focused at the micro- and meso-system level, emphasizing the grassroots character, but also noting exo-system influences and issues.

1. Walnut Creek Wetland Park and Urban Wetland Education Center, Raleigh, N.C. (See the NCAPA piece, “A Study in Community Action for Environmental Protection: The Raleigh Walnut Creek Wetland Center,” in this issue.)

This 59-acre wetlands and flood plain woodlands is the first “education” park in the Raleigh parks system. The project began in 1998, when Partners for Environmental Justice (PEJ) engaged the author and his landscape architecture graduate design studio to create a vision for the 300-acre Walnut Creek wetlands. Later, a design program and conceptual master plan⁴ was developed by NLI, followed by several years of advocacy. As a member of the Raleigh Parks and Recreation Citizen’s Board, the author was able to facilitate board cooperation with PEJ.

A brochure summarizing the design program and master plan promoted the project. Eventually the lynchpin Urban Wetlands Education Center was built. Meanwhile, the Urban Wetland Park remains to be recognized as a unit within the Raleigh parks system.

2. Kids Together Playground, Marla Dorrel Park, Cary, N.C.

Urban context

First phase of the new, 11-acre Marla Dorrel community park (under development). Adjacent to suburban housing development and shopping mall. Highly accessible from main highway connecting Raleigh and Cary. Current terminus of Cary greenway, so highly accessible to cyclists (see “If You Build It, Will They Come? Measuring Greenway Usage in Cary, N.C.,” in this issue).

Significance

Model, universally designed, naturalized family recreation area. Designed with extensive community participation, including families with children with disabilities.

Design process summary

1993 Commissioner Bruce Brown invites Robin Moore to present ideas for a “playground for all children” to the Cary Parks and Recreation Commission. Robin Moore invites Little & Little, Landscape Architects, to collaborate in preparing an initial proposal for design services to the Town of Cary.

1994 Schoolgirls Kristy Holcombe and Helen Rittelmeyer (who had siblings with disabilities) raise money for a playground to include kids with special needs. Their first craft sale raises \$1,300. “Playground for All Children” Community Design Stakeholder Design Workshop is held in two sessions for adults and children.

1995 Robin Moore develops a Master Plan based on workshop ideas. Kristy and Helen present the Town of Cary with \$1,000, raised by selling crafts, used toys, raffle tickets, and baked goods. (Eventually, the girls raised \$12,000, an additional \$270,000 was contributed by donors to the park’s nonprofit organization, and the remainder for the \$850,000 park was contributed by the Town of Cary.) Marla Dorrel (former teacher, future Cary Town Council member) emerges as the indefatigable coordinator/fundraiser (together with Kristy and Helen).

1996 Kids Together 501(c)3 nonprofit organization is formed.

1997 Fund raising includes “Reach for the Stars” small change drive, which collects \$1,307. The \$100,000 funding milestone is reached. A Kids Together design workshop is held to begin Design Development of Phase I. Little & Little is authorized to proceed on Phase I construction documents. The first meeting of the Development Committee is held.

1999 Groundbreaking. Construction begins.

2000 Volunteers erect play structures and participate in a Community Planting Day. Kids Together Park

officially opens. “Name the Dragon” contest is launched; children send in entries; KATAL (Kids Are Together At Last) is selected. Cary Visual Arts present KATAL dragon play sculpture by William Moore to the Town of Cary.

2001 (June 3). First annual playground birthday celebration and Play-a-Thon is held to continue raising money. Park continues to adapt to the needs of the community with improvements in equipment and additions to the landscape plantings. Community groups begin offering a variety of weekend programs.

2007 Town of Cary permits an ice cream stand to conduct business at the playground entrance.

2008 The larger community park’s 11-acre area is dedicated as the Marla Dorrel Park.

Design

Type: New construction. Substantial landscape intervention to create topographic form.

Principal elements: Entry sequence (parking, driveway, pedestrian access). Picnic shelter/bathroom building. Basketball court adjacent to parking, outside of main park area. Connection to Cary greenway system. Curving, intersecting primary pathway system. Three contrasting play areas: vertical, compact play structure; dispersed, horizontal play structure; playhouse area for families with young children. KATAL dragon play sculpture. Resting and social gathering spots (also public art interventions).

Behavior settings: More than 30 individual settings are identified through behavior mapping; these are grouped into 12 main types of play setting.

Challenges: Raising sufficient funds to complete the playground in a single phase. Resolving the issue of a delineated wetland boundary. Resolving the boundary with adjacent residential development to avoid NIMBY reaction. Generating a discussion of programming potential for the playground, i.e., ensuring that in the future it would be possible to accommodate programming staff – either from the municipality or from external groups.

Key decisions: Choosing standardized manufactured play equipment or custom-designed settings. For reasons of cost and liability, the former approach was taken. KATAL dragon is a major custom-designed setting; it constitutes public art rather than play equipment. A water play feature was originally eliminated from the program because of water conservation issues in Cary at the time. Now re-instated (2010).

Evaluation: A post-occupancy evaluation was published (Moore and Cosco, 2007). Behavior mapping demonstrates variable use by setting. Nearly three-quarters of use (72%) occurred in only five types of setting (composite play structures, swings, pathways, gathering settings, sand play). Social gathering settings are well used. Family visits with the member with a disability demonstrated the complexity of “universal design” and “accessibility” issues. The main attraction is not specifically “accessible equipment” but the social

ambiance, ease of movement around the space, feeling of nature, and shade. A high level of naturalization (affording shade and aesthetic appeal), combined with ample social gathering settings, most likely explains why the playground is so popular, attracting multiple visits – including visitors from across the county.

3. Natural Learning Area, Heritage Park, Raleigh, N.C. Urban context

The Natural Learning area is located on a 1.5-acre remnant site adjacent to the Raleigh Housing Authority Heritage Park public housing community center. It is open to the immediate housing community but was developed specifically to serve the needs of children, particularly those enrolled in the child development and after-school tutoring programs.

Significance

The park is an example of how a small, unused “leftover” space can be transformed into a useful community outdoor facility to support existing, innovative, community-based education programs.

Mission: To create a Natural Learning Area to serve the Heritage Park Community and the programs based in the community center.

Design process summary

2001 NLI is approached by the Junior League of North Raleigh (JLNR) to assist with a project to create a diverse outdoor natural learning area (NLA) to serve the needs of the Community Learning Centers (CLC) program. JLNR commits the bulk of projected costs.

2002 Design workshops are held with community stakeholders and children. A design program is developed. The overall phased master plan is developed by NLI. A groundbreaking ceremony is conducted with the Raleigh City Mayor, Raleigh Housing Authority leadership, JLNR leadership, CLC leadership, and other community leaders.

2003 Harriet Bellerjeau, landscape designer, is appointed to produce construction drawings and provide site supervision. Work advances slowly while additional fund-raising is conducted. The need for a new entry to the community center, to connect directly to the NLA, is discussed and funding is secured (an addition to the original scope).

2006 Phase one construction is completed. Trees Across Raleigh with N.C. State “Service Raleigh” students organizes an autumn tree planting with plant material donated by a local nursery. The project is dedicated through a ribbon-cutting event. The community garden remains to be implemented.

Design

Type: New construction in a remnant space adjacent to the existing community center in a 1970s public housing development.

Principal elements: An existing community center with a new doorway connecting a classroom to the NLA. A curving, concrete pathway system connecting to other new NLA entrances. An existing basketball court. A central multipurpose lawn. A pergola for gatherings. A preschool play area. Diverse natural exploration settings. A community garden and spray play water area (phase 2).

Behavior settings: Based on results of workshops with children and stakeholders, 13 settings were included in the master plan.

Challenges: Understanding access and circulation issues, including accessible routes, for different user groups of the community center to ensure children were secure in the NLA during open hours. Raising sufficient funds to complete the project (beyond substantial commitment of JLNR). Achieving a feasible management plan for the new landscape without an institutional precedent. Getting the community garden off the ground without help from a local community garden technical assistance organization – still waiting to be implemented.

Key decisions: Creating separate entry and circulation routes for different user groups. Delineating project boundaries, fence lines, and a phasing plan.

Evaluation: Future evaluation measures: number and diversity of programs and participation rates by residents and other user groups. Number and diversity of informal users of NLA by setting type. Interviews with community and JLNR leaders and community children.

4. Edible Schoolyard, Greensboro Children’s Museum, Greensboro, N.C.

Urban context

The Edible Schoolyard is a teaching garden and kitchen located at the Greensboro Children’s Museum (GCM), which was founded in 1999 in downtown Greensboro within the developing Cultural Arts District. The Edible Schoolyard’s 0.6-acre facility is the first phase of a plan to develop outdoor play and learning environments in the four acres surrounding the museum (housed in a former automobile showroom and currently attracting 130,000 visitors annually).

Significance

GCM is the first children’s museum in the country to have an officially licensed Edible Schoolyard, which directly addresses the national childhood nutrition crisis (N.C. is the 16th-ranked state in obesity rates) through a hands-on “seed-to-table” teaching garden. The facility is modeled after the original Edible Schoolyard at Martin Luther King, Jr. Middle School in Berkeley, Calif., founded in 1995 by Alice Waters, owner of the Chez Panisse restaurant and promoter of organic, local farming principles. The schoolyard is an example of a successful grassroots project with multiple partners, including the Chez Panisse Foundation, N.C. State University, local farm-to-table restaurants, the Greensboro-area slow food movement, and many local businesses and civic



Heritage Park Natural Learning Area. Children’s design workshop facilitated by NLI. *Photo courtesy of Robin Moore.*



Edible Schoolyard on opening day (May 22, 2010) showing vegetable beds, central “ramada” meeting place (left), and main entrance pergola from museum building (right). *Photo courtesy of Robin Moore.*

organizations engaged in forging a new cultural direction for Greensboro – including owners of the first Platinum LEED hotel in the U.S. (see “Student Connection,” in this issue). Scores of volunteers were involved in fundraising activities.

Mission: The mission of the Edible Schoolyard is to create a natural, playful environment for the exploration, discovery, and preparation of edible plants, and the social experience of eating together; and to engage the regional organic farming, restaurant, and educational community in supporting the Edible Schoolyard as a sustainable enterprise.

Design process summary

2006 GCM engages in an intensive strategic planning process to develop an Educational Plan, which contains the objective to develop a teaching garden and kitchen.

2007 Melanie Soles, Chair of the GCM Board of Trustees, initiates the project. Betsy Grant (former Executive Director of Lynn Meadows Discovery Center, Gulfport, Miss.) is hired as the new CEO to implement the Educational Plan.

Discussions are initiated with the Chez Panisse Foundation to develop an Edible Schoolyard. NLI is appointed to develop a conceptual master plan for the museum’s outdoor environments, including addressing

access issues from the immediate surroundings. The access plan receives Board approval. The area north of the museum building is selected as the Edible Schoolyard site. The south area is selected as the Outdoor Play and Learning Environment for later development.

2008 The schematic design by NLI is approved by the Board. Carla Delcambre, ASLA, is appointed to develop construction documents with David Swanson Associates, Executive Landscape Architect. The project is delayed because of the economic recession. J. Hyatt Hammond Associates is appointed as the construction supervision architect.

2009 Groundbreaking and three-day, multi-pronged fundraising extravaganza is held, with guest of honor Alice Waters. Dozens of volunteers, local organizations, civic organizations, and political leaders are involved. Construction of Edible Schoolyard is underway. Staff are appointed: Charlie Headington, Ph.D., permaculture expert, Director; Eleanor Farlow, B.S., Garden Educator; Anne-Marie Scott, Ph.D., R.D., Kitchen Educator.

2010 (May 22) Edible Schoolyard opens.

Design

Principal elements: Entrance from the existing museum building. A curving, primary pathway. An existing commercial indoor kitchen and adjacent outdoor dining patio. An outdoor kitchen and covered dining

area in a converted small barn. Outdoor classroom with composting facilities, tool shed, potting facilities, and materials storage. Central “ramada” gathering area. Chicken house. Pizza garden with accessible beds and an outdoor mud oven. Mud Café. Infant/toddler garden. Pond. Rain water harvesting and re-use irrigation system. Planting beds with secondary and tertiary pathways. Fruiting trees and extensive, vine-covered pergolas and arbors to provide shade.

Behavior settings: Sixteen distinct learning areas are included in the final design, along with the system of planting beds, which will afford a diversity of learning opportunities according to programs being offered and the season of the year.

Challenges: Getting the design implemented on the ground. Raising sufficient funds for the “minimum viable project” so the program could be launched.

Key decisions: The top layer of poor soil was removed and replaced with high-grade top-soil and organic compost. The strategy also extracted highly invasive, problematic Bermudagrass.

Evaluation: Future evaluation measures: number and diversity of programs and participation rates. Income generation by programs, special events, and rentals. Number and diversity of informal users of Edible Schoolyard by area type. Measures of nutritional and science learning behaviors. Assessment of market reach of programs and users. Longitudinal study of impact of programs on positive changes in nutrition behavior such as in food shopping, food production, and eating behavior.

Long-term goal: To affect statewide community nutrition education policy and provision in relation to early childhood, school populations, and residential neighborhoods.

Promoting Children’s Environments within North Carolina Urban Development Policy

Each successful NLI project reflects the vision and persistence of an individual within a larger community organization, often supported by a larger group of volunteer citizens. Typically, several and sometimes many fundraising years are involved before the project becomes a built reality. How can this level of performance be improved to the point where North Carolina becomes an undisputed leader in the development of healthy urban childhood environments? A review of North Carolina developments that are directly or indirectly related to the built environment may provide a useful record of success and a frame of reference for positioning future action.

Statewide initiatives

North Carolina exhibits extraordinary leadership potential for demonstrating new and necessary attention to children- and family-focused built environments. The state has been a leader in early childhood development for many years, beginning in 1993 with the creation of the N.C. Division of Child Development and the North

Carolina Partnership for Children (Smart Start) under the leadership of then-Governor Jim Hunt.

Because of the early leadership in developing early childhood policy from the practical perspective of children’s development, it makes sense to address early childhood development separately from the broader childhood realm. This is significant for urban planning because it is a sector of government with a multifunctional spatial mandate and an ability to link the behavioral needs of users to performance requirements of the built environment. If the early childhood connection is not immediately obvious, let us remind ourselves that the location of childcare facilities is crucial to the daily home/work activity pattern of commuting parents with young children. Moreover, families need to engage in outdoor lifestyles to maintain good health (Centers for Disease Control, 2008). In the public realm, are there settings offering early childhood-friendly affordances? Are they provided in the streets and other public-realm settings in residential neighborhoods – in community parks, for example?

Outdoor Learning Environments (OLE) Alliance: In 2006, a substantial network of early childhood professionals launched the OLE Alliance to focus on improving the quality of outdoor environments in childcare centers across the state through advocacy and professional development. Many conference presentations, workshops, and advocacy initiatives have been offered since.

Preventing Obesity by Design (POD): Building on the successful efforts of the OLE Alliance and beginning with a 2008 pilot project (now in partnership with Smart Start, with support from the Blue Cross Blue Shield Foundation of N.C.), NLI is leading an intensive statewide grassroots effort to get childcare children to spend more time outdoors. The strategy involves improving the physical quality of childcare center outdoor areas along with professional training of teachers to provide skill development and resources for outdoor play and education. Model demonstration and training sites are being developed in selected counties across the state.

The North Carolina Children and Nature Alliance (NC CAN): A broad group of statewide stakeholders gathered in April 2008 at the N.C. Zoo for a Leave No Child Inside Conference to look at cooperative efforts to promote getting children outdoors and connected to nature. At a second meeting in Raleigh in September 2008 – facilitated by Allen Cooper, a policy consultant from the National Wildlife Federation – a steering committee was formed to develop a draft vision, mission, goals, and organizational structure, which was presented at the second statewide stakeholders meeting in February 2009. Participants endorsed the establishment of NC CAN (an affiliate of the national Children and Nature Network) and developed a draft strategic plan, which was endorsed at the third statewide meeting in March 2010. A proclamation signed by N.C. Governor Bev Perdue was presented.

Links to these organizations and other statewide

health promotion initiatives with potential built environment dimensions are listed below.⁵

National initiatives

Two national initiatives may offer a direct, positive urban design impact on children's environments.

*Leadership in Energy and Environmental Design-Neighborhood Development (LEED-ND):*⁶ Just as LEED for buildings has so rapidly become the benchmark for "green building," LEED-ND – which defines a set of standards "beyond the building" – is likely to become the most significant frame of reference for wise practices for the built environment. The next step must be to assess the LEED-ND standards in relation to the needs of children and families as they may be applied to the built environment in the Carolinas. Such an exercise was conducted by a national group of interested parties and submitted to the LEED-ND committee during the final public comment period.

The Sustainable Sites Initiative (SSI): This equally important current achievement through a partnership between the American Society of Landscape Architects (ASLA), the U.S. National Botanic Garden, and the Lady Bird Johnson Wildflower Center focuses attention on the most common scale of landscape architecture practice (the site) and therefore also the scale most relevant to children and families.⁷ Of particular note, in contrast to the LEED-ND, the SSI highlights the social context and social value of sustainability. In other words, SSI frames sustainability as a socio-cultural issue that must address built environment sustainability performance objectives that can be technically addressed by landscape architects. Again, the SSI must be translated into recommendations related to the needs of children and families, particularly naturalization components for play and learning. In this form, the SSI will provide North Carolina communities with a frame of reference for integrating the needs of children and families into landscape architecture practice.

Modifying development codes: As we know, out-of-date municipal development codes are sometimes in conflict with best practice as defined by newly emerging standards of best practice for sustainable development. Many efforts are underway to reform "the code" as it currently exists, including in the City of Raleigh.⁸

Professional development: Re-thinking the role of cities, the re-emergence of urbanism as a positive cultural discourse, and the rapid pace of adoption of "green building" and sustainable development goals reinforces a sense that "now is the time" for reviving and reframing a discourse about children, families, and the built environment – particularly in urban planning. Hence, in 2008 NLI launched the Growing IN Place Symposium (www.naturalearning.org).

Engaging children and youth in the process: Involving

the potential users in community design projects has become standard practice in progressive design firms and forward thinking public institutions. Professional expertise and best practice guidelines have consequently grown, including recent publications from the Growing Up In Cities international program (Chawla, 2000; Driskell, 2002). The latter publication offers an up-to-date compendium of approaches and methods for working with children and youth, and it is readily adaptable to Carolina communities. The NLI website offers examples.

Conclusion

Given growing concerns about children's declining physical health, the potential has never been greater for developing new urban design policy to guide the creation of child- and family-friendly urban environments. Proven environment-behavior methodologies are available that link research and practice; these methodologies can be applied in developing an evidence base for design and evaluation protocols for built projects. Over time, small, rich, easily accessible spaces can be created to attract children and families to engage with nature, to play and learn outdoors. The "big vision" is to imagine these spaces linked by a fine network of safe pathways (sidewalks, alleyways, trails, greenways) allowing children to independently walk and bike with their friends to create their own healthy, outdoor adventures. To pursue this potential for change, children's environment professionals must work across disciplines, reaching out beyond silo walls to foster collective action with planners and other professionals who are working to improve the built environment for all people.

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Endnotes

¹ The Natural Learning Initiative (NLI) was founded January 1, 2000, at the College of Design, North Carolina State University, by Robin Moore and Nilda Cosco, with the mission: "Creating Environments for Healthy Human Development and a Healthy Biosphere for Generations to Come." Primary NLI activities include community design assistance, research, and professional development. See (www.naturalearning.org).

² This idea was initiated during a personal meeting with Bronfenbrenner in Rotterdam in 1984, during a conference of the International Association for the Child's Right to Play, where he was a keynote speaker. Through subsequent correspondence, the modified model was included in *Childhood's Domain* (Moore, 1986), which was also influenced by Pia Björklid's (1982) research from that same era. Bronfenbrenner's model also influenced her investigation into the effect of different housing forms on children's outdoor behavior (an early application of behavior mapping).

³ Examples of design programming processes can be reviewed at <http://www.naturalearning.org/services/design.htm>

⁴ For downloadable program and master plan see <http://www.naturalearning.org/showcase/projects/walnutcreek.htm>

⁵ Outdoor Learning Environments Alliance (<http://www.poemsnc.org/OLEbrochure.pdf>), NC Public Health Physical Activity and Nutrition (PAN) Branch (<http://www.ncpanbranch.com/>), Be Active North Carolina (<http://www.beactivenc.org/>), and North Carolina Children and Nature Coalition (NC CAN – <http://www.ncchildrenandnature.org/web/blog/index.html>)

⁶ <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=148>

⁷ <http://www.sustainablesites.org/>

⁸ Google "Raleigh's New Development Code."