Chapter 30
Developing a Safe, Nurturing and Therapeutic Environment for the Families of the Garbage Pickers in Guatemala and for Disabled Children in Bosnia and Herzegovina

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Abstract This chapter focuses on the role of natural places in rebuilding children's lives concurrent with a disaster, and on how the rebuilding of a place for safe play, learning and skill building can help children endure and move beyond the immediate effects of the disaster in the red zone. Through the exploration of two case studies, in Guatemala City and in Bosnia and Herzegovina, respectively, we show how garden creation and natural space design play a role in recovery after disaster.

Cast out of their villages, Mayans resettled around the garbage dump in Guatemala City. In 2004, children were banned from the dump and now stay at home without supervision. In 2006, the University of Washington Landscape Architecture Design/Build Program designed a portion of their school facilities and assisted the community in transforming the donated decommissioned dump site into a therapeutic garden. This environment is designed to help the children learn about the natural world, their culture, science, math and writing, gain vocational skills, and ultimately reconstruct their lives in a healthier and constructive direction.

Surviving years of ethnic cleansing, disabled children in Bosnia and Herzegovina face severe discrimination in their villages. Families are left to care for their children suffering from autism and other disabilities with little support. Many have self organized and advocate for and provide care to their children. Many of these providers suffer from their own war related injuries. In 2009, we collaborated with the Community Gardening Association of Bosnia and Herzegovina to create gardens to meet the rehabilitation and therapeutic goals of two associations serving disabled children. The gardens are designed to offer a variety of support activities including horticultural therapy, drama, music and art therapies, active recreation and contemplative escapes.

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Professor and landscape architect Daniel Winterbottom describes gardening projects for children resettled around a garbage dump in Guatemala, and disabled children in Bosnia and Herzegovina. Through a participatory process engaging the children, their parents, teachers, and therapists in design, Winterbottom and his students created gardens that offer horticultural, drama, music, and art therapies, active recreation, and contemplative escapes.

The Design/Build Lab

Our design/build lab at the University of Washington enables students to work with communities to address issues of social injustice, post-conflict reconstruction and therapeutic interventions. Service learning and cultural exchange are at the core of the design/build program, which engages students in overseas experiences. We collaborate with marginalized populations who have undergone traumatic stress and join their efforts to bring basic necessities, hope and healing to their communities.

We have worked in two red zones. In Guatemala we partner with displaced highland villagers who fled their homelands during the 30-year genocide seeking safety in the crime ridden barrios of Guatemala City. They now face desperate conditions including extreme poverty, poor sanitation and fragmenting family structures. In Bosnia and Herzegovina (BiH) we partnered with communities who advocate for recognition and support for their underserved children coping with cognitive and physical disabilities. They receive little support as the country suffers from post-war corruption, a breakdown of services, a poor economy and continuing ethnic strife.

With a decade of experience of greening in these red zones, we have learned from our past projects and ongoing research how to effectively design and build gardens for people facing displacement and trauma, whether induced by human or natural disaster. Central to our work is an intensive participatory community design process to engage the participants in informing the designers about their unique cultural, physical and emotional needs and aspirations for the future. Ongoing exchanges with the community are essential resources for project planning from conceptual stages through site design. Our pre-project orientation consists of readings and discussion of cultural traditions and histories, studies about children's experience of war and trauma, and design strategies for therapeutic gardens.

Impacts of War and Displacement on Children

In the aftermath of war, the loss of a familiar safe home environment with its reliable social structures can result in the loss of identity, social status and culture (Kostelny 2006). The protective factors that support most children – nurturing relationships with care providers, supportive relationships with peers, meaningful interactions with adults, and positive cognitive and emotional stimulation – can be lost in the struggle to secure the basic needs of shelter, food, water and healthcare. Many parents suffer from severe depression, substance abuse, and loss of self-esteem resulting in fragile attachment relationships with their children.

The majority of the Guatemalan families living at the dump fled their Mayan villages in the highlands of Guatemala in the late 1980s to escape unrelenting poverty, inequity of land distribution, and the destructive entanglements of a 30 year civil war. Most settled around the dump because it offered unskilled employment and vacant land. For the children, the legacy of displacement is growing up in the sprawling shanties, exposed to toxins and a poor diet. Education is meager with parents absent or working. Gang predation, sexual abuse and violence are common. Municipal and national government corruption ensures that a network of educational and social services and a reliable system of law and order are inaccessible to these families. The need is enormous and a small percentage receives help from the many NGOs like our partner, Safe Passage.

From 1992 to 1995, Bosnia and to a lesser extent Croatia and Serbia, were devastated by ethnic cleansing. Mixed families were split apart, neighbors attacked neighbors, criminality flourished, and children became scarred by the atrocities they witnessed and the depravities they endured while trapped in the red zone (see also Laćan and McBride, Chap. 22, this volume). Twelve years later, those struggling with the physical and emotional scars of war, amputations and post traumatic stress are left to rebuild their lives and social institutions. The corruption that arises in a broken political and economic system breeds cynicism. Access to nature is restricted by land mines, and much of the urban fabric remains torn apart by bombings. Optimism is fleeting for the country's younger generation who inherit the tragedies of war and distrust.

Programs like Safe Passage and American Friends Service Committee in BiH restore these families by establishing safe places, where children and their parents can develop resilience, empowerment and control over their lives. Community activities that reinforce cultural values and offer participation in recreation, sport and vocational education help develop physical, psychological, and social abilities (Arafat and Musleh 2006). In a study of Palestinian children suffering war trauma, it was found that 90 % of the children identified 'self-improvement efforts as their primary means of coping with life events. Forty percent preferred to keep busy by participating in activities such as sports, arts and family events' (Arafat and Musleh 2006).

Enrollment in school and participation in educational programs has been identified across cultures as having a significant role in reducing trauma and stress,

increasing self-esteem and resilience, and building basic life skills and coping mechanisms for children (Arafat and Musleh 2006; Nicolai and Tripplehorn 2003; Tripplehorn and Chen 2006). Schools' missions in these red zones can widen beyond a focus on traditional curricula to become multi-functional safe zones that support study, play and exploration, cultural celebration and therapy.

Well-child programs can be designed to be integrated into school curricula, whereas facilities offering therapeutic rehabilitation for children with disabilities use applied learning to improve educational outcomes and provide vocational development. This is the intent behind the Children's Garden of Hope and the Healing Gardens of the NGO Leptir and the Institution for Education and Training of Persons with Physical and Psychological Developmental Disabilities (IETPPPDD) in BiH. They create therapeutic green zones where learning, working and playing with others instills hope and offers a safe haven from the trauma of red zone atrocities.

Role of Nature in Children's Development, Education and Well-Being

Green spaces offer many benefits for children including play, education, nutrition and vocational skill-building. For children suffering from emotional and social disabilities, helping to care for and cultivate a garden offers a distraction from memories of pain and loss. In a safe, natural environment children can feel free to explore. Stress is reduced as they engage in activities that hone fine and gross motor skill development, improve social interactions, and develop self-esteem (see also Wells, Chap. 7, and Chawla, Chap. 8, this volume).

Adventure therapy offers a therapeutic model in which nature presents subtle challenges for children who are having difficulties coping with boundaries, authority and physical engagement (Berger and Mcleod 2006; Garstet al. 2001; Kaly and Hessacker 2003). Unscripted play itself promotes a healthy self image as children view others in socio-dramatic play or learn about the physical world as they manipulate objects and predict change (Gomez 2005). Equally important are observation and solitary reflection to discover who they are. The outdoors provides many opportunities for children to engage in introspection (Louv 2005).

As a therapeutic tool, play has been used to address the effects of disaster on children. For example, in a controlled study, Shen (2002) found play therapy to be effective for children who had experienced a destructive earthquake in 1999.

Nature therapy offers a counterpoint to more traditional static psychological therapies where the setting is dynamic and nature is conceived as an active partner in shaping the therapeutic process. Immersed in a continually evolving environment, participants face issues related to the uncontrollable and the unexpected and are challenged to develop flexibility and other coping mechanisms.

Children's Garden of Hope, Guatemala

The traditional villages in the Mayan highlands are close knit with distinct identities and established rules and rituals. Village identity is lost in displacement. The lack of social cohesion offers no safety net for migrants to the city, and with little education, poor nutrition, and bad air quality, and lacking electricity, running water or plumbing, they are locked in a constant struggle to meet their basic needs of food, shelter and health. Many children are left at home alone to care for younger siblings and drop out of school at an early age. Born into this cycle of poverty, children are compelled to follow their parents into the work of garbage picking or to join violent gangs that aggressively recruit children as young 12 years old.

Partners

The Children's Garden of Hope project began with a vision and a partnership between the University of Washington and Safe Passage, which helps the poorest of Guatemala's children break out of poverty in a dignified and permanent way through education. Safe Passage offers a wide range of services to families and supports the enrollment and attendance of children in public schools. Safe Passage acquired decommissioned dump land for their pre-school and vocational schools and asked the University of Washington landscape architecture design/build program to extend its goals for therapy, education and recreation to this landscape. As a safe zone, the gardens would provide a natural environment where children, supervised and nurtured, would feel secure and find their stresses reduced. Here the childhood denied to so many could be rediscovered, and social skills acquired and relationships with family solidified. The garbage dump, transformed into a green zone, would be a refuge in the middle of a neighborhood torn apart by poverty, violence and despair.

In the first phase of the project, a series of meetings with our team of 18 landscape architecture students and community members identified the following needs:

The Parents (all women)

- Places for parents to socialize, talk and spend time together, knowing their children were safe and engaged in activities of their own
- A walled green zone with supervision at all times
- A place with abundant vegetation, lots of color (flowers) and wildlife. Plants that reminded participants of their homeland
- Areas to raise food and learn gardening so they could share their skills with their children
- A place for celebrations
- Play elements for their children
- Walking paths
- Seating in the shade

Teachers:

- An outdoor classroom
- A diverse range of gardens including play, production, mystery and ethno-botanical
- Clear sight lines so the children could be seen anywhere within the park
- Interpretive elements about the plants, insects, physical fitness, ecological systems and Mayan beliefs
- Play areas for children

The children:

- Places to explore, climb, play and run
- Range of places, quiet and hidden, active and open
- Mountains, castles, caves, forts, forests and open lawn
- Soccer field
- Flowers, plants and fruit trees
- Animals and insects
- Picnic tables

The goals for the Children's Garden of Hope Park were:

1. Create a park to support all aspects of the children's development, including psychosocial, physical, educational, emotional, vocational, and life skills
2. Create a safe refuge where confrontation and threat would be eliminated and adult supervision provided at all times
3. Create a nature habitat that is stimulating, nurturing, challenging, accommodating and healthy
4. Provide a series of spaces that celebrate the mix of cultures with social gathering areas, and places for adventure, reflection and food cultivation

Park Description

The Children's Garden of Hope is walled and gated to secure the site from land invasions and provide protection for the children inside. It is easily accessed by the families who walk their children to the school/park. Located on a decommissioned dump, the land is capped with imported soil. Trees are planted to absorb soil toxins through phyto-remediation and hedgerows are planted to serve as catchments for migrating air-born particulates.

A pre-school serving 150 children and a vocational school are located on the site. In 2006 we designed and built an entry sequence linking the two buildings that serves as the formal gateway. A paved plaza surrounded by sensory and habitat gardens provides a gathering area for mothers picking up and dropping off their children and accommodates school celebrations and recreation such as tricycling, court sports, and jump rope. It also functions as an outdoor classroom, and as a collection point, mediating the transition of activities between the pre-school and the park. An arbor creates a passageway from the entry gate into the park and provides shade for seating in two

suspended porch swings. A small children's exploratory garden is located near the arbor with several interactive elements for fine and gross motor skill development.

In 2007 in a second phase of the project, we designed and installed an adventure playground for the preschool. This play area offers activities that enhance curriculum and address the schools' goals of social, physical and cognitive development for the children. An elevated deck/bridge structure winds through the existing trees, expands to create gathering spaces, and provides links to slides and ladders and other formal play elements. The lower rooms, beneath the deck, are designed for play, performance and gathering. Small gardens, raised turf mounds and trees are integrated into the play area to create a verdant green zone of exploration, cultivation and nurturing.

Healing Gardens of Bosnia and Herzegovina

An estimated 120,000 people with special needs live in BiH, and most receive no public support. Disabled children, shunned by their peers and adults, are kept out of view. Facilities for the children and their families are rare and operate with little funding, resources or skilled care providers. Hope for a productive, integrated future for these children is limited.

In the summer of 2009, underwritten by American Friends Service Committee, I brought five university students to Bosnia to design and build two demonstration restorative gardens for severely disabled children, one in Tuzla supported by the state-run IETPPPDD and the other in Bugojno supported by the NGO Leptir.

State-run institutions in Bosnia tend to be bureaucratic systems, rife with patronage. IETPPPDD serves 60 disabled children and is staffed by government employees. The passion for the children was noticeably restrained and institutional. The range of disabilities includes autism, Down syndrome and other cognitive disabilities. Physical disabilities include loss of sight, cerebral palsy, physical deformities and loss of limbs. The programs offered are occupational training, physical and speech therapies, music, reading, crafts and drama.

Leptir is a grass roots organization that advocates for the rights of disabled children. They rely on volunteers and sweat equity and are determinedly child centered. Leptir provides educational and rehabilitation programs for 20 patients ages 7–16, three days a week and for 10 younger patients every day. Through occupational, physical and speech therapies, and crafts, drama and martial arts, the patients improve their social, physical and cognitive skills.

Institution for Education and Training of Persons with Physical and Psychological Developmental Disabilities Garden

IETPPPDD's staff envisioned a therapeutic park for horticultural therapy, play, vocational training and performance. Before our arrival, *the Community Gardening Association of Bosnia and Herzegovina (CGABH)* conducted staff and parent focus groups.

The results include the therapist's desired elements

- Outdoor classroom
- Outdoor atelier (divided into three smaller plots: modeling, painting & horticultural activities)
- Recreation spaces
- Horticultural therapy garden
- Relaxation, rehabilitation and occupational gardens
- Sensory gardens
- Peace garden
- Zoo/petting, healing garden
- Dwarfs' garden
- Hanging mini-gardens and flowerbeds
- Stage
- Shade house – arbor
- Water element
- Swings, slide and see-saw
- Sand boxes

The parents' and patients' desired elements

- Recreation spaces
- Lawn
- Relaxation, rehabilitation and occupational gardens
- Forest garden
- Nursery garden for flowers and plants
- Relaxation music garden
- Pets garden
- Garden with dwarfish plants
- Swimming pool
- Coffee place – bar
- Sandbox
- Eco and video classrooms – outside
- Water element

The design features a 40-ft diameter central mound for crawling, climbing, rolling, and seating to view performances on the stage 12 ft to the north. The grass mound is a gathering area and focal point and mediates between active and quiet zones on either side. The zone closest to the building holds the most active elements and these are linked for a sequence of therapeutic play. At the building entry, stepped raised beds for horticultural therapy and vegetable production are easily accessed by a path designed to meet disability standards, and establish a formal connection into the garden for the most impaired users. A 'stage' for performance and events also serves as an outdoor classroom. Integrated into the stage are monkey bars and a ramp, transitioning into the most active physical play. The adjoining space has balancing elements built from donated tires and left-over timber cut-offs. On the opposite side of the mound a contemplative zone supports quiet activities. There is a calming

shade arbor with a bench swing where children can relax, read with care providers, and quietly socialize. Adjacent to the arbor is a sensory garden with shade trees.

The therapeutic benefits of the garden extend to the staff who work and teach in this rehabilitative environment. They use it as a natural refuge and nurturing place during non-work hours. During the war all of the CGABH staff remained in Bosnia. One, Dragan, served in the BiH army in Sarajevo and offered moving personal testimony of the near incomprehensible difficulties of living and fighting under siege (see also Laćan and McBride, Chap. 22, this volume).

Therapeutic gardens are unfamiliar prototypes in Bosnia, and care providers are intrigued with their potential. They are challenging themselves to integrate new activities into their teaching and design their curriculum around the new spaces. The local neighborhood youth, who participated in the construction process, gained an understanding of the association and the children they serve, which may reduce the stereotyping and marginalization of disabled children. When the participants returned in the fall, the garden was a compelling reason to go out outdoors and IETPPPDD has continued to build upon what was initially built.

The Healing Garden at Leptir

For 15 years, the parents who founded Association Leptir have been raising disability awareness. Leptir serves 30 children a year through physical, occupational and speech therapy and art classes. Our site, the front yard, was visible from a well traveled pedestrian street. The garden space functions as a therapeutic environment and because of its visibility, promotes equality for children with disabilities by folding them into the community.

A needs assessment of LEPTIR staff, administrators and parents yielded the following results:

- Garden to walk through
- Vocational garden
- Lots of nature
- Relaxation gardens
- Stage for drama
- Active play area
- Rehabilitation elements
- Climbing mound
- Tree house
- Accessible raised beds
- Seating

The site's assets included three shade trees, an open field to the north, and the relative quiet of a residential neighborhood. The elevated finished floor at the front yard limited access into the building.

The design solution included an accessible path and ramp system to bring all participants into the facility and to link the spaces on either side of the existing entry path, creating a single whole legible space. To the north the path, inlaid with blue tile butterflies, arcs around a 4-ft high lawn mound transitioning into a wooden ramp accessing the raised front porch. Lined with sensory plants, this path provides a pleasant, stimulating passageway for those entering the association building. Flanking the path are two, 4×8 ft raised planters for the horticultural therapy program and between them a lawn area is equipped with balancing tire structures for physical therapy. The porch opens onto a stage for dramatic productions, play activities, structured learning, and rehabilitation activities. Crossing the existing entry path the circulation continues in concrete, then transitions to a raised wooden boardwalk. Wheelchair users can garden side by side at a cantilevered work table and raised planter with participants who stand along the boardwalk. Posts at the boardwalk support a set of monkey bars above and stairs lead to a tree house. Limited space precluded construction of wheelchair access to the tree house, but the majority of the participants are able to climb and the tree house has an open design to allow visual contact with any wheelchair participants below. Beneath the tree house is another set of monkey bars sized for the younger participants. In addition, the boardwalk leads to an arbor bench swing, sandbox and climbing wall.

The gardens at Leptir and IETPPPDD facilitate access for the participants, provide places and elements that complement the goals of rehabilitation, and facilitate activities that each association has adopted within their programs. The increased accessibility through the sites, play and recreational opportunities, nature interactions, and gardening beds support the process of rehabilitation in a manner that is engaging and natural to children. The bench swing is a place where both disabled and able bodied children come together and share the experience of motion around which they develop camaraderie. Mothers and siblings help their children climb onto the tires, balance beams and monkey bars, and guide them across the challenge courses, providing a shared experience of accomplishment. On the mound, families come together to enjoy the productions that their children have created, and here the larger community meets to witness the talents and progress of their children and offer support to each other. In Leptir the gardens represent the hopes of the parents – that their children can play and thrive in public, and that those unaware of children with disabilities will develop a different and more compassionate acceptance of them.

Lessons Learned

Our involvement in all three projects coalesced around a shared belief in the therapeutic benefits of nature. Our community design/build process is adaptive and highly effective in these small-scale, need driven projects of place making. Partnering is key and we have learned that our liaison with the non-profit needs to be a strong connection. We need to establish trust in one person who can move the project

forward through impediments and who is available for the duration of our work. Our projects succeed to the extent that they are an exchange, not a handout, of skills and labor, creativity and resourcefulness, understanding and good will.

The participatory process is very informative in assessing community needs and perceptions; however greater input from physical, occupational and child therapists would enhance the design team's ability to address the children's specific disabilities. As an evolving process, the next phases will include this form of participation. Community buy-in could also be expanded. Working with Leptir, a community run organization, we were able to continue our interactions with the community and solicit their opinions throughout the project. In Guatemala and at IETPPPDD, there was less continuous interaction with community members. In Guatemala the families worked in the dump and had little time to give to the project. At IETPPPDD, a state run institution, community input was not part of the traditional operational process. In both places, methods would need to be developed to increase community engagement.

Many students would like to have more contact with the trauma victims so they can understand the effects of war at a deeper level. However, these exchanges can be disturbing. It is a sensitive issue how to expose students to the realities of a red zone in a way that they can better appreciate the effects, but not be themselves traumatized. Also, these exchanges need to protect and respect the war victims so they don't feel taken advantage of, or treated as oddities.

Disabled children in BiH face the added effects of discrimination and humiliation as well as the lingering effects of the war. There are abundant research and prototypes for design for people with disabilities; less information exists how to help those with disabilities gain acceptance from their communities whose perceptions may be preset and intractable.

Our design goals derive from the strategies of nature play, play therapy, ecopsychology and nature therapy to help participants overcome the persistent effects of trauma, stress and disrupted relationships that undermine healthy growth and development. The gardens feature multiple and flexible uses, adaptable to the needs, moods and abilities of the participants and their care providers. Many of the participants suffer from mood swings, attention deficits, and hyper-activity, and a range of activities are available to accommodate needs that may change day to day, hour by hour, or minute by minute. For these children, the gardens are the one place in their growing years where, with guidance, they can choose safe places to experience reflection, verbal communication, and active group or individual play.

The primary goal of the gardens in Guatemala and BiH was to foster education, social, physical and cognitive development, and to nurture each participant through a range of nature interactions. The sensorial gardens stimulate smell, touch and visual attention and the climbing trees, jumping stones, and rolling hills encourage a physical relationship and interaction with nature. While the park and gardens represent refuge they are also an escape. Within the park and gardens the human threats of violence and abuse are removed, prejudices from outsiders negated, and the associated stress levels reduced. These are places where children can express themselves openly, stumble in their attempts to progress without fear of humiliation, and seek support among the care providers when problems or issues of self confidence,

image and reliance surface. In the gardens the stigma of being disabled or traumatized is non-existent, and children can strive, fail and succeed without a sense of judgment or disapproval, while physical and cognitive well-being and positive self-image are fostered.

Conclusion

In the three projects we found children to be quite resilient. Given their circumstances, it is extraordinary that they are willing to reenroll in school and participate in rehabilitation programs. For the older children in Guatemala, the stigmatization of being an older student in a second grade class is ever present and their willingness to attend school takes courage and strength of character. The children's resilience can mask other deeper disturbances and the use of nature play, play therapy, eco-psychology and nature therapy to elicit and help develop coping mechanisms provides a unique opportunity for landscape architects to positively affect the children and diminish the effects of this disaster.

The children of the dumps are plagued by multiple traumatic experiences, war, violence and environmental and social threats, sexual and physical abuse, lack of education, poor diets and early childhood and fetal toxic exposure. Many strategies, play therapy, counseling, journaling, role play and adventure play, have been traditionally used to address the traumatic effects and disabilities caused by disasters. As holistic environments that empower their users by offering a range of choices, the Children's Garden of Hope and the healing gardens at Leptir and IETPPPDD attempt to respond to the changing and varied conditions by providing multiple opportunities. The core of the design is found in the linkages between active and passive play activities though the network of garden elements. The gardens differ in style, character and therapeutic objectives and offer a diverse range of experiences from formal to wild, tactile, aromatic, colorful and humorous. Together, through differing exposures to nature these provide a nurturing framework. Mood swings, hyper-activity, depression and attention deficit disorders are common in the children. The range of spaces and activities enables the children through their own initiative or encouraged by a care provider to seek the most appropriate place to meet their immediate needs. Many children use the bench swings under the arbors as a source of comfort. The gentle rocking motion, the quiet shaded space, the sense of enclosure and refuge within the arbor are appealing to children feeling overly stressed, socially challenged, or seeking a calming counterpoint to intensive activities. The swing accommodates several children with a care provider and many children use this activity to passively observe children engaged in other activities within the gardens, to listen to a storyteller read or narrate a story, or to socialize. A counterpoint to the passive experience unfolds on the active elements, bridges, climbing structures, climbing mounds, tree houses and slides in the other areas of the garden. The rigorous educational support system offered by Safe Passage, overlaid upon the therapeutic benefits provided in the park, provide a two pronged strategy to support

and provide skills so the children of the dumps can break the cycle of poverty, violence and despair that defines their life at the dump. Parents are, in most cases willing to pool their already marginal resources and further sacrifice as they attempt to ensure the success of their children. A therapeutic environment will help to enable even the most traumatized children to recapture their childhood, learn coping mechanisms, and move beyond the 'dump' physically, intellectually and economically.

Elements within the gardens are designed to be multifunctional to maximize their educational and therapeutic benefits. For example, a wall with alphabet cut-outs can be used for climbing or hide-and-seek. To this end teachers and care providers participated not just in the design, but they also reviewed the ease of use, proportions, and aesthetics during the building process. We encouraged care providers to integrate the needs of their classroom curricula within the park, so that the forms, activities, plant selection, and interpretive elements will become outdoor curriculum components complementary to those in the classrooms. Tiles illustrating the fauna found in the garden are embedded in columns supporting an arbor that flanks the habitat garden in Guatemala. Teachers open the science curriculum to their students as they walk under the arbor, the tiles revealing the web of life in the garden from worms to snails, spiders, butterflies and birds. Names of the species are written in Spanish and English, so their instructional value extends to language classes as well.

In Guatemala, many of the parents came from rural environments and the play garden concept connected them to memories of nature in their childhood that they wanted to recapture and share with their children. Many of the mothers had tended gardens in their villages and longed to pass their knowledge of cultivation on to their children. The hope is that the parents' personal investment in the park will contribute to its good stewardship.

During the participatory process in Guatemala and through the input from parents in BiH, it became clear that mothers desired many activities they could share with their children. In an effort to support meaningful interactions between parents and their children, to reduce the depression affecting many of the parents, and to strengthen the insecure attachment relationships, shared activities became a priority in the programming of the park and gardens. It was also important to achieve a balance between shared activities such as gardening, education and recreation, and places for private activities, meditation, and reflection. Sensory gardens, meditative spaces, and secret paths have been included in phases two and three.

Our projects are implemented with volunteer equity and modest budgets. They are intended to be replicable where resources are scarce using indigenous construction types. In Guatemala, we used concrete mixed on site for seat walls, assisted by local craftsmen and ornamented in the local vernacular crafts.

The gardens described in this chapter may provide models for replication by the many organizations serving veterans rehabilitating from post-traumatic stress disorder, women recovering from war atrocities, refuges and returnees deprived of useful work, and disabled children. An important part of the process, one that the flexibility of the phased design/build process can easily accommodate, is to observe how the built components function and to adjust future phases as needed. In serving a unique

population and trying to understand their needs, future designers will build upon those interventions that prove to be most effective. In assessing the benefits of these three projects, early observations indicate the goals of the gardens are being met, producing significant benefits for all of the users.

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