



LATIS 2011

Landscape Architecture Technical Information Series Number 1

Forum on Therapeutic Garden Design

2nd Edition

Part 1: Therapeutic Gardens in Healthcare Settings

Part 2: Environmental Sources of Wellbeing



AMERICAN
SOCIETY OF
LANDSCAPE
ARCHITECTS



LATIS

Forum on Therapeutic Garden Design

Copyright (c) 2005, 2011
by the American Society of Landscape Architects
636 Eye Street, NW
Washington, DC 20001-3736
202 898 2444
www.asla.org
First edition 2005
Second edition 2011

Library of Congress Catalog Card
Number 84-07-1877
ISSN:0195-5764

LATIS and this special LATIS Forum are produced
by ASLA as an education service to the profession
of landscape architecture.

IMAGES

Cover photos:

Lower right: Image courtesy Mark Epstein, ASLA

Upper left: Image courtesy Sonja Johansson, FASLA

Contributors:

Barnes, Marni, ASLA

Carman, Jack, FASLA

Carman, Nancy

Chambers, Nancy

Cooper Marcus, Clare, Honorary ASLA

Cosco, Nilda G., Affiliate ASLA

Epstein, Mark, ASLA

Johansson, Sonja, FASLA

Kavanagh, Jean Stephans, FASLA

Luymes, Don

Mooney, Patrick F., ASLA

Moore, Robin C., Affiliate ASLA

Publisher's Note:

The American Society of Landscape Architects publishes the Landscape Architecture Technical Information Series (LATIS) to encourage professionals to share specialized expertise relating to landscape architecture. ASLA considers LATIS papers to be important contributions to a necessary and ongoing dialogue within a large and diverse community of landscape architecture researchers and practitioners. ASLA oversees a rigorous peer review process for all LATIS papers to ensure accuracy of content. Each author offers a unique perspective on the practice area covered, reflecting his or her portfolio of professional experiences.

The LATIS Forum on Therapeutic Landscapes discusses the practice of creating landscapes to support human health and wellbeing. Unlike other papers in the series, this LATIS Forum is a compilation of contributions from numerous authors covering multiple aspects of a diverse practice area within landscape architecture. Authors explore how this practice area, rooted deeply in tradition, is evolving to meet modern needs arising from various life circumstances. Successful designs and the process to create them vary according to the special needs of user groups. Readers will learn how therapeutic landscapes provide benefits to all humans, both in clinical and institutional settings and in the matrix of everyday life.

Feedback on this LATIS and on the series in general should be sent to ASLA, c/o Professional Practice Manager, 636 Eye Street NW, Washington DC 20001. ASLA welcomes suggestions for future LATIS topics that will broaden awareness of new and/or rapidly evolving practice areas within landscape architecture and enhance technical proficiency for practicing in these areas.

Table of Contents

Publisher’s Note: iii

Introduction to the LATIS Forum on Therapeutic Gardens 1

PART ONE: THERAPEUTIC GARDENS IN HEALTHCARE SETTINGS . . . 2

A Thumbnail History of Therapeutic Gardens in Healthcare 3

The Role of Gardens in the Therapeutic Milieu of Healthcare Facilities. 6

Gardens in Acute Care Settings: Principles and Practice 15

A Children’s PlayGarden at a Rehabilitation Hospital: A Successful Collaboration
Produces a Successful Outcome. 20

PART TWO: ENVIRONMENTAL SOURCES OF WELLBEING 38

Therapeutic Landscapes in the Public Realm: Foundations for Vancouver’s Wellness
Walkways 39

Well-being by Nature: Therapeutic Gardens for Children 50

Therapeutic Gardens in Assisted Living Communities 68

The Power of Landscapes 77

Introduction to the LATIS Forum on Therapeutic Gardens

Nature is the great equalizer for people of all ages. Whether a child builds a sand castle with warm, damp beach sand for the first time, or an older adult plants a spring garden while anticipating large, juicy, tomatoes for a summer meal, nature brings enjoyment, a sense of place in the world, and lifelong memories to enjoy again and again.

A need for contact with the outdoor environment is hard-wired into the human species. Whether we live in an urban, suburban, or rural setting, the earth provides the food we eat, the ground we walk on, the materials that shelter and clothe us, and breathtaking beauty for us to enjoy.

For children, ready access to nature early on in life establishes a sense of interconnectedness with the world around them. Outdoor activities such as individual or group play, exercise, and structured planting activities give children a sense of having control over their environment and an affinity with the outdoors.

Older adults, especially those in a supportive senior housing setting such as assisted living or skilled nursing care, can also derive tremendous benefit from a therapeutic garden or thoughtfully planned landscape. Depending upon their level of functioning, residents can enjoy a continuation of lifelong hobbies such as gardening and bird watching. Many times, a renewed sense of purpose and connectedness to life results in an additional benefit.

In a medical setting, a well-planned garden with easy access can offer familiarity, stress reduction, and a sense of safety and hopefulness for patients, family members, and health care providers. Among the general public, natural landscapes have been shown to provide a “positive distraction” from the daily bombardment of stress. Restoration of internal calm, reconnection with one’s true self, and mental and physical relaxation can only result in enhanced well-being.

The articles in this issue of LATIS underscore the importance of nature’s contribution towards quality of life. The benefits provided by therapeutic outdoor environments in a variety of settings are essential to people’s health and well-being at all stages of life.

Nancy Carman, MA, CMC

PART ONE: THERAPEUTIC GARDENS IN
HEALTHCARE SETTINGS

A Thumbnail History of Therapeutic Gardens in Healthcare

by Jean Stephans Kavanagh, FASLA

therapeutic garden, n. – *a consciously designed outdoor setting that evokes, reinforces, and maximizes the number, quality, and intensity of positive interactions a visitor can have with plants.*

The therapeutic potential of landscape is not a new discovery. Throughout the rise and fall of empires and cultures, people have turned again and again to the landscape for inspiration, strength, and healing. The garden in particular has served both metaphorically and practically as a valuable source of solace, health, and well-being. Today, the restorative qualities of therapeutic gardens have gained renewed notice, and designers face the challenge of melding this age-old garden tradition with modern medical knowledge and practices.

The evidence of ancient appreciation for the garden as a place of comfort and healing abounds. Gardens that graced the homes and domestic lives of the ancient Egyptians were preserved for their afterlives in tomb paintings. Similar public garden and landscape features are thought to have been present at both their healing centers and their places of mourning.

The Greeks integrated the theory of healing gardens with then-emerging medical theories prescribing that patients sleep in special gardens. It was believed that these gardens contributed to healing, in part by promoting dreams that could be interpreted to diagnose ailments.

The Romans later adapted the dream gardens of the Greeks into concentric garden forms within their military hospitals. The officers' rooms were organized around a central peristyle garden to improve their recovery from disease and injuries. The wards of the common soldiers were separated from those of their officers by linear open spaces that, when possible, were developed as gardens providing fresh air, light, and plant and garden views.

The importance of courtyards and other enclosed garden spaces for providing light, fresh air, and distractions continued during medieval times, when these amenities were generally lacking in daily life. While the demands of survival often reduced domestic gardens to remnant spaces within fortified enclaves, the value of these gardens as restorative environments did not diminish. Walled monastic communities provided cloister gardens both for the religious community and for the public. Here, visitors—especially patients who depended upon the monastery's infirmary and

hospice—were encouraged to meditate, exercise, and socialize as part of their spiritual and physical rehabilitation.

In eighteenth and nineteenth century Europe, the art and practice of medicine improved, and gardens retained their prominence in the therapeutic environment. Hospitals and hospices serving the injured and the ill were located on large parcels of land and were designed and built with enclosed courtyards and central garden spaces. Hospital grounds offered both active and passive therapeutic gardening experiences, integrating horticultural and agricultural activities as integral components of prescribed treatments.

During the colonization and development of the United States, new world medical institutions borrowed traditions of medical practices and perceptions of healthful activities from Europe. Friends Hospital in Philadelphia, Pennsylvania was the first hospital in the United States to integrate recreational and aesthetic landscape activities into a therapeutic medical regime. Founded by the Quakers in 1827, the Friends Hospital landscape is still reminiscent of English estate parks. Friends Hospital no longer operates the farm it once had, but experiencing its lawns, garden spaces, grand trees, shady walks, and seasonal bloom remains a part of each patient's treatment. The strong example of Friends Hospital and its landscape therapy serves as a model for medical institutions. Its influence remains recognizable in the design and planning of Veterans Administration hospitals and psychiatric institutions.

The Menninger Clinic offered another important American precedent for using therapeutic landscapes in healthcare. When Dr. Menninger first established his Topeka, Kansas, clinic in the 1920s, he recognized the benefits that landscapes can contribute in treating ailments, and he incorporated these therapeutic landscape values into his new medical practice. Today, as one of the nation's premier medical establishments, the Menninger Clinic expects patients to experience and participate in the gardens and landscape spaces surrounding its new and historic buildings.

The allied profession of horticultural therapy emerged in the United States after World War II, bringing even greater recognition of the need for specialized indoor and outdoor facilities for therapeutic horticultural activities. One of the first of these facilities was the Enid A. Haupt Glass Garden at New York City's Rusk Institute of Rehabilitation Medicine. Part of the New York University Medical Center in Manhattan, Rusk Institute has limited acreage. Nonetheless, its 4,400-square-foot therapeutic garden, completed in the late 1950s, is virtually unaltered from its original form.

Friends Hospital, the Menninger Clinic, and the Enid A. Haupt Glass Garden at the Rusk Institute of Rehabilitation Medicine remain iconic therapeutic landscapes sought out by international visitors, designers, and medical administrators investigating the nature of healing and restoration in the landscape. New therapeutic garden complexes throughout the United States are enhancing hospital systems, senior living campuses,

Alzheimer's patient care units, schools, and botanical gardens. Limited space for gardens within existing institutions has necessitated a trend toward smaller garden sites accommodating a widely varied collection of environments, habitats, diversions, and activities. Many new gardens are constructed on rooftops, balconies, terraces, and other remnant spaces within the hospital or residential complexes. Therapeutic landscapes increasingly combine plants, wildlife, and play. Designers create play gardens for children by integrating natural elements with normal childlike activities. Opportunities to engage with familiar natural elements also characterize memory stimulating healing gardens designed for people with Alzheimer's disease.

Most of the newest therapeutic gardens are designed to serve the general population of a hospital or care unit along with its visitors and medical staff rather than any single specific population sharing a common diagnosis or medical condition. Both active clinical therapy and passive, even meditative, restorative diversions can occur within the same garden precinct. Gardens in this context offer respite and diversion to a wide variety of visitors. Each of these new garden types operates as a therapeutic garden whenever it supports a clinical therapy or empowers individuals with confidence, skills, or understanding. A therapeutic garden may spur medical recovery, but the enjoyment and sense of comfort it evokes within visitors renders it an amenity welcomed by patients, staff, and visitors alike.

The Role of Gardens in the Therapeutic Milieu of Healthcare Facilities

by Marni Barnes, ASLA, and Clare Cooper Marcus, Hon. ASLA

"Nature is but another name for health..." Henry David Thoreau

The healing qualities of nature were recognized and relied on for centuries as a valuable part of convalescence. However, the last century has seen nature's therapeutic role eclipsed by the dominance of technological advancement in the medical arena. In the new millennium, the pendulum is beginning to return toward center. Responding to a variety of forces including those of an aging population, an increasing understanding of somatic disorders, and the significance of the mind-body connection, medical technology is being placed side by side with alternative therapies. Included in this trend is the acknowledgement that gardens and views of greenery stimulate health and recovery (Cooper Marcus and Barnes, 1999).

This ancient awareness that nature can be restorative and provide healing benefits is beginning to be more closely examined as it intersects with society's need for allocating limited resources. What the specific role of the garden is and its therapeutic application in healthcare settings become important centers of discussion. Three significant aspects of health restoration that can be supported by a well-designed garden or by viewing nature have been identified in research:

- First is achieving a degree of relief from pain. This relief is a significant factor in the life of an individual with an acute illness or with a trauma from which s/he is recovering, such as a routine postoperative patient. This component of healing also plays an important role in the life of the patient with a chronic illness for whom pain management can be a significant treatment goal. (Tse, M.M.Y. et al., 2002; Vincent, E. et al., 2010).
- The second component of healing is stress reduction and increased levels of comfort for an individual dealing with the emotionally and physically trying experiences of a medical setting. Stress reduction is one of the most significant components of well-being for the individual with a chronic or terminal condition, where the quality of his or her life is of paramount concern. It also may be the most relevant healing component for visitors and staff, where relaxation and rejuvenation are the end goal, in and of themselves.
- A third healing concept is that of attention restoration, whereby viewing or being in nature results in restoration from the fatigue of focused attention. This is particularly pertinent to healthcare staff, who are often fatigued from paperwork, constant human interaction, etc.

Any environment can hinder or enhance these components of healing, and gardens are particularly well suited to support and even stimulate these therapeutic processes.

How Nature Heals

"I only went out for a walk and finally concluded to stay out until sundown, for going out, I found, was really going in." – John Muir

The totality of the interaction between humans and nature may never be fully understood, but human psychological reactions to natural surroundings are the subject of a growing body of research. A study by Barnes (1994) evaluated the qualities of outdoor spaces and the behaviors of individuals who used these spaces specifically to seek solace. Drawing upon previous research on the places that people seek for solace (Frances and Cooper Marcus, 1991); the process of emotional healing as experienced on wilderness backpacking trips (Kaplan and Talbot, 1983; Segal, 1988, Hartig 1990); and prior studies on meditation and the physiological relaxation response (Kutz et al., 1985); this study revealed that both designed and natural outdoor spaces prompt, or cue, the individual through a series of emotional states that lead to restoration. Self-reports suggest that this process effects emotional rejuvenation and stress reduction, which in turn may produce physiological changes and influences physical well-being.

There are four components of this healing process: Getting Away to the new setting is a mechanism for gaining distance or making a separation that allows the individual to step back from his or her situation. It creates the opening for change and potential resolution. It often serves to shift the individual away from an unproductive perspective. Sensory Awakening focuses the individual's attention to external stimuli that are present in the moment. This provides an escape from habitual thinking. This shift in the cognitive processes can lead to a change in the emotional perspective as well. Self-Reflection occurs when the individual revisits the initial feeling state from the newly gained perceptual orientation and is able to begin to work through or come to terms with that experience. Spiritual Attunement enhances a deeper awareness of the interconnectedness and cyclical nature of life, often bringing comfort in the universality of experience.

Herbert Benson (1984, 1983, 1977, and 1975) and others (Kutz, Borysenko, and Benson 1985; Stainbrook, Hoffman, and Benson, 1983) have studied the relationship between meditation and health. In a series of studies exploring many different interventions (biofeedback, use of medications, psychotherapy, etc.), meditation has proven to be one of the most effective methods of attaining a state of healthful relaxation—coined the "relaxation response" by Benson. The physiological changes that occur during the evocation of the relaxation response affect the body's immune response and other factors influencing one's ability to recover from a physical illness. Many people, whether consciously seeking a meditative experience or not, are able to attain some of the benefits of this activity by the gentle prompting of the garden or natural green environment.

Healthcare Settings

“Nature eliminates a surplus and compensates for deficiency.” – Tao-te-ching

In the healthcare setting specifically, the garden also offers opportunities for behavioral options that have therapeutic benefit, particularly for inpatients. Roger Ulrich has developed a theory of supportive garden design based on the known factors that contribute to stress in medical settings (1999). Design elements aim to ameliorate these factors and reduce stress in patients, staff, and visitors. This theory identifies four aspects of a garden that promote therapeutic benefits in a medical setting:

1. Sense of Control, especially access to Privacy
2. Social Support
3. Physical Movement and Exercise
4. Access to Nature and Other Positive Distractions

For persons who are ill, loss of the sense of control causes a great deal of stress. Many experiences related to illness and injury are stressful in large part because they are uncontrollable. Impaired physical capabilities and unavoidable and unpleasant diagnostic procedures are experiences intrinsic to illness and treatment. Hospitalization further erodes patients’ feelings of control when patients suffer lack of information, loss of privacy, loss of control over eating and sleeping times, lack of authority over what to wear, etc.

Researching four California hospitals, Cooper Marcus and Barnes (1995) found that restoration from stress was the most important category of benefits derived by persons interviewed in healthcare gardens. Several respondents in the study indicated that the gardens fostered restoration in part by providing escape from, or control of, stress. For example, a patient using a garden commented: “It’s a good escape from what they put me through. I come out here between appointments . . . I feel much calmer, less stressed” (Cooper Marcus and Barnes, 1995, p. 27). A patient in a garden at another hospital said: “I felt really depressed in there [the hospital]; I was getting really teary. You go from having control of your life to less control. Out here you’re on your own; there’s time to forget about it. You feel relieved from all the medical aspects of your case” (Ibid., p. 35).

Social support from friends, family, and colleagues enhances health by reducing stress associated with challenges and traumas. Bolstering a sense of connection and caring, social support provides therapeutic benefits to staff and visitors as well as patients. Higher social support has been shown to improve recovery outcomes in heart attack patients, survival length in patients with metastatic cancer, and immune functioning in family caregivers of Alzheimer’s patients (Ulrich, 1999).

Exercise brings a spectrum of significant physical health benefits and clearly is a positive factor in reducing risk for mortality in the general population. In addition, the psychological or emotional benefits of exercise and related therapeutic effects on stress are particularly significant in healthcare settings. As with social support and control, there is substantial scientific evidence that exercise reduces stress in patient populations, and has significant physiological benefits for the frail elderly.

As discussed above, access to the positive distractions of a natural environment promotes an improved emotional state in the perceiver and fosters beneficial physiological changes including lowered blood pressure and a reduction in stress hormones.

Ulrich's theory further contends that a requisite condition for a garden to provide stress relief in these capacities is a sense of security. If the design or characteristics of a garden engender feelings of insecurity or risk, the setting will likely have stressful rather than restorative influences. This is particularly relevant in healthcare settings since persons who undergo medical treatment often feel psychologically vulnerable, which heightens their sensitivity to all aspects of their environment.

Design Implications

"[Good garden design] employs the mind without fatigue, tranquilizes yet enlivens it, and thus gives the effect of refreshing rest and reinvigoration." – Fredrick Law Olmsted

As Barnes's and Ulrich's theories of emotional restoration in outdoor settings are overlaid, the needs of medical care facility users become clear, and four key components for a garden in a healthcare setting become self-evident.

- *Access to outdoor space*, both visual and physical, is necessary to stimulate the awareness of and subsequent participation in a potential healing process and to provide a pleasant environment for exercise.
- *An abundance of natural and living elements* and the provision of a variety of gentle stimuli will awaken the senses and provide a distraction. This benefit will be maximized if the garden is healthy and well cared for, reducing the chances of negative stimuli and the potential for subsequent depressive thoughts and fears.
- A setting is necessary that provides *options and a contrast to the interior environment*, offering a variety of seating arrangements and divergent pathways to foster a sense of choice and control, as well as creating areas for social interaction and introspection, supporting self-awareness.

- *Physical safety and emotional security* must be designed into the garden so that this particularly vulnerable population will be able to allow deeper feelings to arise and the bridging between experience and faith to be established.

In addition to these key concepts, it is critical that a healing outdoor space be visible (people need to know it is there); accessible (with automatic door openers for those with limited strength); quiet (away from traffic, loading docks, helicopter landing pads, noisy HVAC units); culturally appropriate (depending on the patient population); and familiar (in terms of materials, planting, details, etc.).

A variety of design solutions can result from these concepts, and the options are many. However, the landscape architect must hold the primary goal to be that the experience of the person in the garden will be unambiguously positive, and this goal eliminates some design possibilities. Medical settings are no place for challenging symbolism, evocative statements, or confounding juxtapositions. Patients under stress and their visitors are sensitized to negative stimuli and are predisposed to perceive their environment and their experiences as reinforcing that negativity.

A poignant example of this type of perception is that of a 79-year-old woman whose husband had just died from cancer. This woman attended a bereavement group for family members, sponsored by the hospital. At the end of the session, a flower from the bouquet that had been on the table was given to each person as he or she left. This woman put her carnation in water when she got home but in the morning found that it had wilted. She was extremely distressed by this and became very angry. She repeatedly expressed how uncaring and hurtful it had been to be given what she could only see as “a dying flower.” Her experience as a recent widow was one of death and abandonment, and this flower was seen by her to embody both of these messages — the death of the flower and her “abandonment” by the group that perpetrated such a hurtful act. She was so upset that she talked about it for many days. Despite acknowledging that she had benefited from the gathering, she refused to return to any subsequent meetings, thus cutting herself off from a source of caring and support. This type of filtering of experience is common in a medical setting, among stressed patients and visitors alike.

Beyond the incorporation of these key concepts, there are many levels of refinement in design implementation. A good deal of these design choices should be made based on the particular population that uses a given facility or site. In children’s hospitals for example, the developmental needs of the growing child need to be addressed. As a vehicle for healing children, gardens have special significance because of the way in which children relate to the world through play and their attraction to nature. Play is the child’s way of establishing relationships with the social and physical world. Play is also a right as guaranteed in Article 31 of the international human rights treaty “Convention on the Rights of the Child” (Moore, 1999, p. 323). Creating space for siblings to interact and for parents to experience everyday interactions with their child outside the medical environment is also a very significant goal in a pediatric

facility where patients are often hospitalized for long stays and where repeat visits are frequent.

In psychiatric facilities, issues of supervision, confinement, and confidentiality become a significant challenge to providing choices, privacy, and spaces that support the experience of “getting away.” Inpatients often display impaired ability to make decisions and may experience hallucinations and delusions, thus potentially disorienting and scary aspects of design elements and materials must be evaluated and avoided. “People with mental health problems often see everyday objects differently . . . Knots in a wooden door may look like eyes, or like the face of a monster. The shape or shadows of trees up-lit at night may look menacing” (Sachs, 1999, p. 311).

With a burgeoning population of older adults, designing outdoor spaces for the elderly and for those suffering from dementia is becoming a significant component of work for landscape architects. Gardens for the frail elderly must be visible from a highly used indoor space (dining room, social space); easily accessible with an automatic door opener and no lip at the door to impede wheelchairs; provide spaces for programmed events (patio, gazebo); contain shorter and longer walking loops, seating at frequent intervals and plenty of shade. Gardens in dementia facilities need all these qualities as well. Additionally, an absence of toxic plants, no accessible water and garden boundaries subtly hidden with planting to prevent attempted elopement are essential here.

Each medical facility and each patient population has its own subset of needs. General guidelines are helpful, but participatory design becomes an imperative in these specialized settings. Meetings with client administrators, staff, and residents/patients of the specific facility will yield a wealth of information. These meetings will provide the landscape architect valuable information regarding each individual participant’s experiences. Perhaps even more significant, the landscape architect will be able to access the accumulated knowledge of the other professional disciplines that are familiar with the potential users of the garden.

Conclusion

The significant role that gardens can play in healthcare facilities is being increasingly recognized. In 1998 the Joint Commission for the Accreditation of Health Care Organizations drafted “Proposed Enhanced Standards” that significantly revises their previous environmental quality criteria. For the first time, an assessment of landscaping is being considered as part of the evaluation standard. Specifically, views to nature and the question “Can these views be seen from the bed?” are checklist items.

In 1999, The Society of Critical Care Medicine, based in Washington, D.C., placed access to a garden as one of the top five environmental criteria for intensive care units—perhaps the most highly stressful medical setting.

The U.S. Green Guide for Healthcare combines some LEED strategies with new credits that include Connection to the Natural World: Outdoor Places of Respite; Connection to the Natural World: Exterior Access for Patients; and Daylight and Views: Connection to the Natural World. As laudable as these recommendations are, they make no reference to the quality of these respite spaces in terms of their greenery content.

The Sustainable Sites Initiative is modeled after the LEED Green Building Rating System and provides credits for, among other things, design that supports Human Health and Well Being. These credits include providing Opportunities for Outdoor Physical Activity, and providing Views of Vegetation, and Quiet Outdoor Spaces for Mental Restoration.

As the demand for therapeutic landscapes increases, it becomes imperative that landscape architects responsibly shoulder this additional component of their professional role. Informed therapeutic design must be comprised of the following:

- Allowing for the vulnerability of patients
- Understanding the process of healing
- Setting unambiguously positive experiences as the predominant design goal
- Exploring the nuances through a participatory design process
- Involving management and staff in the design process
- Refining the implementation of the design elements accordingly
- Evaluating the projects
- Reporting on the successes and failures via post-occupancy evaluations and design audits
- Continuing to inform and educate the profession through both the educational institutions and ongoing professional development

Sources

Barnes, M. 1994. "A Study of the Process of Emotional Healing in Outdoor Spaces and the Concomitant Landscape Design Implications." Berkeley, CA: Masters thesis, Dept. of Landscape Architecture, University of California at Berkeley.

Barnes, M. 1996. "The Healing Art of Landscape Architecture." In *1996 American Society of Landscape Architects Annual Meeting Proceedings*. Washington, DC: ASLA, pp. 34-40.

Benson, H. 1983. "The Relaxation Response: Its Subjective and Objective Historical Precedents and Psychology." *TINS*, July, pp. 281-284.

Benson, H., Beary, J. and Carol, M. 1984. "The Relaxation Response." *Psychiatry*, 37, pp. 37-46.

Benson, H., Greenwood M., and Klemchuk, H. 1975. "The Relaxation Response: Psychophysiological Aspects and Clinical Applications." *International Journal of Psychiatry in Medicine* 6(1-2), 87-98.

Benson, H., Kotch, J., Crassweller, K., and Greenwood, M. 1977. "Historical and Clinical Considerations of the Relaxation Response." *American Scientist*, 65, 441-445.

Cooper Marcus, C. and Barnes, M. 1998. "Gardens in Hospitals: Their Role in Reducing Stress and Fostering Human Well-Being." In *1998 American Society of Landscape Architects Annual Meeting Proceedings*, Washington DC: ASLA, pp. 53-56.

Cooper Marcus, C. and Barnes, M. (eds.) 1999. *Healing Gardens: Therapeutic Benefits and Design Recommendations*. New York: Wiley.

Frances, C. and Cooper Marcus, C. 1991. "Places People Take Their Problems." In *Proceedings of the 22nd Annual Conference of the Environmental Design Research Association*, edited by J. Urbina-Soria, P. Ortega-Andeane and R. Bechtel. Oklahoma City, OK: EDRA.

Hartig, T., et al. 1990. "Perspectives on Wilderness: Testing the Theory of Restorative Environments." In *The Use of Wilderness for Personal Growth Therapy and Education*. Ft. Collins, CO: United States Forest Service General Technical Report, RM 193, 86-95.

Kaplan, R. and Kaplan, S. 1989. *The Experience of Nature: A psychological perspective*. New York: Cambridge University Press.

Kaplan, S. and Talbot, J. 1983. "Psychological Benefits of a Wilderness Experience" (pp. 163-203). In *Behavior and the Natural Environment*, edited by Altman & Wohlwill. New York: Plenum.

Kutz, I., Borysenko, J., and Benson, H. 1985. "Meditation and Psychotherapy: A rationale for the integration of dynamic psychotherapy, the relaxation response, and mindfulness meditation." *The American Journal of Psychiatry*, 142, 1-8.

Minter, S. 1993. *The Healing Garden: A natural haven for emotional and physical well-being*. London, England: Headline Book Publishing.

Moore R. C. 1999. "Healing Gardens for Children." In *Healing Gardens: Therapeutic Benefits and Design Recommendations*, edited by C. Cooper Marcus, and M. Barnes. New York, NY: Wiley.

Sachs, N. A. 1999. "Psychiatric Hospitals." In *Healing Gardens: Therapeutic Benefits and Design Recommendations*, edited by C. Cooper Marcus, and M. Barnes. New York, NY: Wiley.

Segal, F. 1988. "Wilderness experience: A Phenomenological Study." Ph.D. dissertation. Berkeley, CA: Dept. of Psychology, California Institute of Integral Studies.

Stainbrook, G. Hoffman, J., and Benson, H. 1983. "Behavioral therapies of Hypertension: Psychotherapy, Biofeedback, and Relaxation / Meditation." *International Review of Applied Psychology*, 32, 119-135.

Thompson, J. W. 1998. "A Question of Healing." *Landscape Architecture*, 88(4), 68-92.

Ulrich, R. S. 1999. "The Effect of Gardens on Health Outcomes: Theory and Research." In Cooper Marcus and Barnes (Eds.), *Healing Gardens: Therapeutic Benefits and Design Recommendations*. New York, NY: Wiley.

Wiley, John. 1999. "Help is on the Way: Combine the Power of Nature, Animal Companionship and Music, and You Have a Recipe for Healing." *Smithsonian*, 30(4), 22-24.

Gardens in Acute Care Settings: Principles and Practice

by Mark Epstein, ASLA

In 1995, the American Horticultural Therapy Association (AHTA) officially recognized seven characteristics as defining therapeutic gardens:

1. Scheduled and programmed activities bring new patients and other first time visitors to the garden and introduce its sensory-stimulating environments and horticulture-based experiences.
2. Garden features, elements, and equipment are selected or modified to improve access, ease gardening activities, and enhance the horticultural experience.
3. Well-defined perimeters increase enclosure, limit uncontrolled entries and exits, and redirect visitors' attention and energies to activities, components, paths, spaces, and special displays within the garden.
4. A profusion of plants and people-plant interactions exploit human biological and evolutionary preferences while orchestrating, emphasizing, and integrating the sensory attributes of plants in legible open spaces.
5. Benign and supportive conditions result from horticultural practices that minimize environmental irritants and hazardous pollutants, as well as from features that reinforce personal comfort and safety.
6. Universal design principles support a wide range of conditions by offering settings to stimulate the full range of senses and by details permitting people to experience the garden in their own way, on their own terms, and at their own pace.
7. Recognizable placemaking promotes independence, reduces stress, and enhances the therapeutic garden as a unique, identifiable, and special place.

Certain factors that limit the benefits of gardens include lack of information about a garden's location and accessibility; insensitivity to specific patient mobility needs; intrusive or irritating sensory stimuli; lack of accommodation for competing or conflicting user needs; and design elements that evoke ambiguous interpretations. The latter is particularly significant in medical settings where the fragile emotional state of many garden users can lead to negative perceptions of all but the most unambiguously positive stimuli.

In addition to these basic criteria, gardens in medical settings need to be tailored to meet the particular needs of their specific patient populations. This is best done in conjunction with a design team of patients and relatives, staff, and administrators.

Legacy Health System in Portland, Oregon, recognizes the value of therapeutic gardens. Legacy staff and designers used AHTA's "Characteristics of Therapeutic Landscapes" as the theoretical framework for the design program and concept development for the Healing Garden at Good Samaritan Hospital and the Children's Garden at Emanuel Hospital. These gardens illustrate how adherence to this framework

translates into positive experiences for a variety of patients. The two hospital gardens illustrate AHTA's principles:

1. Rehabilitation activities occur in the garden whenever weather permits patients to be outdoors. Occupational therapists assign activities such as watering and removing dead flowerheads (deadheading) to meet their goals with patients (Figure 1.)



Figure 1. A variety of ordinary garden tasks provide opportunities for therapy. *Image courtesy Mark Epstein.*

Speech pathologists use the garden for cognitive and communication treatments. Recreational therapists schedule group activities in the gardens, including musical performances and other social programs, as well as individual activities such as walking, birdwatching, and learning adaptive gardening strategies. For the horticultural therapist, the garden is used in many ways to help patients increase strength and endurance, mobility, focus of attention, memory, and use of adaptive strategies, as well as to develop new leisure interests (Figure 2).



Figure 2. Horticulture therapists use the garden to accomplish physical, mental, and recreational goals. *Image courtesy Mark Epstein.*

2. *Ordinary garden features have been modified to improve accessibility.* Residents with Alzheimer's disease sit comfortably with staff to plant or deadhead annuals in containers. A child, too, can work with plants in raised beds of various heights while standing or from a wheelchair. The garden paths and grade changes offer degrees of challenge for patients. Spinal cord injury clients with greater upper extremity function may be able to reach the top of the healing garden, while the more frail elderly may propel their wheelchairs independently in the lower entrance to the garden.

3. *Edges of garden spaces and special zones of activities within the garden are emphasized to direct the attention and energies of the user within the garden space.* Each bed in the Healing Garden is identified by thematic signage (Figure 3). Therapy staff, patients, visitors, and hospital staff use the thematic signage for specialty gardens and the garden quotations in various ways. In one garden area, a visitor copied an inspirational quote. On another occasion, a physical therapist had a patient work toward increasing standing balance while reading the "Fragrant Garden" signage and making observations about the plants. The active gardening area for children is focused in the sunny part of the garden, while under the shade of a large ornamental plum and behind the bog planting, seating allows for a more meditative, restorative experience.

4. *A profusion of plants and people/plant interactions is maintained.* Places are designed for horticulture, therapy, and socialization. Lush, botanical collections with great variety are absolutely critical to therapeutic applications offering both horticultural therapy and therapeutic benefits of horticulture to those who use the garden independently (Figure 4).

5. *Benign and supportive conditions are identifiable.* Plants are selected for, among other characteristics, their disease and pest resistance, thus avoiding patient exposure to potentially hazardous chemicals. The



Figure 3. Signs identify themes of garden beds. *Image courtesy Mark Epstein.*



Figure 4. Therapeutic garden settings offer benefits to patients and non-patients alike. *Image courtesy Mark Epstein.*

provision of shade, protective structures, flourishing plants, and the protective nature of the garden offer personal comfort and refuge to the user. In the Children's Garden, therapeutic goals focus on mobility, motor skills, social interaction, cognitive ability and emotional status. Restorative goals promote general wellbeing with focus on play, relaxation, socialization, education, and creativity. The plant-dominated environment makes a major contribution to fulfilling these rehabilitation goals for hospitalized children.



Figure 5. The gardens are designed to appeal to the full range of senses and to users of varying abilities. Image courtesy Mark Epstein.

6. *The hospital garden settings are designed and programmed for the widest possible range of user abilities* (Figure 5). Therapeutic gardens commonly stimulate the full range of senses including memory, hearing, touch, smell, and sometimes taste as necessary supplements to the visual experience.

The garden and programs were developed to exploit the most complete range of people/plant interactions and experiences possible. This focus on increasing the value of landscape usage tends to increase support in a variety of ways. Fund development, marketing, and public relations benefit from the promise of increased opportunities for rehabilitation activities and promotion and support by staff.

7. *The gardens are simple, unified, and easily comprehended places.* Efforts heighten the visitor's focus on plant-related sensuality, comfort, and independence experienced

within the therapeutic gardens. Post-occupancy evaluations of hospital gardens have indicated the high value placed on access to the outdoors by staff, visitors, and patients alike. Among the garden elements most valued are features representing life and health—such as trees, plants and flowers, and elements that arouse the senses—such as fragrances, the sounds of birds and water, and the feel of sunlight or a gentle breeze. These elements present a marked contrast to most hospital interiors, providing a sense of distance or “escape” and allowing for reflection and restoration. Retrofitting or remodeling existing hospital structures to provide views of, if not access to, therapeutic planted environments has further increased awareness of the therapeutic value gardens can have. The level of benefit derived from these healing spaces can be enhanced through sensitive landscape design.

A Children's PlayGarden at a Rehabilitation Hospital: A Successful Collaboration Produces a Successful Outcome

By Sonja Johansson, FASLA, and Nancy Chambers, HTR

PlayGardens at rehabilitation hospitals, when creatively designed, are the ideal places to support and encourage a wide range of therapeutic benefits for children with disabilities. All children begin their lives by using their senses and motor abilities to gather and interpret information about their environment. They spontaneously engage in activities, repeating things again and again, to test and absorb the experience. They respond to stimulation in their surroundings, using their senses to give them feedback and cues so that they can navigate and orient themselves, by voices, landmarks, boundaries, shapes, and mass. Through this movement, repetition, and chance, they grow and develop and constantly learn new things about their world.

Children's development of physical capabilities proceeds in a somewhat predictable sequence, e.g., rolling, crawling, sitting, standing, walking, running, with each stage laying the basis for the next as physical, social, cognitive, and emotional aspects influence and act upon each other in interrelated, complex ways. Children integrate and adapt the information they receive from movement, gravity, and their relationship with the earth. They learn what is upside-down and right-side-up and whether they are moving, how fast, and in what direction. They figure out how to get from one place to another and how to get their bodies to move through space.

Unfortunately, each year in the United States approximately 150,000 children are born with birth defects and another 230,000 become disabled at some point during their childhood. Some have restricted motor abilities or reduced endurance, limiting their ability to interact, experience, and play, especially outdoors in nature. Others have sensory or perceptual deficits that make them unable to accurately integrate or organize colors, lights, shapes, and sounds received by their senses, and thus have difficulty orienting themselves to their environment.

Professionals who work with children with or without disabilities recognize the importance of active, creative play as essential for development. They understand the need for creating environments that stimulate the senses and offer physical, social, emotional, and cognitive experiences. However, despite research demonstrating the restorative benefits of nature, traditional therapies for disabled children are conducted indoors in hospital rooms and corridors. In addition, parents of disabled children, fearing that the outdoors is unsafe or unhealthy for their children, are often hesitant to allow them to interact with outdoor environments. These children rarely have the opportunity to lie on the grass in the sun and smell and feel the earth beneath them.

Traditional outdoor spaces—both playgrounds and gardens—do not sufficiently meet the needs of children with disabilities. Spaces must be specifically designed to enhance the capacity of the child to interact with the environment. The environment

itself must provide motivation for the child to spontaneously move about, exercise fully, and interact with all elements. It must be designed with enough diversity to engage all children regardless of their abilities or disabilities. It must be an environment consciously designed to develop and integrate their perceptual, motor, and cognitive skills.

In response to ADA regulations, landscape architects now design so that disabled people can maneuver within the built environment as easily as possible. Playgrounds, however, are spaces that should encourage all children to try new and often difficult tasks. The specialized rehabilitation needs of young patients requires that challenge be safely integrated into children's play environments to inspire the children to actively test their abilities, improve their skills, and advance their development within a supportive environment.

The PlayGarden at the Rusk Institute was designed to provide for the full scope of children's needs at different levels of development, ability, and health. The Rusk Institute is a rehabilitation hospital in the heart of New York City. Of the Institute's 3,000 in-patients and more than 15,000 outpatients who receive services annually, one-fourth are children. They receive treatment for a variety of disabilities including cerebral palsy, amputation, spinal cord injuries, spina bifida, muscular dystrophy, brain tumors, and multiple trauma. The pediatric unit includes a full preschool for 18 children ages 3 to 5 and an early intervention program for 20 children ranging from a few months to 3 years old. All of these children have been diagnosed with developmental delays and orthopedic disabilities.

In recognition of the importance of play for children, a playground was built in 1970. At that time, it represented the highest design standards for children with disabilities. Twenty-five years later, however, theories about disability, safety, construction, and accessibility had evolved to the point that the playground was no longer adequate.

In 1994, a project team was created to develop a new PlayGarden, and a landscape architecture firm was hired to redesign the existing space. The project team included recreational, occupational, horticultural, and physical therapists, as well as teachers and physicians—every specialist who works with children. The team also included a project manager representing the Plant Maintenance and Construction Department at the medical center.

The Rusk therapists had worked together to develop concepts for the play area. Following discussions, the scope of work for the landscape architect was clearly defined from the outset:

- work with a designated client team and project supervisors
- work within a designated budget
- integrate nature into all play elements
- create topography and three-dimensional space
- provide play equipment, gardens, water, and sand
- create multiple use space

- extend accessibility and risk-taking activities
- ensure all surfaces are accessible, safe, low maintenance, all-weather use, aesthetic, durable
- provide a new accessible entry from the building
- provide a car barrier and privacy fence at the sidewalk perimeter
- provide storage space

The users were clearly defined. They included children up to 12 years of age, including toddlers, preschoolers, inpatients and outpatients; children’s families, including siblings; therapists working with children (occupational, physical, horticultural, recreational, and music therapists); teachers; and families in the local community. The commitment to maintenance, staffing, and usage was in place. While the PlayGarden would be open to the public, the decision was made that children would be permitted only with a supervising adult and that the PlayGarden would be open only when staff were present to provide oversight.

Design discussions between the therapists and designers as well as visits with the children during treatment and in class helped to determine the desired outcomes for the children’s rehabilitation, development, and education, and suggested ways of achieving these goals through design. Sketches, photographs and other materials were used to illustrate ideas or feelings for the creation of the space.

From this process, the rehabilitation team and landscape architects concluded that the standard play experience should not be the main focus of the playground. Rather, it was decided that this little corner of New York City should be transformed into a naturalistic interactive PlayGarden (Figure 6), where children would be encouraged

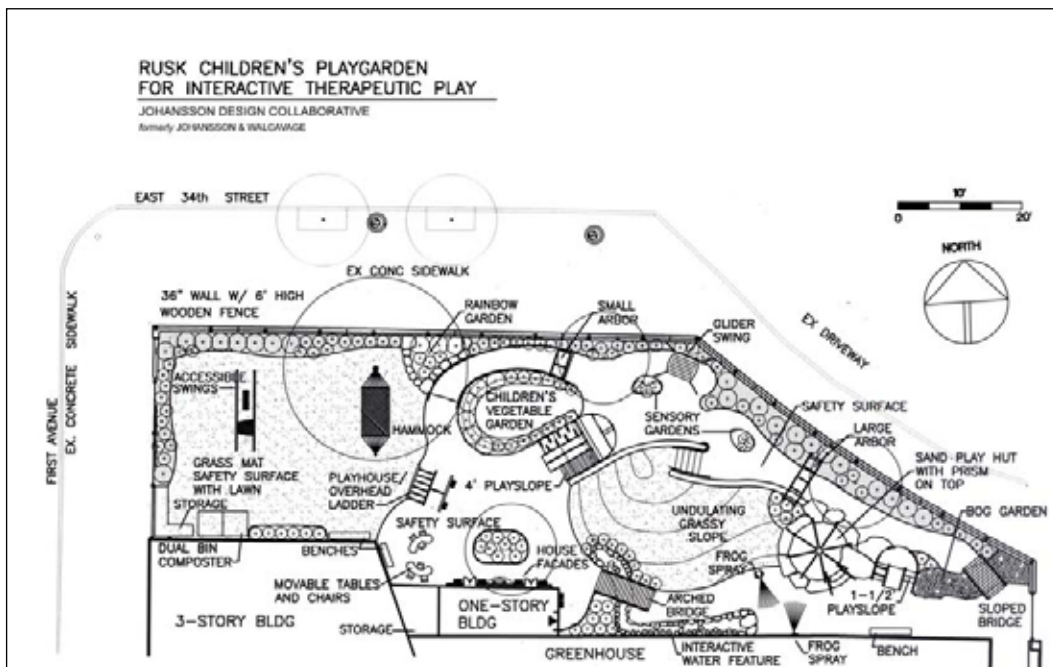


Figure 6. Rusk Plan by Johansson Design Collaborative (formerly Johansson & Walcavage) developed in collaboration with the therapists.

to explore and enjoy a wider variety of activities and materials at their own pace and in their individual ways. The team wanted a safe, nature-oriented environment to support and challenge disabled children in play and therapy. (While able-bodied children were not the focus, designing for them was a secondary goal.) The space would provide incentives and opportunities for these children to explore and practice activities that would stimulate curiosity and promote independence, spontaneity, and creativity in the physical, cognitive, social, and sensory realms .

Design Goal: Provide for Safety, Motor-Planning, and Physical Movement

The team wanted to create topography from the existing flat site. A safety concern gave an added impetus: previously cars had damaged the perimeter fence. In order to create a car safety barrier along the sidewalk that was the northern perimeter of the PlayGarden, the level, existing grade was altered to create a 3-foot rise against a new exterior retaining wall topped by a 6-foot wood privacy fence surrounding the space. This altered topography became the key design solution to creating the multi-level space that added visual interest and physical challenge to the PlayGarden (Figure 7).

A lush grassy hill became the focal point of the PlayGarden. The hill attracts the children as it invites tumbling, rolling, and stretching in the sun. This sloping lawn also gives the small PlayGarden space a sense of openness.

Custom-designed slides—one for toddlers and one for larger children—are tucked into the hillside to add interactive play experience while giving the children sloping, vertical, and horizontal planes on which to play. There are several ways to get up or down the slides, some more difficult than others. The children decide on their own which route to take, balancing the need for challenge against their need for security (Figure 8).



Figure 7. A small, flat, urban lot is transformed with undulating topography. *Image courtesy Michael Rogol Photographer.*



Figure 8. Therapeutic play equipment is integrated into a lush grassy hill. *Image courtesy Sonja Johansson/Glass Garden.*

Three years after the PlayGarden opened, the smaller toddler slide was retrofitted as a bean-bag toss surface. The bean-bag toss brought in another interactive play and therapeutic element to the Playgarden that enhanced eye-hand coordination and range-of-motion.

To enhance motor planning, body positioning, balancing, and upper body strength, a playhouse with overhead rungs and side hanging bars was designed to enable children to exercise by swinging, climbing, and turning while being monitored by a therapist or parent (Figures 9 and 10). Instead of using concrete to edge a sandbox, natural rocks were used. Children learn coordination and motor skills as they climb



Figure 9. Children are free to play expansively on equipment designed specifically for their needs. *Image courtesy Glass Garden.*



Figure 10. Another view of the custom playhouse. *Image courtesy Sonja Johansson/Glass Garden.*

over large rock steps to get into the sand. A swing to challenge children's balance and another to cradle a child with spinal injuries were installed.

A pathway system with a colorful safety surface aids in orientation as it curves around the grassy slope, under arbors, and rises over an arched bridge to cross a babbling brook. Another span crosses a lush, plant-filled bog. The path is the unifying element in organizing the PlayGarden space (Figure 11). Its safety surface prevents



Figure 11. A safe pathway over a bridge, to an exciting landscape. *Image courtesy Sonja Johansson.*

scrapes and bruises from falls. Another more natural-looking accessible safety surface, called a grass mat because it allows grass to grow through it, is used under the swings and hammocks. Three years after opening, the grass mat surface was removed and replaced with the colorful safety surface. The grass was unable to sustain itself because of the volume of visitors playing in the space. At that time the planting beds in the back were also expanded to increase the diversity of plant materials.

Thus the range of topography, surfaces, and play equipment motivates the children to exercise all their muscles by running, crawling, sitting, bending, turning, swinging, and jumping. All the natural and man-made play elements foster challenges to motor-planning, eye-hand-foot coordination, balancing, spatial awareness, body positioning, and a multitude of challenging opportunities for a full range of gross motor and coordination skills.

As the PlayGarden grew in popularity with community pre-schoolers, loose objects such as riding toys, wagons, and sandbox toys were placed around to assist in interactive play. Children now “hail a taxi”, a large wagon pulled by another child. They tumble in when their “taxi” stops for them. They constantly move sand and water with pails, shovels, trucks, and wheelbarrows.

Design Goal: Provide Sensory Stimulation

As children move their bodies through space, their senses receive changing stimulation from the environment—the visual field, vibrations in the ear, changes of currents under the nose. These changes teach the sensory organs to understand and discriminate between qualitative aspects of the environment—i.e., changes in sound waves and rhythms (breezes through the grasses), visual patterns and forms (leaves, flowers, and rocks), gradations of light (sun and shadows), textures (grass, bark, rocks, sand, water), colors, and scents.

The PlayGarden was deliberately designed to enhance the entire range of senses for children with disabilities. All the areas of the space are meant to be touched and explored and experienced by young children in or out of wheelchairs. The grassy hill is the largest sensory-tactile element for children to smell, roll on, and feel on their skin (Figure 12).



Figure 12. A child delights in rolling down the gentle hill and climbing up again, touching the cool grass. *Image courtesy Sonja Johansson.*

A multi-level natural stone water channel was created to add to

the sensory mix as the children receive the tactile pleasure of water play and also hear the “water song.” The children touch and manipulate materials to take in the sensory information that will lay the base for cognitive learning (Figures 13 and 14).



Figure 13. Stone water channel. *Image courtesy Sonja Johansson.*



Figure 14. Multi-level channel encourages tactile interaction with stones and water. *Image courtesy Michael Rogol Photographer.*

The PlayGarden was consciously designed to integrate nature into the play space and to stimulate and involve the entire range of senses throughout the seasons. Therefore all of the shrubs, trees, vines, annuals, and perennials used in the space were specifically selected for their textures, scents, tastes, colors, shapes, sizes, and even sounds. The plants were also selected to provide a habitat for butterflies, birds, and beneficial garden creatures to augment and enhance visual and auditory stimulation. Two small plant beds that cut into the pathway overflow with various mints and lavender that brush against the children as they wheel or walk by (Figure 15).

The sandbox juxtaposes the textures of play sand and large boulders. Natural elements are also integrated into the swings and colorful play houses, which would otherwise have a manufactured appearance: colorful and scented



Figure 15. A wide range of plant varieties, used on every surface, add excitement to the journey. *Image courtesy Glass Garden.*

vines on trellises shade the swings and sandbox and the window boxes in the house facades overflow with small gardens that the children planted (Figures 16 and 17).



Figure 16. Flowering vines shade the sandbox while adding interest. *Image courtesy Sonja Johansson.*



Figure 17. Children plant colorful window boxes and watch the flowers grow. *Image courtesy Glass Garden.*

A unique feature of the PlayGarden is a prism sculpture atop the sandbox trellis. This prism gently rotates in the wind, capturing the sun's rays and casting rainbows throughout the PlayGarden. The scented herbs, bright flowers, dazzling grass, dancing rainbows, running brook, flitting butterflies, and ringing chimes engage the entire range of senses.

A major focal point in the PlayGarden has become the large, stately, and elegant weeping willow tree that creates a tranquil room for classes, shade for the office, and stimulation for children's imaginations (Figure 18). A child was seen driving a toy car back and forth under the willow branches, letting them swing against his face. When asked what he was doing, he said, "I'm at the car wash!"



Figure 18. The weeping willow branches provide many opportunities for play. *Image courtesy Glass Garden.*

Design Goal: Provide for Discovery and Learning

Children can develop cognitively and intellectually when they are alert to the world around them, when they can express themselves and use their imagination and creativity to figure things out. Children need to discover on their own how to manipulate their environment by their own efforts.

The PlayGarden was designed so that the children cause things to happen. When they open the doors of the fanciful playhouse facades, the children discover specially designed objects that they can manipulate to stimulate their fine motor and decision-making skills. Elsewhere, they turn the frog spray and the waterfall on or off; they move rocks to change the water's flow; they unfasten locks and clasps to discover shells, feathers and stones behind secret doors (Figures 19 and 20).



Figure 19. Playhouse facades invite exploration. *Image courtesy Glass Garden.*



Figure 20. Children explore independently, enhancing their development. *Image courtesy Glass Garden.*

The children learn about nature by planting seeds in their garden and watching their produce flourish. They explore the materials of the earth in the soil, sand, small and giant rocks, and cascading water. The PlayGarden instills an awareness of and appreciation for the natural world, and aids in the development of critical thinking and science skills: the children learn to express their curiosity and awe while being in nature as it performs its magic (Figures 21 and 22).



Figure 21. Children have the opportunity to plant seeds and watch vegetables grow. *Image courtesy Sonja Johansson/Glass Garden.*



Figure 22. Interaction with natural elements instills an appreciation of nature. *Image courtesy Sonja Johansson.*

Every area of the PlayGarden offers opportunities for different learning experiences. Children read or listen to stories while swinging quietly in the hammock (Figure 23). They propagate plants and make nature craft projects at the stackable tables and chairs. They learn about light refraction and wind when watching the dancing rainbows from the prism sculpture. They follow the path of the insects flitting through the bog. They learn how to play creatively with others inside the playhouse. They move their bodies and objects about and through space as they explore the limits of the space.

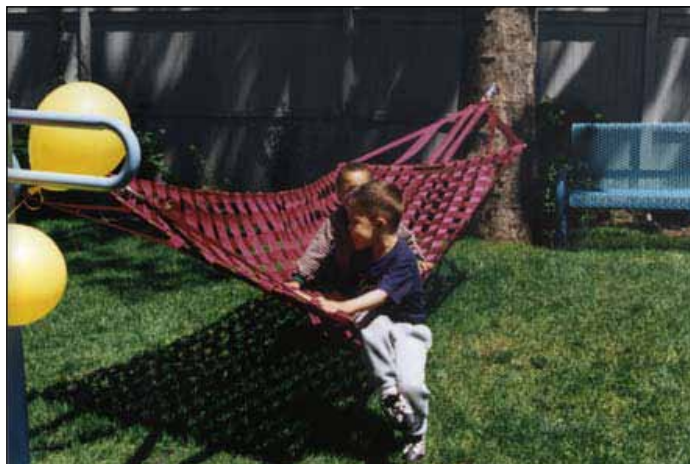


Figure 23. A hammock creates a quiet place for reading or sharing stories while providing therapeutic motion. *Image courtesy Glass Garden.*

These experiences enhance organizational and planning skills, sequencing, understanding of cause and effect, motor planning, and initiation by providing a safe environment in which to explore, experiment, make decisions, and learn independently, without the need for help unless warranted.

Design Goal: Provide for Social Activities and Quiet Restoration

Creating diverse opportunities for activity was a major design concept of the PlayGarden. The space was to be the resource for independent imaginative play and group cooperative play. The design had to arouse curiosity and trigger imagination. The PlayGarden had to be inviting and friendly, a place where good things happen.

All of the elements in the PlayGarden foster social interactions or independent contemplation. The children can work cooperatively in groups around the tables. They play roles in the little house. They go down the slide holding hands with each other (Figure 24) and swing in the hammock in groups. There are colorful benches for additional caregivers. The glider swing, specially designed for wheelchair accessibility, offers opportunities for adults and children to be together. The glider is also a special place where parents can actively play with their children (Figure 25).



Figure 24. The Playgarden offers many opportunities for cooperative play. *Image courtesy Sonja Johansson/ Glass Garden.*



Figure 25. Parents and children can enjoy the glider together. *Image courtesy Sonja Johansson.*

The PlayGarden also offers restorative, soothing elements to reduce the stress of the hospital environment: the harmony of design and scale, the calming pastel colors, the soft, sweet-smelling green grass to lie on, gentle curving pathways, swings to dream on, and a house to hide in. All elements create a restorative and soothing environment. Every place in the play yard offers easy visibility for supervising adults; there are no totally hidden places, just symbolic ones to encourage children to feel comfortable.

Benches are available so that parents can easily watch the children while also relaxing and visiting with other adults.

Summary of Project Outcomes

Over 300 professionals a year, landscape architects and landscape architecture students, doctors, therapists and other medical personnel visit from around the country and the world to learn what it is about the design and the process of developing the design of the PlayGarden that so positively affects healthcare outcomes. The success of the PlayGarden's design was due to the collaboration between the landscape architects and the treatment team at the rehabilitation hospital, as well as the input received from the most important user group—pediatric patients.

The successful design also resulted from the unwavering focus on desired outcomes for children with disabilities. The space—shape, volume, surfaces, canopies, walls—is designed as interactive surfaces to which children respond and from which they receive information. The space is clearly a unified, child-friendly environment, child-scaled, fully comprehensible so that they can plan and carry out activities independently. It is a safe environment in which to explore, experiment, make decisions, and play. The design accommodates lifelong learning in that it provides an environment that encourages and motivates the children to use and learn a wide variety of physical, social, cognitive, and sensory skills (Figure 26). It opens opportunities for building competencies, which leads to self-esteem and independence.



Figure 26. Children have fun with diverse therapy options. *Image courtesy of Glass Garden.*

“Children are often seen log-rolling and walking down the gardens’ central slope, steering four-wheeled play equipment down its paths and over its bridges, crawling low in the sandpit and climbing high atop house “scaffolding.” The winding paths, multiple levels of topography, and a large weeping willow invite children to explore

and discover new areas of play as they make their way through the environment. Again, the many different areas of the garden encourage activities that support multiple skill sets and curiosities.” (Pranikoff, 2005)(Figure 27).

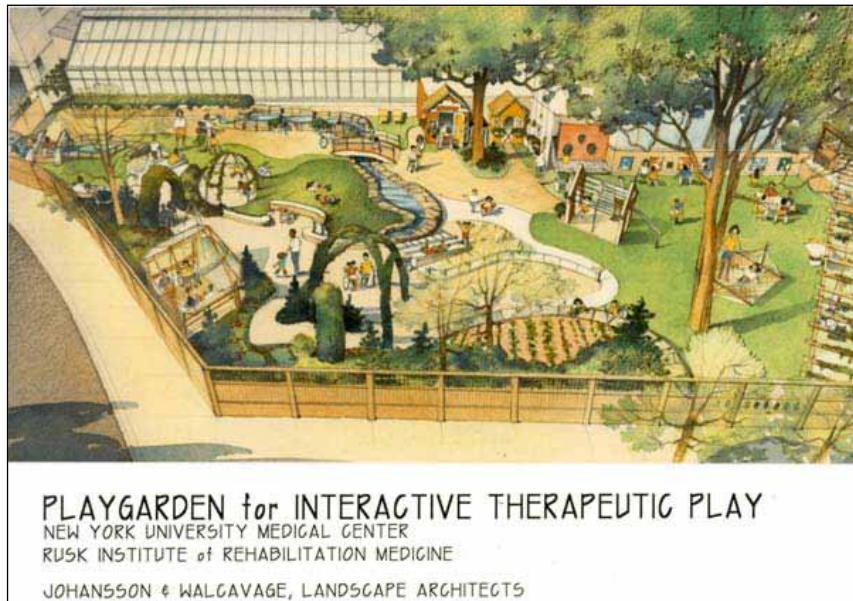


Figure 27. Artist rendering of the PlayGarden. *Rendering by Thomas Schaller.*

Equally important, the PlayGarden introduces the children to natural elements that they might never experience otherwise, particularly those children growing up in the city, and allows them to experience these elements in a safe and therapeutic way.

“For example, children’s connection to the environment and their desire to care for their surroundings is evidenced when one sees them collect water from the interactive creek and spraying frogs and feed the plants that they have investigated during their garden visits.” (Pranikoff, 2005)

These learning experiences and the knowledge and skills gained from the interaction between play and the natural environment not only help in the healing process, but also enhance these children’s lives and futures by instilling in the children an appreciation for the natural environment.

Not only do the patients benefit by learning many things, developing curiosity, self-confidence and problem solving skills as they play and plant and care for the PlayGarden, but the therapists also continue to enjoy the possibilities of change as well. The job of the therapists has become more enjoyable as the PlayGarden enhances their direct work with the patients and also provides them with a space to enjoy. Therapists used the PlayGarden enthusiastically from the beginning because they were actively part of the process, and they pursue the new opportunities that the PlayGarden presents. Therapists feel very free to vary the planting from year to year, adding to the base planting of trees and shrubs. They have adapted new methods to meet therapy goals as they have become familiar with the children’s responses to the

outdoor setting. One way in which the therapy has changed is that children are given more opportunity to decide what they will do at any given time.

“The garden also allows space for therapists to rest when they are not with the patients. Hospital staff members are often seen outside chatting with each other or on the phone, eating lunch, and reading. The garden is a space in which they can leave the clinical environment and restore their energy before returning to work. Families of patients also spend time in the gardens while they wait for their loved ones to finish an appointment or get a break from their therapies. Often times, siblings and parents of patients can be seen playing in the garden waiting for a patient to join them outside.” (Pranikoff, 2005)

The PlayGarden has become a favorite spot as well for other therapists and families. Physical and occupational therapists working with adults regularly use the gentle slopes of the pathway system for wheelchair and ambulation practice. It adds diversity to the treatment mix for the therapists and patients and a sense of pride in this special place.

“Moreover, watching the children at play in the garden brings adult patients joy and takes their minds away—if only temporarily—from their pains and worries.” (Pranikoff, 2005)

The PlayGarden has allowed many new programs both for patients and for the community at large, such as the Budding Gardeners and the local library’s story hour. New features have been added to the PlayGarden to help with the programs, including a compost bin and additional window boxes. Neighborhood families have discovered the PlayGarden and so community toddlers are playing there, too. This fosters positive social interactions between children with disabilities and those without.

“The PlayGarden has become a regular spot for playgroups to meet. Community members take advantage of the diversity in the space; for example, in the summer children come ready to get wet, wearing swimsuits—the water features transforming the garden into a miniature water park.” (Pranikoff, 2005)

The impact of the PlayGarden on the hospital as a whole has been especially significant. The donors are extremely happy with the results and plan to continue supporting future projects. The PlayGarden has become one of the key venues for promoting the outreach efforts of the medical center. An Annual Community Festival featuring baby farm animals takes place in the PlayGarden every June and brings in over 800 visitors for the day. Special needs schools for children with disabilities, from pre-school through high school from throughout the City, bring classes to the PlayGarden for environmental education programs run by the PlayGarden’s professional horticultural therapy staff. And the PlayGarden is the first place administrators bring their visitors’ important people.

The PlayGarden is a place for nature in the city. The energy of the wind and sun is evident in the rainbows and the rustling grasses. It is a place to feel the cool shade while lying in a hammock. It is a place to hear the chirping of insects in a bog. It is a place to see the color changes from season to season, and feel the materials of the earth in the water, the soil, sand, and rocks. The new PlayGarden has become the focus of attention for the Rusk children and their families and all the others working with them.

Notes:

1. Portions of this paper were presented at the Sixth Annual People-Plant Symposium, Interaction By Design, hosted by the Chicago Botanic Garden in July 2000, and in their subsequent proceedings publication.

2. Design Awards for the Rusk PlayGarden:

- 1999 AIA Certificate of Merit, Architecture for Education Design Award for Exemplary Learning Environment
- 2000 NYC ADA Achievement Award Honorable Mention
- Jury selection for HEALTHCARE DESIGN Magazine November 2001
- 2002 Boston Society of Landscape Architects (BSLA) Merit Award
- 2003 Adaptive Environments "Excellence in Universal Design: Great places Fit for People Award"
- 2004 The American Horticultural Therapy Association, the 2004 Therapeutic Garden Design Award

3. Participants in the Creation of the Children's Therapeutic PlayGarden at The Rusk Institute of Rehabilitation Medicine, NYU Medical Center, include among others: Landscape Architects and Therapeutic Play Creations Designer: Sonja Johansson, ASLA Johansson Design Collaborative; Project Supervisor: Nancy Chambers, HTR, Director- Glass Garden; Design Team: The Landscape architects in collaboration with the Rusk Team of therapists, medical personnel, and teachers; Therapeutic Play Creations Engineers and Manufacturers: Playground Environments International. Fred Druck, who engineered the play equipment is now at PlayWorx, the custom division of Gametime; Prism Sculpture: Robert Perless; Sketch Artist: Vincent Chiu

4. References for figures in article:

Plan by: Johansson Design Collaborative Inc., Landscape Architecture

Rendering by: Thomas Schaller

Photos by: Sonja Johansson, Michael Rogol, Stephanie Molen, Theresa Johnson, Playground Environments International

Additional information about Rusk PlayGarden:

Chambers, N.K., Johansson, S., and Walcavage, D.M. 1996. "Classroom? Playground? Garden? Or Clinic?" *Journal of Therapeutic Horticulture*. Vol. VIII, 83-87.

Educational Facilities: *The AIA Exemplary Learning Environment Program*. AIA 1999 Design Awards for Rusk PlayGarden, The Images Publishing Group. (2002)

Johansson Design Collaborative website: www.johanssondesign.com

Johansson, Sonja & Chambers, Nancy. 2001. "A 'Sensational' Children's PlayGarden." *Zolltexte*, Austria.

Johansson, S. "Creating Outdoor Natural Play Environments for Disabled Children's Rehabilitation." *ASLA Proceedings*, Montreal (2001); updated for San Jose (2002).

Pranikoff, Julie. (2005). Post Occupancy Evaluation (POE). data was collected in the summer of 2005. The Graduate Center – The City University of New York.

Nursing, Japanese publication Gakken 2001, about Rusk Gardens

White, H. (2002). "Child's Play". *Garden Design, Spaces*, April 2002

RUSK THERAPEUTIC PLAYGARDEN PLANT LIST
(as of 1999. Therapists make some changes every year.)

TREES

Chionanthus retusus (Chinese Fringetree)
Salix alba (Weeping Willow)
Chionanthus retusus (Chinese Fringetree)
Koelreuteria paniculata (Goldenrain)
Oxydendrum arboreum (Sourwood, Sorrel)
Prunus subhirtella (Weeping Higan Cherry)

SHRUBS

Buddleia davidii (Butterfly Bush)
Calycanthus floridus (Carolina Allspice)
Cedrus atlantica 'Glaucu Pendula' (Weeping Blue Atlas Cedar)
Cotinus coggygria 'Royal Purple' (Royal Purple Smoke Bush)
Hamamelis x intermedia (Witchhazel)
Hibiscus syriacus 'Diana'
Hydrangea quercifolia (Oak Leaf Hydrangea)
Hydrangea macrophylla 'Blue Wave'
Philadelphus (Mockorange)
Prunus laurocerasus 'Otto Luyken' (Cherry Laurel)
Syringa patula 'Miss Kim' (Lilac)
Syringa villosa 'Donald Wyman' (Lilac)
Vaccinium corymbosum, mixed, early-late (Blueberry)
Viburnum carlesii (Korean Spice Viburnum)

VINES

Actinidia kolmikta
Clematis varieties
Honeysuckle
Hydrangea anomala
Polygonium aubertii
Dolichos lablab

BOG PLANTS

Acorus verigata
Cattail

Equisetum
Hardy Canna
Horsetail Rush
Iris 'Caesars Brother'
Liatris microcephala
Lobelia cardinalis
Lobelia siphilitica
Saggitaria
Water Clover
Water Parsley

PERENNIALS

Achillia 'Pink Deb' (Yarrow)
Aquilegia flabellata 'MiniStar' (Columbine)
Aruncus
Aster frikartii 'Monch'
Astilbe varieties
Aurinia saxtiles 'Compacta'
Cimicifuga racemosa 'Autopurpurea'
Coreopsis 'Moonbeam'
Corydalis lutea
Echinacea 'Magnus' (Purple Cone Flower)
Gentiana (Gentian)
Hemerocallis 'Hyperion' (Daylily)
Hibiscus moscheutos
Iris chrysographes
Iris kaempferi
Lavendar 'Hidcote'
Lychnis
Lysmachia clethroides
Mertensia siberica
Monarda (Bee Balm)
Nepeta faassinii
Nepeta mussini 'Blue Wonder' (Cat Mint)
Peony - 'Bowl of Beauty', 'Sarah Bernhard'
Perouskia atriplicitfolia (Russian sage)
Phlox sublata
Phlox paniculata 'Bright Eyes'

Physostegia virginianum
Rudbeckia hirta (Black-eyed Susan)
Salvia 'Wild Watermelon'
Santolina chamaecyparissifolia (Lavender Cotton)
Santolina virens
Saponaria officinalis
Solidago rugosa 'Fireworks' (Goldenrod)
Stachys 'Helen von Stein' (Lamb's Ears)
Stokesia laevis 'Blue Danube' (Stokes Aster)

Thymus citrodorius 'Gold Edge' (Golden Thyme)
Thymus pseudolanuginosus (Thyme)
Tricirtis formosa 'Amethystina'

GRASSES

Festuca glauca
Miscanthus 'Yaka Jima'
Panicum 'Heavy Metal'
Pennisetum alopecuroides

PART TWO: ENVIRONMENTAL SOURCES OF
WELLBEING

Therapeutic Landscapes in the Public Realm: Foundations for Vancouver's Wellness Walkways

by Patrick F. Mooney, ASLA and Don Luymes

The design of therapeutic landscapes is a rapidly growing specialization of professional practice in landscape architecture. Society, modern medicine, and researchers are once again rediscovering the historical practice of integrating therapeutic landscapes with other patient treatments. The benefits of contact with nature are also being recognized in a variety of settings beyond health care and for a variety of users. In the past quarter century, interest in the theory, design, and function of therapeutic and restorative landscapes has been increasing in North America, Europe, Japan, China, and elsewhere.

The word therapeutic means having the ability to restore or to preserve health. When combined with the word landscape or garden we are left with the idea that the setting itself can restore or maintain health. However it is the interaction between the individual and the landscape that creates the benefits of improved functioning and wellness. Wellness is a condition of not only not being sick, but of being physically and mentally at a more optimum level of functioning. By this understanding a therapeutic landscape or garden is one that supports mental and psychological health and well-being through the interaction of the user.

Complimentarily and somewhat overlapping theories of how the therapeutic process occurs have been put forward. One widely accepted theory is the Stress Recovery Theory developed by Roger Ulrich (Ulrich 1984, Ulrich 1999, Ulrich et al., 1991). This theory proposes that viewing scenes of high natural content reduces stress, improves mood and aids in the functioning of the immune system (Cooper Marcus and Barnes, 1999). A number of authors have proposed that since our ancestors evolved in environments that were much more natural than those which we typically inhabit, there is an evolutionary basis for both landscape preference and the beneficial effects of contact with nature. The authors hypothesize that particular qualities and physical arrangements of a given landscape that would have supported the survival needs of our hunter-gatherer forbearers are preferred by humans (Kaplan and Kaplan 1978).

Human Response to the Attentional Demands of Urban Life

Environmental psychologists Steven and Rachel Kaplan, at the University of Michigan, have developed the Attention Restoration Theory to explain why landscapes are "restorative." They maintain that modern life is essentially fatiguing to our ability to focus our attention and that a condition of directed attention fatigue results. In a classic paper on the nature of human environmental psychology, Stephen Kaplan has elucidated the mechanism for this process of mental restoration (Kaplan, 1993). He tells us that processing information from our environment requires us to focus

our attention on what is happening around us. To do this, humans have developed two kinds of attention mechanisms: involuntary attention and voluntary (or directed) attention.

Many things in our environments attract our attention involuntarily. Movement, noise, large animals, color, and blood are examples of attractors of involuntary attention. Other things requiring our attention but not inherently fascinating to us are dealt through our directed attention mechanism. Stress or mental fatigue may be largely the result of directed attention fatigue. In this fatigued state our cognitive abilities are lessened and only the very most salient aspects of a problem or environment receive attention, while much of what is important in either the cognitive or the physical domain will be missed (Kaplan, 1994).

If we examine the effect of modern urban life on the human organism we can see that the involuntary attentional demands of modern society include forced and extended social interaction, crowding, and many aural and visual demands that are irrelevant to the needs of the individual at the moment. In this setting, we become fatigued from the constant effort to inhibit irrelevant information and to find and process relevant information. Such environments do not entice us to be involved, to comprehend, and to interact. We are stressed because our directed attention mechanism is overworked and because our need to make sense of our environment is frustrated. The resultant directed attention fatigue produces the state of poor functioning and lack of clarity about one's situation described by Kaplan and Lewis. What is needed is an aid to restoring mental functioning, clarity, and a sense of knowing. Unless this is done, an impaired quality of life may well become a chronic state.

Characteristics of Restorative Environments

A restorative environment is one that facilitates restoration of the directed attention mechanism. In such an environment functioning is easy and automatic. Our attention is engaged without discernible effort. Research has shown that people find natural or naturalistic environments intrinsically fascinating and strongly restorative (Kaplan and Kaplan, 1989). Such landscapes are said to contain "soft fascination" due to the presence of natural elements in the landscape and are highly restorative. This process is not instant. Since the fatiguing effect of environment on our psyches occurs over a period of time, it follows that frequent exposure to restorative environments over a similar time period leads to positive cumulative effects (Cimprich, 1990).

Both Ulrich's Stress Reduction Theory and the Kaplan's Attention Restoration Theory theories have been demonstrated empirically by many researchers over the past few decades. For example, Roger Ulrich reports that a reduction in stress levels as measured by physiological changes in the body occurs within 3 to 5 minutes of viewing natural scenes (Ulrich 2002). Several researchers have found correlations between key aspects of restorative landscapes i.e. being away, extent, fascination and compatibility and measures of restorativeness (Velarde et al. 2007).

It may be that stress reduction as measured by Ulrich and his colleagues is a quick signal of the larger and longer term restorative effects taking place in the brain proposed by the Kaplans and allied researchers. Since the directed attention mechanism does not fatigue in a short period of time, but rather is worn down over a period of weeks and months, so too does its long-term restoration require frequent and regular exposure to natural environments (S. Kaplan 1994).

From the above research it has become clear that exposure to natural environments, or even pictures of natural environments, ameliorates stress, improves clinical outcomes and improves mental well being (Hartig and Evans 1991, Ulrich 2002). The therapeutic landscape has been seen by landscape architects and others as the vehicle by which people can receive these benefits.

However, its domain has been, and continues to be, the institutional ground rather than the public realm (Dannenmaier, 1995). While extremely important in this context (Mooney and Hoover, 1996), this categorization of the therapeutic landscape has limited public understanding and implementation.

Most people encounter the landscape of their daily lives in the public realm of workplace, schoolyards, neighborhood streets, and urban open spaces. Thus, it is the public realm that can potentially deliver the greatest benefits to the greatest number of people. Before this can happen it is necessary to rid ourselves of the notion that therapeutic landscapes are primarily an aid to the institutionalized, ill, aged, and impaired. We must extend the concept of the therapeutic landscape from the institutional setting to the public realm.

If members of the public are not ill, we might wonder, why should they need exposure to therapeutic environments in the public realm? There are two responses to this question. The first is that that we are not well and even that our urban environments either reflect or cause that malaise. Ted Relph coined the term "existential outsidership" to describe the anomie caused by living in placeless cities (Relph, 1976). Charles Lewis tells us that functioning in an urban environment can provoke stress and lead to mental fatigue. This can result in "reduced competence, irritability, loss of judgment, and antisocial behavior" (Lewis, 1996, p. 118). Obviously, this is not a description of mental wellness. The second response is that therapeutic effects exist in the broad sense of preserving health. Rather than helping to cure illness, they are restorative to mental wellness, and it is this restorative contact that is needed by the urban dweller.

The Therapeutic Landscape

The range of benefits that may accrue from contact with natural environments is well documented and relevant to all segments of the population (Lewis, 1996). It is for this reason that we believe that the mechanisms that provide the therapeutic effect to populations with special needs likewise provide the restorative effect of landscape to

the general populace. What occurs in the therapeutic landscape is not particular to the institutionalized, e.g., those in long-term care facilities or mental or correctional institutions. It is rather something that is fundamental to the human condition, and it can be experienced by anyone, at any time throughout life. Conversely, just as restorative landscapes are mentally restorative for the general populace, the therapeutic environment uses these same mechanisms, adapted to the special population being treated, to achieve a therapeutic effect.

We hypothesize that both the restorative landscape and the therapeutic landscape achieve their benefits through the restoration of the directed attention mechanism. A therapeutic landscape is a restorative landscape that also contains the physical features that make it function for its special users. It is compatible with their special needs and with prescribed therapeutic outcomes even as it facilitates what users wish to do there.

One other underlying mechanism of the restorative environment is perhaps not so well researched and documented, but we think it is ultimately related to, and constitutes a corollary of, the “soft fascination with nature” theory. In 1979 Harvard biologist E.O. Wilson coined the term biophilia.¹ In his words:

I have suggested that the urge to affiliate with other life forms is to some degree innate, hence deserves to be called biophilia. The evidence for the proposition is not strong in a formal scientific sense: the subject has not been studied enough in the scientific manner of hypothesis, deduction, and experimentation to let us be certain about it one way or another. The biophilic tendency is nevertheless so clearly evidenced in daily life and widely distributed as to deserve serious attention. (Wilson, 1984, p. 85)

It seems probable that the mechanism that causes us to be biophilic and attracted to environments that contain natural elements is related to our basic human nature. The premise behind both mechanisms is that, for humans, this way of being is rooted in our evolutionary past and is therefore inherent in our psychological makeup. We hypothesize that the list of natural elements that elicit “soft fascination” and that are therefore restorative should be expanded to include the presence of other life forms in the landscape.

This brief discussion illustrates some characteristics of the restorative environment. First, it is compatible with our informational needs. Humans require appropriate informational stimulation in our environments, i.e., information that responds to our needs at that moment. This includes such things as information that supports wayfinding or provides welcome visual stimuli.

Next, restorative environments are “natural” and biophilic. We are mentally restored and find pleasure in environments that contain natural elements, and we are

¹ A later book, which assembled the work of various scientists on the subject, provided more empirical support for the biophilia hypothesis (Kellert and Wilson, 1993).

inherently attracted to the visible presence of other life forms. In a survey conducted in the Vancouver area of British Columbia, it was found that regardless of age, gender, or income level, the majority of people surveyed preferred naturalized areas to more refined parks. The majority also reported that they enjoyed seeing a natural landscape with wildlife present and think that there should be more of such areas in the city (Mooney, 1996). This is indicative of a tendency of people to “turn on” and mentally engage their surroundings once their biophilic response or their information processing response is triggered.

Restorative environments also provide relief from unwanted stimulus. They are not visually disruptive and cluttered: they do not provide more information than we can assimilate or information that is unnecessary to our purposes. To achieve its effect, a restorative landscape should have abundant natural elements—landform, rocks, water, and plants—arranged in a way that makes their processing easy and that is compatible with the user’s intent. For example, information that supports wayfinding and access should be abundant, and information that is irrelevant to the purpose of moving to and from key destinations in that environment should be minimized. Restorative environments would support our natural biophilic tendency by ensuring that other humans and/or other life forms such as butterflies and birds would be visible.

Last, if the restorative environment is in the public realm it should be safe and social. The human species is a social species. In our early history we functioned in the social context of family and tribe. For roughly the past 10,000 years we have lived in highly structured social civilizations and in cities. Our cities today are in many senses unsafe. This reduces the use of the urban environment, thus reducing the benefits that could arise from social interaction in that environment. The urban restorative environment, to be used socially, must first be perceived as being physically and psychologically safe.² It was these ideas, values, and theories that informed the design of a neighborhood renovation scheme in Vancouver, British Columbia, intended to be restorative to both the general public and the special populations living in the neighborhood.

Vancouver’s Wellness Walkways: Retrofitting the Urban Landscape

The City of Vancouver’s Planning and Engineering Departments jointly commissioned the Mount Pleasant Wellness Walkways Design Study from the authors.³ The intent of the study was to identify design solutions that could be applied on public open space

2 In *With People in Mind: Design and Management of Everyday Nature* (1998) by Rachel Kaplan, Stephen Kaplan, and Robert Ryan, the authors discuss the characteristics of restorative environments. The characteristics of restorative landscapes discussed here overlap or correspond with some of their categories. For a fuller discussion of the characteristics of restorative landscapes, this work is recommended.

3 Copies of this study may be requested from Alan Duncan, Greenways Planner, Community Planning Division, 4th Floor, East Wing, Vancouver City Hall, 453 West 12th Avenue, Vancouver B.C, V5Y 1V4, Canada.

or on adjacent private properties (on a voluntary basis) to accommodate the full range of people in the Mount Pleasant neighborhood. These included a higher than usual population of seniors in care and people with special needs. The result is a pre-design study for a particular type of public realm development – one that serves the public by providing respite and restoration while serving the special populations in the neighborhood by giving them that same respite together with an environment that supports their additional needs.

The prototypical design solutions in the study show how the public and private realms could be changed incrementally to contribute to community health in general and to respond to the special needs posed by illness, disability, or age. We term this a therapeutic rather than a restorative environment because it contains the fundamental elements of the restorative landscape and the physical features necessary to serve its special populations. To our knowledge, the design and implementation of such a public realm has not been attempted previously. The nature of the problem is broad and multifaceted. The proposed solution requires a similarly diverse design response.

Approach

The study combined traditional landscape architectural methods of inventory and analysis of the study area, stakeholder consultation, and review of research relating to the problem. The consultants began by inventorying the physical condition of the study area. The inventory included street lighting, existing vegetation, heritage resources, slopes and topography, traffic flows, crime statistics, sidewalk conditions, and pedestrian origins and destinations.

The city, prior to engaging consultants, convened a series of stakeholder and neighborhood public meetings. The program that emerged from study of user needs was synthesized with the inventory to develop prototypical walkway circuits for the neighborhood. These Wellness Walkways circuits (Figure 28, following page) expressed a hierarchy of pedestrian linkages connecting neighborhood nodes and designed to strengthen wayfinding.

The study needed a strong rationale for the intended changes to both the public and private lands. To get positive response to the program and to be able to support and establish priorities, the consultants turned to the current and classic literature in the areas of environmental psychology, therapeutic landscapes, universal design, defensible space, and design for social interaction. Our research reinforced our intentions to design a public realm that would be rich in relevant information, incorporate natural elements, and be compatible with people's needs. This meant that the new neighborhood landscape would promote wayfinding—even for the visually impaired or mentally disadvantaged—be universally accessible, support socialization in the public realm, provide physical and psychological safety through the application of defensible space principles, and prevent crime through environmental design strategies.



Figure 28. The Wellness Walkways circuits first emerged as a hierarchy of routes between major neighborhood destinations. These routes and nodes were then designed using the principles of restorative landscapes discussed in this paper. *Image courtesy Patrick F. Mooney and Don Luymes.*

It is significant that the stakeholders developed the program. The findings of the literature review were in all ways congruent with the intentions of the people in the neighborhood. For example, when people living in the neighborhood were asked how they wanted their local park enhanced, they asked for universal access, places for socialization, enhancement for birds and butterflies, and more perennial flowers (Figure 29). In other words, they described a restorative landscape rich in near nature, information-rich, compatible, social, universally accessible, and biophilic.



Figure 29. Tea Swamp Park, a local destination and activity node. The amended design shown here promotes universal access, socialization, micro-climatic comfort, and near nature. It supports the biophilic impulse by attracting urban wildlife. *Image courtesy Patrick F. Mooney and Don Luymes.*

Solutions

The landscape architects had a mandate to work with three types of improvements.

These were:

1. basic street improvements, such as sidewalks, curbs, and street trees;
2. standard accessibility and safety improvements, e.g., curb drops and crosswalks; and
3. unique elements that would support therapeutic use of the street.

The design recommendations sorted into four categories: rest areas (Figure 30), intersections, sidewalks and streets, and special landscape areas. The consultants made

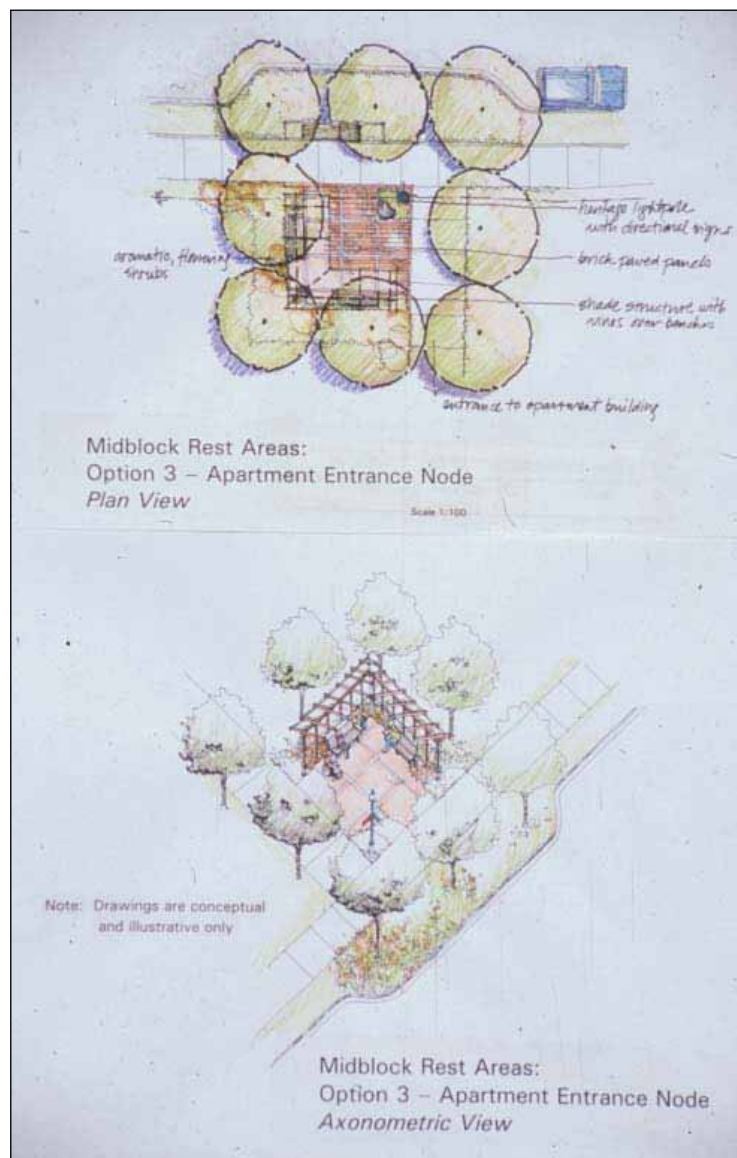


Figure 30. A typical mid-block rest stop incorporating the use of private land. By placing such rest areas at mid- and end-block positions, and at the entries to the healthcare facilities in the neighborhood, the authors were strengthening the visual image of the neighborhood. Such places are rich in information, incorporate near nature, and support socialization, wayfinding, and defensible space. *Image courtesy Patrick F. Mooney and Don Luymes.*

61 different recommendations for the neighborhood, and these elements were put into a matrix indicating category and showing whether the element would provide support, either directly or indirectly, in each of the following areas: universal design, way-finding, restorative landscape, safety, beautification, or community building. Our intention was that those recommendations that supported the most goals of the study with least cost should have priority for implementation

Conclusion

The City of Vancouver is now in the process of implementing the study recommendations and is encouraging investment by the business community and private citizens in a process that will transform the neighborhood of Mount Pleasant. We have proposed that once the Wellness Walkways are in place a post-occupancy evaluation should be conducted to confirm the benefits of these changes to the community. This evaluation could validate much of the research used in designing the Wellness Walkways and reveal new questions for further research.

The study's proposed solutions are a set of prototypical designs, showing how the public realm can be changed incrementally to more fully meet community needs (Fig. 31).

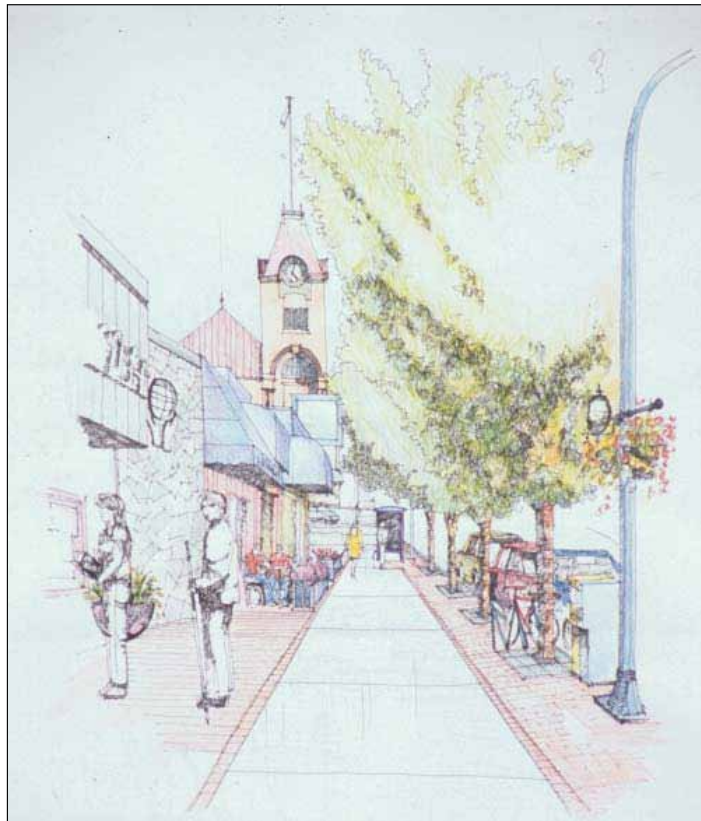


Figure 31. Main Street, the commercial hub of the neighborhood, is to be amended to support the visually impaired and those using wheelchairs while at the same time being more compatible with the information needs of the general public. This is done through the use of bus shelters designed to accommodate the visually impaired, tactile paving strips, new street lighting, seating, and coordinated signage. *Image courtesy Patrick F. Mooney and Don Luymes.*

They are place-specific and client-specific, yet the process applied here would yield relevant yet client-specific design solutions anywhere.

As society ages, this attempt to provide restoration, universal access, and amenity to the urban landscape should become increasingly relevant. Cities across North America urgently require greater visual coherence and amenity, greater public safety, more social landscapes, and greater community identity. Urban populations need safe, compatible, information rich, biophilic, and restorative environments. These environments are especially needed as populations include an increasingly higher percentage of seniors. For that reason, we view this study and its proposed public realm as a prototype for what should be the common urban landscape of the not too distant future.

Note:

Portions of this article are adapted from “The International Development of Therapeutic Landscapes,” *Chinese Landscape Architecture*, 2009. Permission to re-use parts of the article are given by Dr. Jin He-xian, Vice editor-in-chief, *Journal of Chinese Architecture*.

References

- Cimprich, B.E. 1990. “Attentional Fatigue and Restoration in Individuals with Cancer.” Unpublished doctoral dissertation, University of Michigan, Ann Arbor.
- Cooper-Marcus, C., Barnes, M. (Eds.), 1999. *Healing Gardens: Therapeutic Benefits and Design Recommendations*. Wiley, New York, NY.
- Dannenmaier, M. 1995. “Healing Gardens”. *Landscape Architecture Magazine*. Washington D.C.: American Society of Landscape Architects 85 (01): 56-58.
- Hartig, T. and Evans, G.W. 1991. “Restorative Effects of Natural Environment Experience”, *Environment and Behavior*. 23, pp. 3-26.
- Kaplan, R. and S. Kaplan. 1978. *Humanscape: Environments for People*. Duxbury Press.
- Kaplan, R. and Kaplan, S. 1989. *The Experience of Nature: A Psychological Perspective*. New York: Cambridge University Press.
- Kaplan, S. 1993. “The Role of |Natural Environment Aesthetics in the Restorative Experience.” In P.H. Gobster (ed.) *Managing Urban and High-use Recreation Settings*. St. Paul, MN: Forest Service, USDA General Technical Report NC-163 pp. 46-49.
- Kaplan, S., 1994. Personal communication to the author.

Kaplan, R., Kaplan S., and Ryan, R.L. 1998. *With People in Mind: Design and Management of Everyday Nature*. Washington, D.C.: Island Press.

Kellert, S.R. and Wilson, E.O. 1993. (eds.) *The Biophilia Hypothesis*. Washington D.C.: Island Press.

Lewis, C.A. 1996. *Green Nature/Human Nature: The Meaning of Plants in Our Lives*. Urbana: University of Illinois Press.

Mooney, P.F. 1996. "Creating Home Place: Urban Disturbance, Landscape Restoration, Biodiversity, Connection and Dwelling." In *Caring for Home Place: Protected Areas and Landscape Ecology, Proceedings of a Joint Conference of the Canadian Council on Ecological Areas and The Canadian Society for Landscape Ecology and Management*, PolyScience, Montreal.

Mooney, P.F. and Hoover, R.C. 1996. "The Design of Restorative Landscape for Alzheimer's Patients" In Cheryl Wagner (ed.) *Design for Change: Vision, Values, Community, 1996 Annual Meeting Proceedings of the American Society of Landscape Architects*. Washington, D.C.: ASLA. pp. 50-55.

Mooney, P. F. 2009. "The International Development of Therapeutic Landscapes." *Chinese Landscape Architecture* 25 (164) 24-27.

Relph, E. 1976. *Place and Placelessness*, London: Pion Limited.

Wilson, E.O. 1984. *Biophilia*. Cambridge: Harvard University Press.

Ulrich, R.S., 1984. "View through a window may influence recovery from surgery"; *Science* 224 (4647), pp. 420–421.

Ulrich, R.S., 1999. "Effects of Gardens on Health Outcomes: Theory and Research", in: Cooper-Marcus, C., Barnes, M. (Eds.), *Healing Gardens: Therapeutic Benefits and Design Recommendations*. Wiley, New York, pp. 27–86.

Ulrich, R.S. 2002. "Health benefits of Gardens in Hospitals", Paper for conference: Plants for People. International Exhibition Floriade. www.planterra.com/SymposiumUlrich.pdf Accessed July 10, 2009.

Ulrich, R.S., Simons, R.F., Losito, B.D., Fiorito, E., Miles, M.A., Zelson, M. 1991. "Stress Recovery During Exposure to Natural and Urban Environments. *Journal of Environmental Psychology* 11 (3) pp. 201–230.

Verlarde, M.D., Fry, G. and M. Tveit. 2007. "Health Effects of Viewing Landscapes – Landscape Types in Environmental Psychology", *Urban Forestry and Urban Greening* 6:(4) 199-212.

Well-being by Nature: Therapeutic Gardens for Children

by Robin C. Moore and Nilda G. Cosco

The following discussion and design guidelines are based on the assumption that regardless of children's abilities or disabilities, nature has a positive impact on wellbeing and helps children acquire harmonious, healthy lifestyles (Wells, 2000; Wells and White, 2002). We consider wellbeing to be a delicate balance between healthy human processes (psychological, physical, spiritual) and healthy environments (landscapes, weather, built environments, and the social circumstances of daily life). Carefully designed garden environments can help maintain the balance necessary for the healthy growth of children (Grahn et al., 1997; Kuo and Faber, 2004).

All children need to experience the healthy, harmonizing effects of gardens in their everyday lives—in childcare centers, schools, children's museums, doctors'/dentists' offices, hospitals, shopping centers, airports, parks, etc. These opportunities for landscape design can help counteract the rapidity with which children are losing daily contact with nature. Powerful experiences of nature are necessary antidotes to the artificial environments of the new century. Without these experiences, children will see themselves apart from nature because it has never been incorporated into their innermost being. If so, as adults they will lack the passion for nature necessary to protect our planet.

Why Therapeutic?

Why do children need therapeutic gardens? Surely, as children play freely with nature, the effect is undeniably therapeutic (Grahn et al., 1997; Fjørtoft, 2001). Rich, natural settings support children's unfolding potential, building knowledge and wisdom at each level of development. The endless richness of nature wraps children in colors, textures, tastes, fragrances, and movement; it encourages curiosity and motivates a passion for learning. The drama of meteorological phenomena (thunder, wind, rain) obliges humans of all ages to relate their finite strength to the power of nature (Cosco & Moore, 1999). Like a dynamic mirror, the environment presents the child with all of life's facets: birth, death, and metamorphosis. Cycles of life offer clear messages of hope and recovery.

So a "garden"—at least as far as children are concerned—is a place of therapeutic value, where direct contact with nature enhances not only attention functioning (Kuo and Faber Taylor, 2004; Faber Taylor, et al., 2001) but also the feeling of being alive and in harmony with the world. Still, has society become so alienated from nature that we must qualify such bonding as "therapeutic"? In this overspecialized life, it seems we need to put a label on everything, even something as obvious as our relationship with nature, with the planet—framing such a natural, biological connection as merely beneficial rather than essential. Consequently, children's experiences with nature may

be valued relative to the need of those children to overcome illness or impairment. Perhaps a byproduct of our fast-paced society, such judgments become dangerous if we substitute what must be the birthright of all children with a more limited concept that excludes the majority of children from consideration.

All children have a right to experience nature (Moore, 1997). As parents, teachers, and professionals, we must encourage all children to venture outdoors and enjoy the quality of life and learning opportunities offered by direct contact with the living world. Ask around and you most likely will discover that the majority of landscape architects and related professionals chose their profession partly because they were inspired by the deep experience of nature in childhood. We could say all children have a special need for daily contact with nature—preferably in their own space and time. Children are very resilient; they do not require constant shelter from natural elements. They won't melt in the sun or dissolve in the rain, although, of course, special care must always be provided for children who are ill, hypersensitive, or debilitated. The human body is a self-adjusting system that learns through experience. Gardens designed for wellbeing will help all children develop bodies that are physiologically and psychologically healthy.

We recognize that there are groups of children with special needs who require extra care or extra stimulation outdoors under the guidance of trained professionals. Certainly, the special needs of these groups will require special design features and accommodations, but it does not mean the landscape designs that support these special therapeutic programs need to be fundamentally different. We must be careful not to think of them as special places for a small minority of children. The basic premise of universal design is that environments should be designed to accommodate the needs of all people (Mace, 1997).

Gardens for Playing and Learning

Gardens have a special significance for children because they enable them to relate to the power of nature through play (Moore & Wong, 1997). Play is the child's way of establishing relationships with the social and physical world. Play is also a human right guaranteed in Article 31 of the Convention on the Rights of the Child (United Nations, 1989). Because gardens are diverse, constantly changing, multisensory settings (as compared to playgrounds with static, standardized, manufactured equipment), they offer children a special boundless way of playing and learning that stimulates the development of mind, body, and spirit.

Some years ago, a "playing and learning" garden was created in an urban elementary school in Berkeley, California, by replacing the one and a half acre asphalt schoolyard with running water, woodland, and wildflower meadows (Moore and Wong, 1997). Butterflies and birds filled the air with colorful movement and songs. As a result, the children identified with the school as a place of joyful learning and positive social relations. They spoke about the garden as a place of belonging, as a "special friend."

In an interview some years later, an adult former student aptly remembered it as “compressed countryside.”

Every type of institution dealing with children could offer similar outdoor environments for wellbeing, allowing children to experiment and have enjoyable experiences in communion with nature. This can work particularly well in medical and rehabilitative institutions where children may have frightening, mysterious things done to them over which they have no control. A garden can offer such children opportunities to recover a sense of control over themselves and their surroundings.

New Professional Roles

The importance of sensory stimulation and the primary experience of nature offer landscape designers the potential for creating new types of nature-based, protected havens for children, where the role of professional staff is to act as therapist/play leader. To be effective, professional caregivers must have extensive knowledge of plants, animals, and gardening. Equally, horticultural therapists need to know about play and child development.

Landscape architects need to understand how environments can be designed to support the creative roles of caregivers. We need to convey a message that all children, not only children with special needs, can benefit from natural therapeutic spaces of health and delight. We need conviction to apply “old-fashioned” design concepts such as the smell of moist soil, the feeling of rain on a young face, the fragrance of apple blossom in the spring, and the harmonious sound of running water.

Design Guidelines for Well-being Gardens¹

The purpose of the following design guidelines is to help landscape designers consider appropriate issues at the beginning of the design process. The guidelines are presented in such a way that they can be applied to the design of many possible types of well-being gardens across a range of institutions serving children. The purpose is not to limit the creativity of the designer by overly prescriptive directions, but rather to focus creativity in ways that are more likely to produce appropriate design solutions.

1. Site Planning

Orient the garden site to receive year-round sun and shelter from winter winds. Plants are the essence of healing in gardens for wellbeing. They need sun to grow. Children need outdoor spaces warmed by the sun, depending on latitude and season. Locate gardens so adjacent buildings will not overshadow them.

1 An earlier, fuller version of these guidelines, oriented toward medical/health facilities, can be found in Moore, R. 1999. ‘Healing Gardens for Children.’ In Cooper Marcus, C. and Barnes, M. (Eds.) *Healing Gardens: Therapeutic Benefits and Design Recommendations*. New York: John Wiley.

Site the garden on level terrain. Anything but a very modest degree of topographical change across the garden site will most likely give difficult access problems from building and garden entrances. Here we are referring to overall site topography, not hills and slopes created as design features for children's enjoyment.

Conserve natural features of the site. Natural features such as mature trees, rock outcroppings, hillocks, and watercourses should be conserved as they provide natural identity to the site and potentially useful amenities (e.g., shade trees). Conserve as much topsoil as possible, to give new plantings the best possible start in life.

2. Location

Locate the garden so it is overlooked by children's indoor spaces. For children who cannot go outdoors, a garden view is critical. Staff can make the connection between inside and outside by physically importing natural elements from the garden as well as by visibly transplanting outdoor plants prepared by the children indoors.

Locate the garden adjacent to children's spaces. Locating gardens next to children's spaces such as playrooms, classrooms, and multipurpose rooms will save time and energy on the part of staff such as play leaders and horticultural therapists who must move items of equipment and play materials back and forth.

Locate the garden so that it is visible from public use facilities such as entrances and waiting areas. When the garden is visible from the facility entrance, it reinforces a friendly, welcoming message to children, family members, and visitors. It also ensures supervision from staff.

Infants and toddlers using the sheltered courtyard garden shown in Figure 32 have direct access from the building. Random paving provides access to mini-lawns and planting beds. The central lawn is crowned as a low "hill." Plants were selected for varied texture, color, and year-round interest. Adirondack chairs offer a relaxing place



Figure 32. A sheltered courtyard garden. *Photo: Nilda Cosco.*

for staff to take time out with children. A large, manufactured shade structure partly covers the garden but allows sufficient light for healthy plant growth. Staff added a colorful banner, to respond to air movement.

In the garden shown in Figure 33, solar exposure supports vigorous growth of perennial beds in front of floor-level windows. As a result, the garden appears to be part of the indoor space. The garden also contains features appropriate to the needs of infants and toddlers: a low rail for children learning to walk (could be higher for older children with mobility impairments), stepping-stones, soft-surface track for wheeled toys, shade trees, lawns, and intriguing natural objects (top, left-hand corner shows a contorted, recycled tree limb).



Figure 33. Vigorous plant growth in front of windows gives the appearance that this garden is part of the indoor space. *Photo: Robin Moore.*

3. Security

If the community uses the garden, apply principles of defensible space. Children, family members, and other users of the garden should be protected from intrusive, inappropriate social interaction. Design strategies should vary according to the context and type of institution. High levels of outdoor activity and staff presence in the garden are the most effective defenses. Measures may also include a single entrance overlooked by an administrative office, an audio signal of each coming and going, an electronically controlled gate, closed-circuit television, etc.

4. Microclimate

Provide shelter from the summer sun. Children's skin is sensitive and can easily be damaged by overexposure to sunlight. Children with limited mobility are especially vulnerable, as they cannot move quickly from direct sun. Plenty of shady areas need to be provided. Filtered light works best at many latitudes. Deeply shaded, dark areas

are visually unattractive and, because of the low illumination, do not function well as activity settings.

Provide for the penetration of spring, winter, and fall sunlight. Use south-facing (in Northern Hemisphere) orientations for activity areas. At many latitudes, outdoor activity spaces are more attractive and comfortable if direct sunlight is allowed to penetrate. Tree species should be chosen and shade structures designed and positioned in relation to activity spaces to allow sunlight to penetrate during temperate and cold seasons. As the trees leaf out, these same spaces will be protected from direct sun during the hot season.

Provide shelter from precipitation. In the middle part of the year when the weather is warm or hot, children enjoy being outside when it is raining, provided that the activity space is sheltered. A light, impervious roof will serve this purpose and allow children to continue their activities while exposed to the sensory enjoyment of the elements.

5. Entering and Exiting

Make all entrances welcoming and child friendly. Children, especially as first-time users, should feel welcomed into the garden with a friendly gesture. This can be achieved by colorful, interesting plantings and by placing playful artifacts such as sculptures, benches, archways, etc., at strategic locations (Figures 34 and 35). Child-made artifacts and gardens created by young people can be displayed. To avoid glare when exiting buildings (especially for children with sight impairments), translucent awnings, pergolas, shade trees or other shading devices should be located at exit thresholds.

6. Accessibility/Usability

Provide accessibility for children using wheelchairs, transporters, walkers, cots, etc.

Children with physical impairments use a variety of mobility devices. Gardens should



Figure 34. “Come on in,” the vine-covered arbor entry to this garden seems to say. The colorful flag is changed by the staff to celebrate each passing season. *Photo: Robin Moore.*



Figure 35. The entrance to this garden is embellished with colorful windsocks and a multitude of different plants. *Photo: Nilda Cosco.*

be universally designed to provide stimulating experiences regardless of abilities or disabilities (Figures 36 and 37). For example, make sure that hands-on landscapes are at appropriate heights for users of these devices, including children in prone positions. We recommend working directly with the staff, children, and parents to assess the particular physical requirements and appropriate design dimensions for the user group rather than relying solely on basic ADA requirements. Plants are such flexible and diverse materials that settings can be designed to accommodate a broad variety of needs.



Figure 36. A ramp over a sand play area becomes a feature in itself in this universally designed children's play area. From the upper level, children have a commanding view over the rest of the play garden as they follow the pathway to the next setting. *Photo: Nilda Cosco.*



Figure 37. This secondary, accessible plank path offers children a diversion, either up and around the planted bed or onward through the "secret tunnel" (dark area in the photo). The routes provide an excellent hide-and-go-seek setting for children and adults as well as two levels of perceptual challenge for children to learn or re-establish feelings of security within their surroundings. *Photo: Nilda Cosco.*

Provide usability for children with sensory impairments. The needs of sight- and hearing-impaired children should be met in ways that are nonintrusive for other children (Figures 38 and 39, following page). Sight-impaired children need acoustic, tactile, and fragrance cues for orientation and way finding. Hearing-impaired children need visual cues. For children with sight impairments, check the design of the garden for protruding objects; pathways should be designed with strongly delineated edges to facilitate easy, safe movement. Plantings should offer fragrances that coincide with the visual way-finding structure of the garden. Wind chimes are useful cue devices.



Figure 38. Signs in this garden remind volunteer staff of activities they might do with the children with sensory impairments. *Photo: Nilda Cosco.*



Figure 39. The acoustic play corner of this garden is made from recycled, painted cooking kettles. *Photo: Nilda Cosco.*

Provide a clear hierarchy of pathways. Primary paths should provide for direct travel through the garden—especially for users with sight impairments. Secondary and tertiary pathways can be designed to be progressively more indirect with an accent on exploration and discovery.

Provide smooth, even surfaces for all primary pathways. Main pathways should be constructed of concrete—a material that can be tinted and inlaid with ceramic tile for aesthetic enhancement. Asphalt is also acceptable for primary pathways and can be decorated using special asphalt paint.

Provide access for maintenance equipment. Make sure access is provided for maintenance vehicles and occasional heavy equipment.

7. User Group Territories

Provide for garden use by a variety of groups, if appropriate, by allocating different spaces or through time-sharing. In casually used gardens, territorial structure is more likely to be a sensitive issue. Program spaces may need to be separated from public use areas. Areas for different age groups may need to be spatially separated.

Provide private spaces for families. For gardens located in facilities serving terminally ill children, secluded spaces will be needed where parents, siblings, and relatives can grieve in private. Benches, the sound and movement of water, screens of plants, and places that are elevated and that give a sense of perspective are features that can support the restorative process.

Provide spaces for adolescents, if relevant. Older children and adolescents may need their own garden space. Adolescents need their own spaces where they can hang out away from adults. This is a very subtle design problem. The best solution will come from involving adolescents in designing their own spaces.

8. Design Participation.

Provide ways for representatives of user groups to be involved in the design of the garden. There are many ways of involving users, especially children and adolescents, in the design process so they may offer their creative design ideas. Methods include site safaris, design workshops using drawings and models (Figure 40), and focus groups.

9. A Range of Social Settings.

Provide a broad range of group settings to accommodate children being together as well as being alone. Children have a wide range of social and psychological needs that are constantly changing. It is fundamental to the role of the outdoor environment that each child has freedom to find her or his own most comfortable and enjoyable setting. A choice of settings that range in degrees of privacy should be provided (Figure 41). They should be of different sizes to accommodate a variety of groups. Also, consider the variety of mobility devices the children may be using.



Figure 40. These children, some with siblings with severe developmental disabilities, are participating in a design workshop using images to select the features to be installed in a universally designed play environment. Photo: Robin Moore.



Figure 41. This therapeutic garden provides intimate, shady corners where friends meet surrounded by beautiful plants. Photo: Courtesy Lucas Gardens School.

Provide settings where special events/entertainment can be held or staged. Consider the possibilities for creating programs of special events and entertainment for children and their families—birthday parties and fund-raising events for example. A modest,

multipurpose amphitheater can be an appropriate solution if space is available. Alternatively, an area in the garden can be designed to be converted into a temporary stage/presentation setting (Figure 42). Whether temporary or permanent, the space should be designed to support theatrical accoutrements such as backdrops and wings. Performance areas should be orientated facing the sun for good illumination. The sun should be behind the audience, who should be protected by permanent or temporary shade.



Figure 42. The articulated shape of the paved area in this therapeutic garden provides a larger space for community gatherings and special events adjacent to the building. *Photo: Lucas Gardens School.*

10. Accommodation of Children's Special Needs

Design gardens to include children with a wide range of special needs. In medical or special education facilities, children may have special needs if they are postoperative, oncology, and psychiatric patients; children with emotional, learning, physical, sensory, and developmental impairments—temporary or permanent; or long-term resident patients. These examples should be used as a basis for discussion with staff about the functional requirements to be accommodated.

11. Accommodate Needs for both Challenge and Rest

Provide a range of physical/social settings so that each individual can explore and discover his or her own level of challenge. In order to grow, children need to be challenged. One child may be challenged by the idea of simply going outside. Another will need to overcome shyness in playing with other children. Yet another will find planting a flower in a pot a new and exciting experience. And so on. Other children, perhaps recovering from surgery or a severe illness, seek rest rather than challenge. They need quiet, peaceful corners to recuperate (Figure 43, following page).



Figure 43. This gazebo in a hospital children's garden provides a retreat for family groups and children who want to be alone or with a best friend or sibling. *Photo: Robin Moore.*

12. *Child-nature Interaction*

Provide as many options as possible for children to experience nature through their senses and/or through hands-on activities. The essence of a well-being garden from the perspective of children is for them to experience directly the sensory richness and living quality of nature. The natural setting should contain the greatest diversity of plants possible, selected for their collective year-round performance from early spring to late fall. At any time of year there should be a new, natural event happening in the garden. Select species that produce flowers, fruit, and other parts that can be harvested and used by the children as play objects or in arts and crafts projects, especially during winter months (Figure 44).



Figure 44. In this therapeutic garden, staff and children have worked together to design and install a "scrap garden." The original garden designer left room for this type of user-initiated embellishment. *Photo: Nilda Cosco.*

Provide opportunities for planting. One of the most meaningful activities for a child in a stressful situation is to be able to intervene in the cycle of life—to start a new life within another species. The feasibility of such activities depends on the institutional commitment to facilitate and support planting activities, the blessing of the medical staff, and the presence of trained horticultural therapists to run the program.

Provide opportunities for harvesting. Children gain much enjoyment from any type of harvesting activity with vegetables (especially to eat) and flowers (gathering budding branches and daffodils in the spring, using cut flowers as decoration) and collecting plant parts as play materials.

13. Diversity of Natural Settings

Provide as wide a range of natural settings as possible within the constraints of climate and available space. Consider the following major categories:

Vegetation. There are many methods of designing vegetation into garden settings. Indeed, classic garden design employs ground covers, raised beds, planters, pots of many types, tubs filled with annuals, arbors, trellises, arches, vine-covered fences, moss- and vine-covered walls, hedges, topiary, perennial borders, herbs, bulbs, shrubs, trees of various sizes, and many other elements (Figure 45). Plants should be selected for seasonal interest (early flowering, late color, long flowering season). Other key criteria for plant selection include sensory variety (fragrance, texture, wind effects), play value (fruits/nuts, seeds, and foliage that can be used as play props), 'nature's bounty' (edible fruits/nuts, herbs), places to hide, shade qualities, screening (visual buffers and wind screens), and wildlife habitat value (for birds and butterflies in particular). The issue of toxic and allergy-triggering properties of plants must be carefully considered (Huntington, 1998; Moore, 1993).

Animals. Animals are particularly fascinating to children and can offer powerful therapeutic effects. Besides domestic pets, consider designing habitat conditions for amphibians, insect life, and birds. Also think about aquatic habitats for fish and dragonflies (Moore and Wong, 1997).

Water. Water is a traditional garden element. Research shows it is a popular play material and a strongly remembered childhood experience (Moore & Wong, 1997). In therapeutic gardens, water is even more significant as it is the source of life. It is not difficult to imagine including a naturalistic fish pond, perhaps elevated and/or protected with a submerged steel mesh to protect against children falling in.



Figure 45. Rich plantings cascading from the large, raised planters, that define the pathways in this therapeutic garden, brush against the wheelchair users and are easily within their reach. Photo: Lucas Gardens School.

Hands-on Activity Settings

Provide attractive movable items that will engage children in their use of the garden. One of the fundamentals of children's play is the desire to manipulate the environment. Small wagons that can be moved around or a sandbox with toys will be sources of delight and provide excellent opportunities for children, siblings, staff, and family members to interact. Sand should stay covered with a light, fine-mesh net when not in use to protect it from animals. The sand should be replaced or topped up periodically. Watering cans left casually in the garden will encourage children to water the plants.

Provide a range of appropriately scaled, accessible multipurpose settings for hands-on activities as well as for social gatherings (Figures 46 and 47). When a garden supports an active program, spaces for group activities with the therapist or play leader must be provided. The design of these settings must be fully discussed with the relevant staff with regard to location, size, flexibility (fixed or movable furniture), and seasonal variations. Where possible, activity settings should be designed to also serve social functions. Suitable ground surfaces include lawn (for comfort and flexibility of use) and paving (for accessibility). A mix of both soft and hard surfaces usually offers maximum flexibility of use.



Figure 46. This group activity space is focused around a multipurpose, sensory activity table. The deeply scalloped table allows children using wheelchairs and standing frames to reach the variety of loose, natural objects prepared for sensory exploration. The shape allows children to interact easily with each other and the staff. The table has a low lip to stop objects from sliding off (as well as to hold water when used as a water table). Low-hanging tree branches provide a natural enclosure. *Photo: Lucas Gardens School.*



Figure 47. This shallow, raised sandtable extends the main sand play setting to allow a wheelchair user (adult or child) to be included in the group activity. *Photo: Robin Moore.*

Integrating the Arts

Provide opportunities for artists to contribute to both the design and the programming of the garden. Inclusion of artists on the design team and the integration of temporary and permanent works of art into the garden will add aesthetic richness and symbolic meaning to the garden (Figures 48 and 49). Consider designing gardens to explicitly



Figure 48. Reflective tile at the base of a tree *Photo Nilda Costco .*



Figure 49. Garden art of many types can serve a variety of purposes in a children's therapeutic garden. This small figurine ("Boy and Car"), half hidden between two shrubs, intrigues children's sense of discovery, stimulates dramatic play, and can provide an inanimate friend. *Photo: Nilda Costco.*

attract community artists, playworkers, and animators desiring to contribute or to be hired to work with children (Moore & Wong, 1997, Chapter 14). Most important of all, children should be able to execute their own art projects (including garden designs) and display them in the garden (Figure 50).



Figure 50. Children can make their own expressive marks, for example by painting plant pots. *Photo: Nilda Cosco.*

Therapeutic gardens offer innumerable opportunities for integration of the arts. The reflective tile surface at the base of the tree shown in Figure 48 stimulates children to enjoy the multiplied movement of the branches and flowers during the blooming season. The effect is mesmerizing, as children feel suspended between the tree crown and reflected image.

Storage

Carefully estimate and fully provide for outdoor storage needs. Storage is one of the most commonly overlooked needs in the design of spaces for children. Size and location next to activity areas should be carefully considered. If items to be used outdoors can be stored close to their use locations, more richness and diversity will be added to the program.

Maintenance

Match the level of garden maintenance required to the ability of the institution to support maintenance costs. Whatever type of garden is installed, it will require some level of maintenance. It is important to decide, with the institution, the amount of maintenance it is willing to support to make a rich therapeutic garden feasible. Some gardens establish a trust fund that supports the cost of professional staff, who can then organize a team of community volunteers.

Bibliography

The following bibliography contains the items referenced in the text as well as other literature that may be useful to the reader. Several downloadable pdfs can be found at: www.naturalearning.org.

Cosco, N. and Moore, R. 1999. Playing in Place: "Why the Physical Environment Is Important in Playwork." *Proceedings. Theoretical Playwork and the Research Agenda*: Ely, U.K., PlayEducation.

Dannenmaier, M. 1998. *A Child's Garden: Enchanting Outdoor Spaces for Children and Parents*. New York: Simon & Schuster.

Faber Taylor, A., Kuo, F., and Sullivan, W. 2001 "Coping with ADD: The surprising connection to green play settings." *Environment & Behavior*, 33(1), 54.

Fjørtoft I. 2001. "The natural environment as a playground for children: The impact of outdoor play activities in pre-primary school children." *Early Childhood Education J.*, 29(2), 111-17.

Gil, E. 1991. *The Healing Power of Play*. New York: Guilford Press.

Grahn, P., Mårtensson, F., Lindblad, B., Nilsson, P., & Ekman, A. 1997. *Out in the preschool* (Ute på Dagis). Stad and Land, 145.

Guinness, B. 1996. *Creating a Family Garden: Magical Outdoor Spaces for All Ages*. New York: Abbeville Press.

Huntington, L. 1998. *Creating a Low-Allergen Garden*. London: Mitchell Beazley.

Hutchinson, R. and Kewin, J. 1994. *Sensations and Disability*. Chesterfield, Darbyshire: ROMPA.

Kellert, S. 1996. *The Value of Life: Biological Diversity and Human Society*. Washington, D.C.: Island Press.

Kuo, F., and Faber Taylor, A. 2004. "A potential natural treatment for attention-deficit/hyperactivity disorder: Evidence from a national study." *American J. of Public Health*. September, 94(9), 1580-1586.

Landscape Architecture, 85 (1), pp. 56-79, January 1995.

Landscape Architecture, 87(11), November 1997.

Lawless, J. 1997. *Aromatherapy*. New York: Barnes & Noble.

Lindquist, I. 1977. *Therapy Through Play*. London: Arlington Books.

Mace, R. 1997. What is Universal Design? http://design.ncsu.edu/cud/univ_design/ud.htm

Moore, D. 1984. "Animal Facilitated Therapy: A Review." *Children's Environments Quarterly*, 1(3), 37-40.

Moore, R. 1996. Compact Nature: The Role of Playing and Learning Gardens in Children's Lives. *Journal of Therapeutic Horticulture*, Vol. VIII, 72-82.

Moore, R. 1993. *Plants for Play: A Plant Selection Guide for Children's Outdoor Environments*. Berkeley, California: MIG Communications.

Moore, R. 1997. "The Need for Nature: A Childhood Right." *Social Justice*, 24(3).

Moore, R. and Wong, H. 1997. *Natural Learning: The Life History of an Environmental Schoolyard*. Berkeley, California: MIG Communications.

Moore, R., Goltsman, S., and Iacofano, D. (eds., second edition). 1992. *The Play For All Guidelines: Planning, Design, and Management of Outdoor Play Settings For All Children*. Berkeley, California: MIG Communications.

Myers, G. 1998. *Children and Animals: Social development and our connections to other species*. Boulder, Colorado: Westview Press

Nicholson, S. 1971. "The Theory of Loose Parts." *Landscape Architecture*, 62(1), 30-34.

Olds, A.R. 1985. "Nature as Healer." In J. Weiser and T. Yeomans (eds.). *Readings in Psychosynthesis: Theory, Process, and Practice* (pp. 97-110). Toronto, Ontario: Ontario Institute for Studies in Education.

Rivkin, R. 1995. *The Great Outdoors: Restoring Children's Right to Play Outdoors*. Washington, D.C.: NAEYC.

Shepley, Mardelle McCuskey, 1998. *Healthcare Environments for Children and their Families*. Dubuque, Iowa: Kendall/Hunt Publishing.

United Nations 1989. *The Convention on the Rights of the Child*. New York: UNICEF.

Wells, N. 2000. "At Home with Nature: Effects of "Greenness" on Children's Cognitive Functioning." *Environment and Behavior*, (32) 6, 775-795.

Wells, N., & White, M. 2002. "Nature and the life course: Connections between childhood nature experiences and later-life environmental attitudes and behaviors."

Paper. *Environmental Design Research Association Conference 2002*, Philadelphia, PA.

Westland, C. and Knight, J. 1982. *Playing, Living, Learning: A worldwide perspective on children's opportunities to play*. State College, Pennsylvania: Venture Publishing.

Therapeutic Gardens in Assisted Living Communities

By Jack Carman, FASLA

Overview

Contrary to popular belief, when an older adult needs a supportive living environment, nursing homes are not the sole option. Today, a wide selection of options is referred to as the “continuum of care,” comprising continued care retirement communities, Alzheimer’s residences, adult day care facilities, and assisted living residences—all in addition to nursing homes. Of all of these, assisted living residences, which began in the early 1990s, have seen the greatest transition. Assisted living residences combine personal support, housing needs, and health care.

The philosophy of assisted living residences is to allow a person to be able to “age in place.” This means, “an individual may remain in their living environment despite their physical or mental decline or increased need for more service that may occur with advancing age” (Deane, 1999). This form of senior housing caters to residents who need some form of assistance with activities of daily living that may include bathing, dressing, medication administration, or other personal needs. “While the size and layout of assisted living residences may vary, the residential units typically offer an unfurnished room, a private bathroom, a small kitchen, and a lockable door” (Deane, 1999).

Assisted living residences currently serve the needs of the middle class. Older adults who are less financially capable—living on a small fixed income—have limited access to these communities. Changes in government funding may make these communities more available in the future. Residences range in size from 30 to 100 beds. Architecturally, there is no set model. They can be designed as small, residential-looking buildings or large, hotel-like structures. The individual living spaces are composed of one bedroom, bath, and kitchenette—sometimes small in size—while the community areas are larger, to encourage socialization. The supportive services available to older adults vary tremendously, with everything from transportation to medication supervision to assistance with bathing.

Daily activities for assisted living residents should include time outdoors. The primary goal of therapeutic gardens is the maintenance and/or improvement of health, and gardens may contribute to residents’ health in a number of ways. Access to gardens may encourage patients to exercise outdoors. One of the best and easiest forms of exercise is walking. Walking does not require special equipment, and it is usually a social activity. Short periods of exposure to the sun increase levels of Vitamin D. Of course, the sun also plays an important part in maintaining one’s circadian rhythms and sense of wellbeing. Daylight activities help balance the sleep-wake cycle. Access

to nature has proven beneficial in reducing stress (Marcus and Barnes, 1995).

The garden can provide a positive distraction from life's cares and concerns (Thomas, 1996). Gardens can provide a wonderful setting for recreation or for various programs that help older adults maintain a link with their past as well as continue the hobbies they have enjoyed throughout their lives.

The Design Team and Design Goals

Throughout the design process the landscape architect should work in concert with other professionals, such as the architect, administrator, activities director, gerontologist, and/or horticulture therapist. Each discipline presents a unique perspective that can contribute to a successful garden. Collaborating with a well-rounded design team will help in understanding the seniors' overall needs and will ultimately determine whether the garden will or will not be used.

Critically important members of the design team are the people who will actually use the garden—the residents. Be sure to involve them in the design of the garden whenever possible, as well as in the maintenance decisions affecting it. Some of the larger problems facing older adults in senior care facilities are loneliness, helplessness, and boredom, as evidenced by the Eden Alternative, a program founded by Dr. William Thomas for rehabilitating nursing homes and similar senior care facilities.

The garden should be designed to encourage use by the resident population. The design intent should be the creation of a garden that closely resembles the resident's own garden. This establishes a connection between the resident and his or her new community. The transition to a new home, especially late in life, can be a difficult, if not traumatic, experience. Creating areas where people have control over their lives and can continue to enjoy lifelong hobbies can be critical to establishing a homelike environment (Figure 51).



Figure 51. Cadbury Continuing Care Retirement Community, Cherry Hill, NJ. Photo: Jack Carman.

Presenting these residents with a sense of purpose in living is a critical component in the quality of care that is offered to them. An early interview with each resident and his or her family needs to find out what outdoor interests the resident may have had or would like to develop. Some residents find that gardening and working in the soil is a therapeutic activity. Other people even perceive gardens as productive, since that is how they made their living. Anyone you can get to "take ownership" of the garden will help in its maintenance.

The wide range of other possible users of the garden extends beyond residents. The design must respond to individual residents' needs and also create a special, functional outdoor space for residents, staff, families, and other caregivers to enjoy. If staff is encouraged to use the garden and enjoys being there, it will be used even more frequently. Family members will use it when visiting a resident if it is a comfortable and friendly place. Gardens are familiar settings and can be non-threatening places to sit and talk. Other users may include schoolchildren, scouts, garden club members, and other people participating in gardening activities.

A successful therapeutic garden requires a balanced design that addresses the various impairments and varying levels of physical abilities of older adults. The abilities of individuals living in assisted living residences can vary significantly, and physical limitations can affect how a person uses a garden. Those with a walker may have limited mobility and may be unable to participate in ground-level gardening exercises. Raised planters are required for them to enjoy growing plants. A certain number of people in assisted living residences have some form of dementia. Therapeutic gardens for older adults should address these specific needs whenever possible. A person with Alzheimer's disease can become more easily confused if the garden path is not easy to follow, if it changes colors, or if its surface is uneven. It is important to remember that the garden should be designed as much as possible for a wide variety of uses as well as for meeting individual needs.

There should be specific behavioral and therapeutic goals for whoever will use the gardens. The involvement of a gerontologist, horticultural therapist, recreational/activities director, nurse practitioner, and other professionals on staff is essential to the success of the garden. These professionals will be involved on a daily basis and will be instrumental in seeing that garden use is coordinated with the garden's design.

Programming

The activities and recreational programs within assisted living residences should be designed to encourage socializing and recreation among the residents.

Socialization. Socialization is an important part of any garden. Interaction with others should be encouraged. There should also be intergenerational activities. A play structure is an attractive activity for visiting grandchildren. Gardening programs with a local school can teach children about horticulture and, in turn, give a sense of purpose and meaning to older adults. Almost all seniors delight in being able to interact with children.

Therapeutic Recreation. The garden can stimulate the senses through vision, hearing, smell, taste, and texture. The garden can support or enhance various forms of recreational therapies for older adults involving music, physical movement, aromas, and horticulture.

Entertainment. An important part of the program of a therapeutic garden is the incorporation of “play” areas for a variety of activities, which may include conversation, eating, recreational therapy, art, music, walking, gardening, sitting, watching presentations, etc. Intergenerational activities are very important for maintaining a connection with one’s past and sense of identity. Adding a play structure to the garden will offer visiting children a familiar activity in which to spend time while visiting their grandparents. Many older adults love to be involved with children. There are several very successful senior centers and residences that have incorporated childcare into their programs.

Gardening. People want to maintain a sense of independence, regardless of where they are in their lives. A person who is using a walker or a wheelchair and cannot easily bend down would still like to participate in various activities. Raised planters that are handicap accessible and are conveniently located can help such a person remain active. Ergonomically designed tools should be readily available as well as any other items needed for gardening. Birdseed should be stored where anyone can easily reach it to fill the feeders (Figure 52). A hose or watering can should be selected for ease of



Figure 52. Medford Les Continuing Care Retirement Community, Medford, NJ. Photo: Jack Carman.

use and should be conveniently located. It should not always be necessary for users to ask for assistance. At the same time, the garden should not be too simplistic. There should be an aspect of challenge within the garden. The garden should encourage a person to succeed. It should be accessible to all residents and designed to meet their changing needs.

Gardens can also have a positive affect on eating habits. Residents will eat better when they have the opportunity to grow their own vegetables. They take an active interest in watching that tomato ripen or waiting to harvest the squash and zucchini.

Fresh herbs will also add interest to their foods. The smell of basil, for example, is very powerful and will elicit many wonderful memories of past gardens and their related meals.

Site Elements

The following is a list of elements and their attributes that should be incorporated into therapeutic gardens to support programming and provide comfort for residents:

Orientation. Distinct landmarks for orientation within the garden can aid in wayfinding. The ability to orient oneself in the garden and to recognize entrances to buildings can be directly affected by the presence or position of colorful flags, water features, statues, or other identifiable objects or patterns in the garden.

Focal points. Focal points can promote a person's interest in visiting the garden. Attractive objects, whether a butterfly bush or a birdfeeder, can capture the imagination and bring residents out into the garden. The garden should be designed to stimulate interest in various activities and also to encourage physical exercise. Another way to make sure that the garden is used is to create spaces that staff, other caregivers, and family members will want to enjoy along with the residents. The view of the garden from within the residence should be considered as much as the views from within the garden itself. A person may not be able to get outside but would still like to passively participate by watching others use the garden. Gardens should be placed outside a community room window, porch, or similar areas. This will help a resident see what is going on and stimulate interest in participating in the outdoor activities.

Sunlight and Shade. The incorporation of shaded and sunlit areas is important in creating a functional garden area (Figure 53). Older eyes take longer to adjust to the change in light, sometimes several minutes. A canopy or other covering at a door can help in the transition from a darker interior to the bright sunlight. Trees along a walk will reduce glare on pathways, especially concrete surfaces. Glare is often a deterrent to seniors taking walks outside. Many medications heighten sensitivity to sunlight. These and similar factors should be considered and assessed before residents venture outside.

Sitting areas. Places to sit should be incorporated throughout the garden, along



Figure 53. Sam Miller Retirement Center, Mt. Holly, NJ. Photo: Jack Carman.

walks, and in small groupings. Benches and chairs should be spaced relatively close together to give people a chance to sit and enjoy the garden. Seats should be available both in the sun and the shade—extending the use of the garden throughout the seasons—and they should be arranged either opposite each other or at a 90-degree angle to encourage conversation and socialization.

Site furniture. Site furnishings should be chosen to elicit memories of previous gardens and hobbies. Consider bird feeders, flags, and other decorations. Garden elements such as wagons, wheelbarrows, watering cans, hoses, and other gardening tools should be present and available for use. The marketplace has not yet fully caught up with the needs of this population, so furniture that is suitable to an older adult can be somewhat limited. Chairs should be sturdy and stable enough that a person feels comfortable getting in and out of the seat. The seat itself should be approximately 18 inches off the ground and level, not cupped in the center. There should be armrests so that even a person with limited mobility can easily lift himself or herself out of the chair. Furniture will not be used if it is perceived as being unstable or uncomfortable. Raised planters are not always easily available, but catalogues and other sources offer planters that are a height of 32 inches. These meet ADA requirements for people in wheelchairs and walkers. Raised planters enable a person to garden without bending over.

Plant selection. Know who will be using the garden and for what purposes. If the garden is being designed specifically for people with dementia or is to be used by everyone in an assisted living residence, only nontoxic plant materials should be used. Obviously, residents could otherwise ingest parts of a plant that causes illness.

Some people are sensitive to certain plants and/or insects. Plants that are very attractive to bees, such as wisteria, may not be a good choice for locations near a door or in an active part of the garden. Plants that attract butterflies make a more suitable alternative and still attract nature into the garden. Persons with seasonal allergies may need to avoid the garden during spring or fall. Still, gardens can be designed to reduce the number of plants that cause problems for those who are sensitive to pollen.

Plant selection should emphasize seasonal interest and year-round beauty as well as usefulness for activities such as flower arranging and potpourris. Sensory qualities are also very important, as these will help people remember past events. The smell of lilac, tomatoes, and basil can have a powerful effect. The texture of a soft leaf, such as lamb's ear, can prove very soothing.

Plant materials should be selected for year-round interest as well as for remembrance therapy. It is good to incorporate plants that people once grew in their own gardens, such as *Syringa vulgaris* and *Hydrangea* in northern regions or *Hibiscus* and *Ixera* in southern regions. Plants should be selected for their vibrant colors and seasonal display. Perennials and herbs are enjoyable plants to use because they offer changing

colors throughout the season, can be used in activities such as flower arranging and cooking, and are familiar to most people.

Wildlife. The incorporation of plants that attract various birds and butterflies is important. This is an activity that is free and will only increase with the growth of the garden. People delight in watching hummingbirds dart from flower to flower. Watching butterflies can provide endless hours of positive fascination. Avoid the use of chemicals and pesticides in these gardens, for the safety of people as well as for protection of the natural visitors.

Special Concerns

Visual acuity. Poor visual acuity can prevent older adults from easily discerning changes in pavement surfaces. Since these users may misinterpret the shadow of a step as a hole, use smooth, level walking surfaces to prevent falls. Many times a garden or outdoor area goes unused because staff fear that someone will fall. The same level of detail should be achieved for outdoor areas as for interior areas. Again, glare from a walking surface can make it difficult for a person to see the surface accurately.

Safety. Garden visitors should be readily visible from all areas within the garden so that staff members know where residents are and that they are safe. An enclosure is often required to prevent wandering away from the garden and to prevent entrance into the garden by someone who should not be there. A fence that is visibly open to the outside is preferred when there are positive views, but views of parking lots and access roads can be a negative distraction and a source of agitation.

Access to the garden is a big factor in its use. (Figure 54). The garden should be located where it will be clearly visible to the interior of the residence. Staff members will be more at ease if they can see residents while they are out in the garden. The view from the interior should be clear and unobstructed. Doors with glass and windows alongside the doors offer the best visibility. Residents may not always want to venture into the garden; they may just stand and watch others.



Figure 54. Sam Miller Retirement Center, Mt. Holly, NJ.
Photo: Jack Carman.

User choices. As much as the garden should be designed to provide a safe and secure environment, it should also offer choices for the user. There should be a variety of paths from which to choose. Residents should feel a sense of control and autonomy in selecting what they want to plant and should be made to feel that this is their garden. That is one of the best ways to help them accept this place as their home.

Conclusion: Maintaining the Therapeutic Garden

There are many opportunities for the development of therapeutic gardens. The garden may be part of a new facility and, in that case, more than likely will be constructed as part of the residence itself. If the residence has already been built, the installation of the garden can be accomplished in several ways. The facility may have been saving to construct a garden. Special funding by grants, community involvement, family and staff participation, or any combination of these sources can be ways to develop a new garden.

But developing the therapeutic garden is only the beginning. Once the garden has come into being, additional steps must be taken if it is to fulfill its purpose. Assessing whether the garden is meeting user needs, and ensuring that the garden is maintained over the long-term, are essential to the success of the therapeutic garden.

The garden designer should remain involved with the residence whenever possible. The participation of the designer will accomplish two important elements. First, the designer will see firsthand how the garden is being used. Are the activities that were proposed being successfully accomplished? Second, what changes need to be made to the garden itself?

The post-occupancy evaluation is an important tool in the design of therapeutic gardens for senior residences. In fact this may be the most essential component of a design, since it is the point at which the designer interacts with the users. The garden should be designed for the residents, staff, caregivers, and family members. They all have different perspectives on how to use the garden and how it should address their needs. Adjustments may have to be made. Products specified may have to be replaced. Input from staff, as well as from patients and other users, is important. Not only will the staff evaluate the success of the garden, but they also will strongly influence whether other gardens are created. A verbal recommendation goes a long way.

The garden should be designed with ease of maintenance in mind. Try to find an interested gardener among staff members. Most staff, however, will not have a great amount of time to maintain the garden. The garden should be developed so the residents can help attend to it by deadheading flowers, separating plants, and performing simple gardening tasks. A knowledgeable landscape maintenance company familiar with garden needs should be contracted with to ensure the garden's health and longevity. If the garden is to be used to its fullest, then it must be maintained properly.

A therapeutic garden can be a vital source of strength and healing. Watching people enjoy a garden and participate in nature is one of the greatest pleasures of our profession. Following up on the initial design and installation can help ensure that the garden is a source of satisfaction for both designers and users.

Sources:

Deane, J.V. Life Style Choices: Independent and Supportive Housing Options, June 8, 1999.

Ulrich, R. "The Psychological Benefits of Plants." *Garden*. November/December 1984.

Marcus, C., and Barnes, M. 1995. *Gardens in Healthcare Facilities: Uses, Therapeutic Benefits, and Design Recommendations*. W. Eusey Press.

Thomas, W. 1996. *Life Worth Living*. VanderWyk & Burnham.

The Power of Landscapes

By Jack Carman, FASLA and Mark Epstein, ASLA

The spaces we travel through daily to get to school, work, or home have a profound effect on how we feel, both physically and psychologically. Landscapes can offer more than simple “window dressing” for individuals. A pleasant physical environment that is rich in elements from the natural world can both soothe and reward its human inhabitants. For children and elders especially, a well-designed outdoor environment integrating activity and nature provides needed physical, psychological, and social support.

Children need safe places where they can watch and listen, exercise physically in a variety of ways, and develop new relationships by interacting socially with others. The richness of natural environments encourages children’s growth in all of these ways. Children’s play spaces should be designed to encourage an ample range of encounters with nature, and children should find these landscapes easily accessible.

The pleasures of a stimulating environment should not diminish just because we age. Walking to a store, sitting on a bench, picking flowers from the garden, watching a hummingbird or butterfly, or stopping to chat with a neighbor are a few of the activities that adults should be able to enjoy on a daily basis. Designed amenities should be in place to help adults of all ages feel at ease in the spaces that create their environments, whether on a public street or in a community garden.

Older adults who relocate to assisted living communities can find the care they need in a home-like setting and experience a greater sense of wellbeing. However, older adults can have difficulty making the transition to an assisted living setting because change can be uncomfortable and, initially, upsetting. Attempts to create senior communities that contain familiar elements and appear “homelike” often rely on special design techniques within the interior of the building. Outdoor areas oftentimes are overlooked and marginally landscaped. Designing public and private outdoor areas in a senior retirement community requires special attention to the physical, psychological, and social needs of older adults, who should feel safe and secure in their continued enjoyment of nature and the outdoor environment.

Successfully creating a supportive landscape requires understanding the needs of the unique populations served. Since many contemporary urban environments offer little in the way of positive natural settings, we need to reexamine our surroundings closely and place a greater emphasis on how they are designed. Then those environments can support both how we want to live and who we want to become.