ANNE SLOAN RILEY
Gardens and Well Being
(Under the direction of MARGUERITE KOEPKE)

Often early gardens embodied qualities that were restoration of the spirit and the body. As landscape design became more formalized, gardens took on new meanings and became a means of demonstrating wealth, power and control over nature. In recent times, landscape design trends have emerged as niches in such areas as ecological restoration, ornamental applications, environmental art, and therapeutic landscapes/healing gardens just to name a few. This thesis poses the question, “Why has the idea of therapeutic design reemerged as a professional niche or specialization rather than simply becoming an integral part of the designer’s ideology?” This thesis proposes the use of existing research and a user- focused approach to design to ensure a therapeutic approach to all garden design.

INDEX WORDS: Therapeutic Design, Healing Gardens, Restorative Gardens, Human–environmental Interactions

GARDENS AND WELL BEING

by

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DEDICATION

To my parents for teaching me that I can
accomplish anything to which I set my mind;
To my brothers for their inspiration and encouragement;
To my friends who helped me start my journey
and for those who traveled it with me;
I will never be able to express how
much your support and love means to me.

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INTRODUCTION

Purpose of Thesis

The meanings and uses associated with gardens have dramatically evolved through time. Often early gardens embodied qualities that were restoration of the spirit and the body. As landscape design became more formalized, gaardens took on new meanings and became a means of demonstrating wealth, power, and control over nature. Throughout the history of landscape design there have been many trends driven by advancing technology, politics, and cultural influences. In recent times, landscape design trends have emerged as niches in such areas as ecological restoration, ornamental applications, environmental art, and therapeutic landscapes/healing gardens just to name a few. This thesis poses the question, "Why has the idea of therapeutic design reemerged as a professional niche or specialization rather than simply becoming an integral part of the designer's ideology?"

In an attempt to address this question, this thesis investigates the topic of therapeutic design through exploring its intuitive beginnings, looking at historical connections between nature and wellness, and delving into the current research and thinking on the topic. It examines the attributes of gardens designed to be restorative, the history and meaning of gardens, and the design philosophies of seven landscape designers to determine the importance of therapeutic haracteristics in their designs. The overall intent is to identify the common threads and themes that are necessary to create therapeutic settings in order to equip landscape architects with the basic knowledge and understanding to make healing a foundation of all garden design.

Definitions: Healing, Restorative, and Therapeutic

The common usage of the term "healing" is quite broad and generally refers to a beneficial process that promotes overall well being. *Webster's Encyclopedic Unabridged Dictionary of the English Language,*1989 defines healing as "curing or curative; prescribed or helping to heal, or growing sound; mending; getting well, or the act or process of regaining health." Webster's defines restorative as " to bring back to a former, original or normal condition; to bring back to a state of health, soundness, or vigor." Therapeutic is defined as " of or pertaining to the treating or curing of disease; curative." Within the context of this thesis, the term "healing" refers to the act or process of regaining health; this will apply to both physical and emotional health. In addition, "therapeutic" and "restorative" also will be used interchangeably to connote the process of regaining health.

Definition of Garden

The term "garden" will indicate a cultivated outdoor site that man has adapted to suit his own needs. The word garden, like the Latin hortus, derives from an Indo-Germanic root-meaning fence or enclosure (Jackson 1994). It should be noted that nature is not limited to landscapes untouched by human hands, rather, it includes parks, open spaces, abandoned fields, and gardens. The term "garden" has a multitude of definitions from the simple "a plot of ground near a house, where flowers, vegetables or herbs are cultivated" (Webster's 1989), to "a place where nature is controlled to serve at, and for human pleasure" (Riley 1990). Further discussion of this issue will occur in Chapter 2. Gardens exist as a direct result of human intention and deliberate manipulation of the organic and inorganic world. Creation of gardens has been a complex and central activity of humans (Hunt 1999). Accordingly, the styles of gardens are as varied as the definitions and the individuals who have designed them.

Thesis Organization

This thesis is organized into several chapters as a means of exploring therapeutic design elements of gardens, the meaning of gardens, and the attention given to therapeutic design on the part of prominent designers through history. The thesis topic was explored in a scholarly examination focused on design and historical elements.

Chapter One explores the essential elements used to create a therapeutic garden. How individuals interact with their surroundings and how these places impact a user has been explored in fields of study such as psychology, sociology, and philosophy and provides a solid foundation upon which therapeutic design can be based. Designers need to consider fully the human–environmental transactions and the potential psychological impact of their work on people. In 'specialized' settings, such as gardens, this is particularly important. We know from research, for example, that design can enhance the therapeutic process, by improving the recovery rate of patients in hospital (Uzzell 1990). Design of gardens is an area in which landscape architects can impact the daily lives of individuals in a positive manner.

Exploration of what gardens have meant throughout history is included in Chapter Two. This chapter highlights spiritual, medical, and traditional styles of gardens in the time period during which they were developed. In addition, the emotional effects of a garden, the expression of power in a garden, gardens as therapeutic spaces and trends in alternative medicine will be explored. The purpose of this chapter is to learn whether gardens had healing components in the past and whether this has changed over time.

Finally, Chapter Three focuses on seven landscape designers who are chosen for their prominent and influential role in the field of landscape architecture. The seven—Humphry Repton, Fredrick Law Olmsted, Gertrude Jekyll, James Rose, Wolfgang Oehme and James van Sweden, and Clare Cooper Marcus—often set the tone for their era, providing insight into the design philosophies of a particular time. The design phi-

losophy of each is discussed and the extent to which landscapes were considered therapeutic and whether these individuals believed creating a healing environment to be an important component of their designs is examined. These seven individuals left a legacy of written material that enabled an exploration with limited conjecture as to their design intent. The insight gained through exploring the philosophies of influential designers over time provides insight into where the field is today with regard to therapeutic design.

The final section addresses the findings developed in this exploration. All gardens have the potential of possessing healing qualities. With a concerted effort landscape architects can enhanced the restorative effects of gardens. Recommendations for how to ensure gardens become restorative sanctuaries will be included.

CHAPTER 1

COMPONENTS OF THERAPEUTIC GARDENS

The purpose of this chapter is to explore available research related to creating therapeutic gardens. The manner in which people interact with their surroundings and how these places impact a user has been explored in fields of study such as psychology, sociology, and philosophy. The research developed in these fields provides a solid foundation upon which therapeutic design can be based. As an example, environmental psychology explores the relationship between the physical surroundings and the people who create and use them and provides a large body of data that directly impacts the manner in which a garden can be designed and used (Uzzell 1990). Initial studies focused on the impact of indoor environments on humans; however, many studies directly related to the impact of outdoor spaces on users are available. With this research as a foundation, it is possible to assist people to achieve or maintain the highest level of functioning and general well-being in outdoor spaces. This goal is the overall purpose of therapeutic design in the field of landscape architecture (Tyson 1998). Having data to support and fine-tune designs will ensure a new and higher level of credibility on the part of landscape architects.

Initially, this chapter will examine research that focuses on the relationship between people and nature. In particular, the first section concentrates on understanding the way the natural or built environment can foster well-being and enhance an individual's ability to function effectively. The chapter then discusses the impact on a user of being able to control aspects of the environment such as levels of privacy and seating

choices. The next section explores the impact of nature on users and includes issues such as the impact of viewing nature, vegetative and landscape preferences. Finally, the therapeutic affects of gardening are also examined and design considerations are explored.

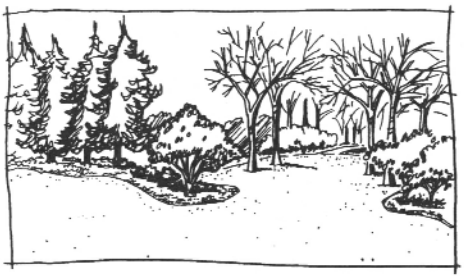
THERAPEUTIC DESIGN COMPONENTS

Kaplan's Analysis

Rachel Kaplan, Stephen Kaplan, and Robert Ryan conducted extensive research on the impact of the environment on individuals. From this research they developed a practical manner of designing and managing the natural landscape. The Kaplan's research suggests the preferred landscapes contain elements that contribute to coherency, complexity, legibility, and mystery.

Complexity and Coherence

Environmental complexity allows users to function at maximum physical and mental capabilities. As demonstrated by the research, complexity was one of the four informational factors preferred by users of a garden. One reason for this preference is that complexity suggests to the user the potential for exploration of a site (Kaplan 1998).



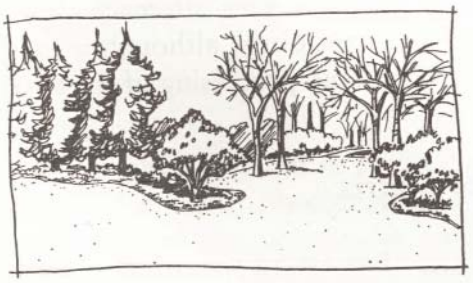
High-coherence Scene (Kaplan 1998)

Coherence in a garden and an ability to oversee the entirety of the landscape may help users feel confident in a garden. A coherent setting is orderly; it is organized into clear areas, and within these areas there are a limited number of contrasting textures and strong organization of elements. A setting that is highly complex benefits from a coherent ordering of ele-

Low-coherence Scene (Kaplan 1998)

ments (Kaplan 1998). Large, open expanses with little variety are considered to be low in complexity. Greater richness or variety in landscapes encourage exploration on the part of users (Kaplan 1998).

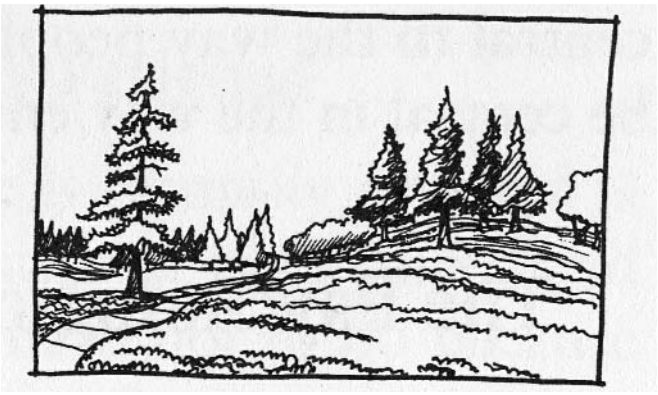
The dual effects of complexity and coherence in a healing garden produce a stimulating environment that is not overwhelming for users. Using the two concepts in tandem produces settings that are intricate and complex while being organized and understandable. These two concepts are not mutually exclusive and should work together to provide a garden of rich textures with repeating themes and unifying elements (Kaplan 1998).



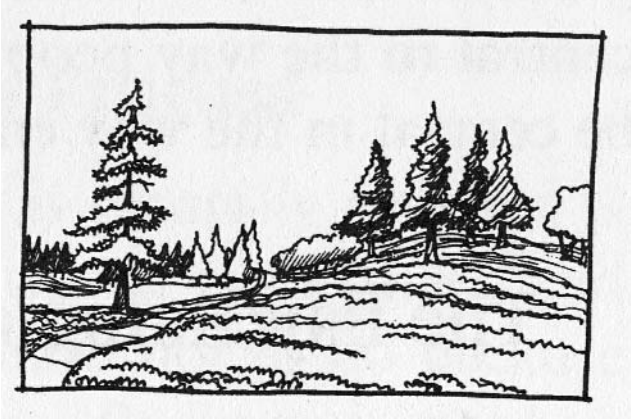
High Complexity and Choherence (Kaplan 1998)

Legibility

The ability to orient one's self or navigate through a garden ensures users feel comfortable in a space. The placement of memorable components in a garden help users orient to the site and increase legibility. 'Way finding', by the use of distinctive elements, provides users with a sense of safety and makes use of the site straightforward (Kaplan 1998). To prevent way finding difficulties, landmarks and prominent features should be integrated into the design; however, the landmarks must be distinctive and



Distinct Placement of Single Pine (Kaplan 1998)



Scene Lacking Distintness (Kaplan 1998)

infrequent (Kaplan 1998). In addition, a successful design will attempt to use redundant cueing to communicate messages through more than one sensory mechanism (Rockaway 1994).

Mystery

The desire on the part of users to explore a site is greatly enhanced if there is a sense of mystery about what may be found further along a path. There are various ways that the landscape may provide hints of what is coming: e.g., a curved path is often more enticing than a straight one. Vegetation that partially obscures what lies behind can invite the visitor to take a look. However, a view if blocked by vegetation removes a sense of mystery, as one is less likely to be intrigued. Large expanses of undifferentiated land covers provide little on which to focus and are very quickly "read" by users. Ultimately, individuals are not enticed to explore the setting (Kaplan 1998).

Environmental Mystery (Kaplan 1998)

Additional Therapeutic Components

The previous four concepts provide a framework by which a designer can organize a garden. These design concepts ensure that users will be supported and that the environment can be made to foster well-being and enhance an individual's ability to function effectively. However, there are additional elements that will further embellish the therapeutic nature of a garden that work in conjunction with the Kaplan's previous four elements. The following sections discuss additional design elements that are critical to a fully developed therapeutic garden.

Control Related Benefits

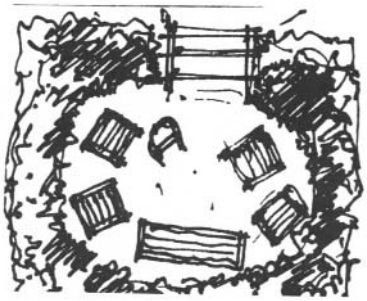
Stress generated by the lack of control has been shown to have a multitude of negative impacts on an individual including depression, feelings of helplessness, diminished cognitive performance, elevated blood pressure, higher levels of circulating stress hormones, and suppressed immune systems (Ulrich 1999). One element that is critical for a garden to be a successful therapeutic tool includes the ability to provide the user with a sense of control. (Gatchel, Baum, Krantz 1989). The sense of control should relate to an individual's ability to determine what they can do, determine what is done to them and affect his or her situation (Gatchel, Baum, Krantz 1989). An individual must be able to regulate levels of sunlight exposure; a garden can provide the user the choices of direct exposure to sunlight or seclusion in shaded areas (Cooper Marcus 1999). Driver and Knoph identified 'temporary escape', a control-related benefit, as being of high importance in therapeutic design (Ulrich 1999). Another obvious benefit that gardens can offer is a pleasant location for exercise. There is substantial scientific evidence that exercise reduces stress and that this reduction in turn may foster other positive health outcomes (Cooper Marcus 1999). Providing a user the ability to decide where and when to exercise is critical to a sense of control.

Levels of Social Interaction

A key element that therapeutic design can address is the need individuals have for privacy and their ability to regulate levels of privacy. Designs that provide limited visual access into spaces where residents sit and reflect can enhance a sense of privacy (McBride, 1999). Privacy measures should permit residents to control the amount of unwanted auditory stimuli. The provision of outdoor space where environmental demands are minimized, and therefore stress is reduced can be a significant factor in the quality of life of users (Cooper Marcus 1999) .

Seating Alcove (Tyson 1998)

Adaptability of seating, as Christopher Alexander, an architect whose work has centered around building "languages" for developing livable community, points out in his description of the sitting circle is critical for encouraging social interaction in addition to providing a user a choice of where to sit. Social interaction may provide users with a sense of increased support; studies have found that there tends to be a general positive association between the overall number of social ties people have and their health status (Ulrich 1999). Research findings attest that gardens and parks often are important settings for social interaction in contrast to clinical and other "static" settings (Ulrich 1999).



Seating Circle (Tyson 1998)

Alexander proposes an informal, loose circle that allows individuals to sit at a slight angle to one another as a design element that can be used to enhance social interaction. For this type of behavior, high activity areas such as entrances and exits are desirable sites as there is much activity to sit and watch. Seating that can be moved as desired, nomadic seating, provides users an additional level of control. Right-angle or U-

shaped seating arrangements allow several people to sit at a comfortable conversation distance without feeling enclosed, have been shown to increase socialization (McBride 1999).

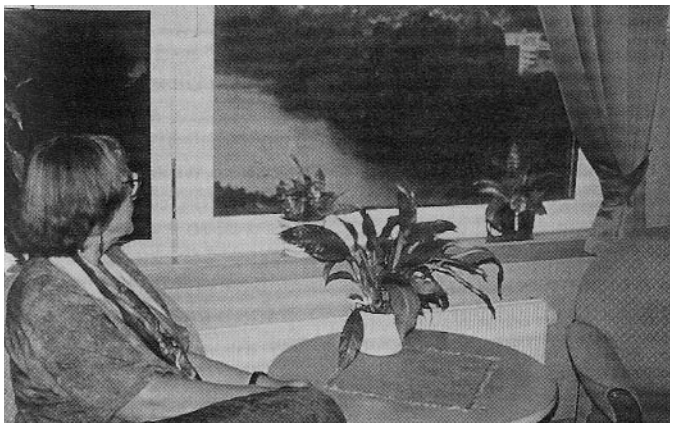
Garden Seat (Alexandar 1977)

Impact of Nature

Investigations reveal that people under stressful conditions appear to benefit more from views of natural settings (Ulrich 1984). In this way, individuals benefit from nature even if not able to visit or actively experience nature or a garden. Ulrich determined that people prefer natural landscape scenes with a relatively high degree of complexity, a clear focal point, an even ground texture, a good depth of field, and a sense of predictability (Balling 1982). Preferences for 'unspectacular' natural scenes are comparatively high if (a) the complexity of the scene is high, (b) there is a focal point or other order present, (c) there is a high level of depth that is clearly defined, (d) the ground surface has even or uniform length textures that are relatively smooth and is favorable to movement, (e) the sightline is curving or deflects so that new landscape information remains outside the observer's visual bounds, and (f) the judged threat is negligible or absent (Ulrich 1985).

For individuals experiencing stress, views of nature appear to reduce mental arousal more effectively than urban scenes (Ulrich 1981). This may include the distraction of daydreams to escape from stress while gazing from an office or hospital window.

In addition, views of urban areas lacking nature may inhibit recuperation from high mental arousal and aggravate some aspects of anxiety (Barnhart 1998). Furthermore, attributes of natural settings trigger responses that allow humans to function more effectively (Knopf 1987). Previous studies have shown that natural outdoor environments not only produce psychological and physiological restorative effects but may influence behavior or enhance functioning (Ulrich 1991).



View from a Window (CooperMarcus 1999)

Decades of research have shown an affinity for natural settings; yet, people are attracted to natural environments for more than purely aesthetic reasons. Research in the area of landscape preference reveals that a natural environment has been defined by test subjects in terms of the absence of man-made constructions, such as roads, fences, buildings, or power lines, but not in terms of the absence of management (Balling 1982). Natural settings are more peaceful and subdued than urban areas and provide opportunities for restoring our energy reserves (Knopf 1987). Consequently, certain locations, such as parks or golf courses, are considered natural (Balling 1982). As suggested by Alexander, “somewhere in every garden, there must be at least one spot, a quiet garden seat, in which a person - or two people - can reach into themselves and be in touch with nothing else but nature” (Alexandar 1977).

In general, with regard to aesthetic judgments for natural settings, preferences for these settings usually hold across individuals, groups, and Western cultures. Also, land-

scape preferences at the level of adult individuals appear to be stable over moderate periods of time. However, the preferences of young children may vary significantly from those of teenagers and adults (Ulrich 1985).

Vegetation Preferences

Previous studies have revealed a great deal about aesthetic responses to forests. In studies, large trees are preferred whereas small trees have a mild negative effect on viewers (Ulrich 1985). Low understory shrub density, and lush, grassy or herbaceous ground covers, tend to have strong positive effects on preference. Nearly all studies have found that depth or openness in a tree stand increases preference (Ulrich 1985). Exposure to vegetation views significantly reduced feelings of fear, and positive affects such as affection and elation were increased. By contrast, the urban presentations actually aggravated anxiety on some dimensions, particularly in terms of increased feelings of sadness (Ulrich 1985).

Landscape Preferences

Certain basic informational properties of landscape scenes exert a strong influence on preference. By meeting these preferences, a landscape can reduce stress and provide a therapeutic foundation. At least some aspects of landscape preference could have been determined by human evolutionary history. Jay Appleton, an environmental psychologist advanced the provocative notion that a preference for a particular type of landscape may also be part of biological heritage (Balling 1982). Users prefer irregular and curvilinear lines and edges, continuous gradations of shapes and color and irregular, rough textures that often

Tree Stands with Open Grassland (Beveridge 1995)

characterize and reflect the processes of natural domains. In contrast, the built environment, characterized by regular lines and rectilinear edges, sharp discontinuities and abrupt transitions, and highly regular, smooth textures, is not preferred by users (Barnhart 1998).

Additional research related to landscape preferences suggests that Americans prefer park-like settings with short grass, an absence of tangled underbrush, and scattered mature shade trees. The natural community most closely approximating this preferred setting is a savanna (Balling 1982). A study by Rabinowitz and Coughlin (1970) supports the conclusion that people prefer savanna-like settings. They found that using several landscapes from the Philadelphia area, subjects had the highest preference for obviously human-influenced landscapes with large open areas of mowed grass and groves of closely planted trees or high bushes. The authors suggest that such a landscape provides feelings of openness and seclusion simultaneously (Balling 1982). In addition, subjects particularly liked scenes that included water. However, when the scenes that had either rivers or lakes are disregarded, the highest preference was for pastoral scenes, that is, semi enclosed meadows and widely scattered trees and an even-textured or grassy ground cover (Balling 1982).

Park-like Setting (Kaplan 1998)

In addition, a site must provide a sense of safety or refuge (Appleton 1975). Hence a preferred setting would maximize security and seclusion by providing a degree of enclosure while including vantage points (Barnhart 1998). There is some innate preference for savanna-type environments, arising from the long evolutionary history of humans on the savanna that expresses itself most strongly in childhood (Balling 1982). holds responsibility for nurturing, such as those in a garden or on a windowsill, are experienced in a participatory mode. Experiences gained through the intimate participa-

tion of nurturing and being responsible for plants are more intense than those gained through distanced viewing of vegetation in the larger landscape. However, both modes produce well-being (Lewis 1991).

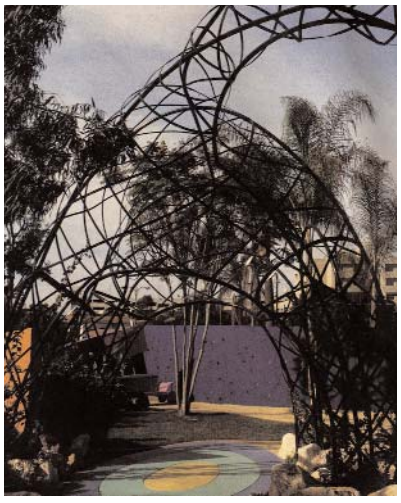
Gardening (Cooper Marcus 1998)

The benefits to the individual from gardening can be divided into three categories. The first consists of the tangible benefits of gardening (enjoying the feeling of producing some of ones own food, cutting food expenses, harvesting). The second category and the category in which the greatest satisfaction is felt are the primary garden experiences. This category includes a desire to work in soil, wanting to see things grow, liking being outside, and interest in learning about gardening. The third category of benefits refers to sustained interests. This grouping also reflected some of the fascinations that gardening affords, but with few specific references to gardening. It included such benefits as diversion from routine, valuable way to spend time, opportunity to relax, and the ability to sustain interest. Gardeners with less experience tend to emphasize vegetables; the tangible benefits were most salient for them. With experience, gardeners tend to value flowers and discover a new set of satisfactions, centering on the many ways in which gardening offers fascination (Kaplans 1991). Gardens and garden-

ing, plants and landscape, come to life in the human mind, where they endlessly enrich and sustain both those who observe and those who participate. Through peace and tranquility, enhancement of self-esteem, demonstration of long and enduring patterns in life, connectedness to larger concepts, gardens and gardening are healing (Lewis 1991).

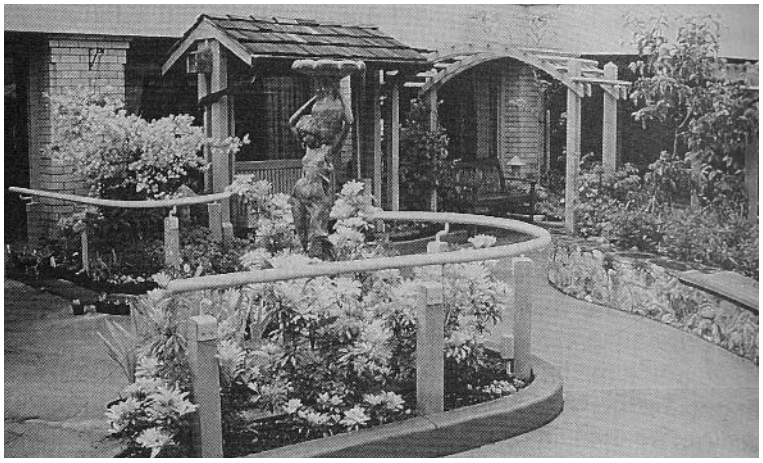
Design Considerations

As an example, the need for play is critical to the emotional and physical development of a child. Play is the manner children establish authentic relationships with the social and physical world (Moore 1999). The most effective form of play is called "adventure play" in which a child fully engages the imagination. Gardens can provide a location for this providing that they are not be highly stylized or sterile (Alexandar 1979). An effective garden for children must be filled with lush plants and sunlight. However, shelter from the sun is a critical design feature. Activity nodes should be well lit by filtered sun. The entry to the garden should be child friendly and enhanced by the placement of playful sculpture, benches, permanent color or colorful plantings. Critical to the design is the provision of opportunities for children to have primary experience of nature, to interact through their senses. A diversity of natural settings can accomplish much of this (Moore 1999).



Garden for Children
(Taylor and Cooper 2001)

Contrasted with a garden for children would be one that is primarily used by an elderly population. Most individual's senses show age-related decrements that can include visual changes resulting in the loss of acuity, narrowing of the visual field, slowed accommodation to temporal or spatial changes in illumination, sensitivity to glare, and some loss of color differentiation (Lawton 1979). Some of these physiological changes can be compensated for by design elements in a garden. The short distances and slow walking speeds of the aged mean that spaces should contain more variety and more visually interesting features in a smaller area than a space designed for the general public. Increased sensitivity to light and glare can be compensated for by the placement of sunscreens and vegetation. The use of water features should be limited in bright light areas to reduce glare (McBride 1999).



Garden Designed for the Elderly (Cooper Marcus 1998)

Summary

The needs of different users may be similar and may include such things as stress reduction, establishment of a sense of control, exercise and privacy. However, the physical manifestation in a garden to meet these demands will be dramatically different based on the specific physical and emotional needs of a user. As a result, there can not be a simple check list of design elements which will produce a restorative garden. Some

design elements may fit under the category of over all good design; however, it is the manner in which they are used and combined which determines whether the garden is therapeutic to a user or not. By the same token, simply designing an asethetically pleasing garden does not necessarily create a restorative environment which supports the user and enables one to function at the highest level possible.

As an example, the use of the Kaplans' elements of coherence, complexity, legibility, and mystery undoubtably should be used in all gardens for many reasons. However, using these elements will not automatically result in a therapeutic space. A child will respond to a garden's complexity dramatically differently than an elderly adult would. The child might be stimulated and intrigued with the detailed offered in the garden and the elderly individual might simply be overwhelmed. An intriguing bend in a path might urge an able bodied adult forward, but so confuse an individual suffering from Alzheimer's Disease that progress forward or backward becomes impossible. These different responses will result in reduction of stress in some cases and elevation in others. As a goal, stress reduction would occur only if the garden is designed to suit the individual who will use it.

Rsearch over the last 20 years has shown that environmental setting preferences among people depend on the type of behaviors those settings are perceived to support (Barnhart 1998). The design process must therefore focus on the needs of potential users. The benefit to be derived from designed places will be achieving a degree of relief from physical symptoms and stress reduction. By meeting some of these design goals an individual may experience an overall improvement of the sense of well-being (Drew 1971). In restorative gardens, there must be a high degree of correlation between design and the ultimate therapeutic goals being sought. Landscape architects will require more than the knowledge of types of settings which are preferred; designed settings must also support the behaviors they were intended for if they are to be successful (Barnhart 1998)

CHAPTER 2

EXPLORATION OF THE MEANING OF GARDENS THROUGH HISTORY

Gardens today are designed using many traditions; understanding the original intent of these traditions provides insight into contemporary gardens. Exploring the meaning of gardens through history facilitate understanding how gardens have been used and what gardens meant to those who used and designed them. The manner in which gardens have been used and designed through history represents the variety of purposes these spaces symbolize to people. Reviewing the spiritual, medical, and traditional uses of gardens within the context of the era in which they were designed provides insight into many aspects of their design. In addition, the impact of the garden on individuals both as a means of connecting to the natural world and expressing one's culture are critical to landscape architects. This exploration will also provide insight as to whether there was a specific therapeutic goal associated with different kinds of gardens.

This review of both the meanings associated with gardens and different garden styles, illustrates the role of gardens as a special sites of beliefs, myths, fictions, and illusions. The first section of the chapter explores the meaning of gardens, the emotional impacts of gardens, and how power can be demonstrated in gardens. The second section includes descriptions of the components of different categories of gardens: medical, spiritual, and traditional gardens. In each section, a type of garden, such as monastery gardens are examined in terms of design and the purpose of the garden. These gardens are placed in the context of the era in which they developed as a means of providing insight into all aspects of their design. With this insight landscape architects can adapt elements of design that are therapeutic and convey specific meanings.

MEANING OF GARDENS

Early Gardens

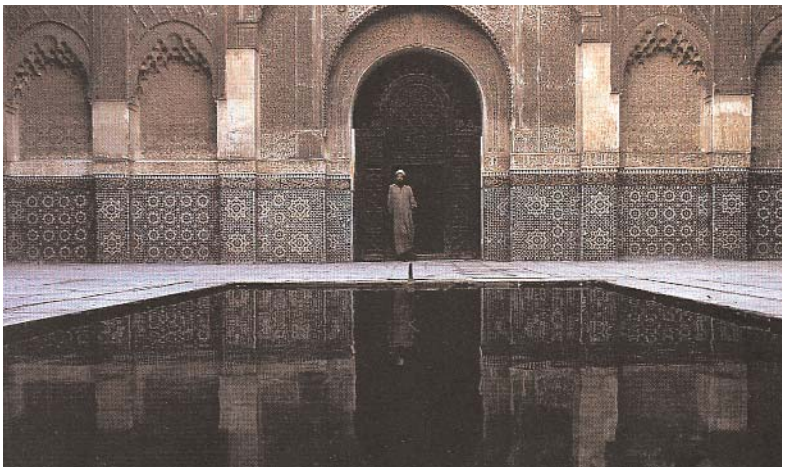
In prehistoric times, and probably well into the Middle Ages, the garden or farmyard played an important role in the life of the family. The garden was where vegetables, medicinal and magic herbs, and fruit and nut trees were grown. The garden also had symbolic value: to plant a tree was a sign—and it still is with many farm families—of settling down, of taking possession of a piece of land (Jackson 1994). However, it is only the subjective impacts the garden produces on the people who use the garden which allows it to be judged in terms of whether it is a well-designed garden (Engel 1969). In a garden, a pleasurable response can be caused by some aesthetic perception or convenience, leisure, or repose induced by some direct sensory experience in the garden. The impact might be of spiritual enrichment; the result of some mystic inspirational process or, depending upon circumstances the impact produced by a garden might be combinations of all these influences in varying proportions and strengths. It is evident then that while the appeal of a garden is universal, the impacts the garden may produce depends upon its location and its particular character. The latter is in turn the product of local tradition, customs, and the way in which the garden was designed to be used. The personality of the user is the final determinant (Engel 1969).

Emotional Influences of a Garden

In addition to sensory pleasure and practical use, gardens also evoke complex trains of thought and feeling that have certain associations. For example, in Western culture, gardens inevitably suggest paradise, the bounty and bliss of the Garden of Eden (Ross 1998). In Europe, medieval cloister gardens attempted to suggest the design of the heavens or perfection in their quadripartite layout and details (Messervy 1995). The symbolic importance of the number four includes the sacred elements of water, fire, air, and earth; symbolism which predates both Christianity and Islam. Ancient Persians

believe that a cross divided the universe into four quarters and that a spring of life lay at its center. In Buddhist iconography, four rivers branching from a common source symbolize fertility and timelessness (van Zuylen 1995). In addition, Judeo-Christian connotations of gardens co-exist with more primitive associations such as sexuality and fertility, death and regeneration, seasonal cycles, as well as with more recent overlays ranging from the tradition of courtly love to the awareness of ecological crisis (Ross 1998).

One of the strongest trends in the design of gardens during the Middle Ages was the creation of a place that replicates paradise as defined by one's religious philosophy. Looking back through history, there are four fundamentally different images of gardens as paradises that provide a distinct vision of how a garden relates to the earth. The first



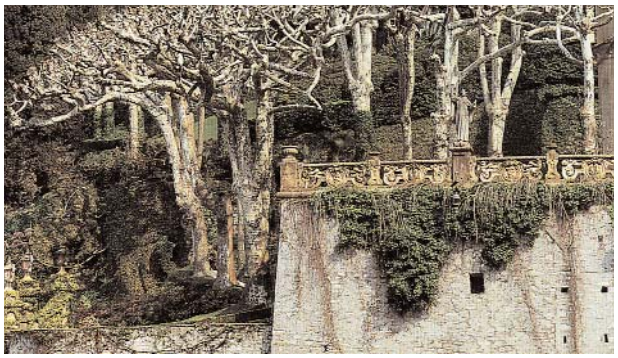
Transcendent Paradise (Messervy 1995)

is a transcendent paradise ascending from the earth, the second is an ordered paradise which tames the earth, the third is a natural paradise which harmonizes with earth, and the final is a planted paradise with collected aspects of earth (Messervy 1995). In the Genesis story, human life has its beginnings in a garden that God created. This garden is a place of absolute richness, fullness, and perfection in which every created thing exists

in a blissful harmony that binds the whole and is meant to endure forever (Howett 1991). Western religions use gardens as a metaphor for paradise as well as a place for refuge and for grace (Brechin 1991).

While gardens can serve worldly ends, there is also a long tradition linking gardens to retreat, contemplation, and repose. Examples of this aspect of gardens include

Planted Paradise (Messervy 1995)



Ordered Paradise (Messervy 1995)

Natural Paradise (Messervy 1995)

the Chinese tradition of the scholar-recluse and Virgil's praise of the life of retirement in the Georgics (Ross 1998). There is a darker resonance as well, since the Garden of Eden was also the site of man's fall, and another garden, the garden of Gethsemane, was the site of Christ's agony and betrayal. In addition, the opposition between wilderness and civilization links gardens with darkness and Satan. Their medieval ties to trysting and love, and their role as "bowers of bliss" counterbalance the negative connotations of gardens. Thus, gardens are linked with meeting spiritual, religious and practical needs (Ross 1998).

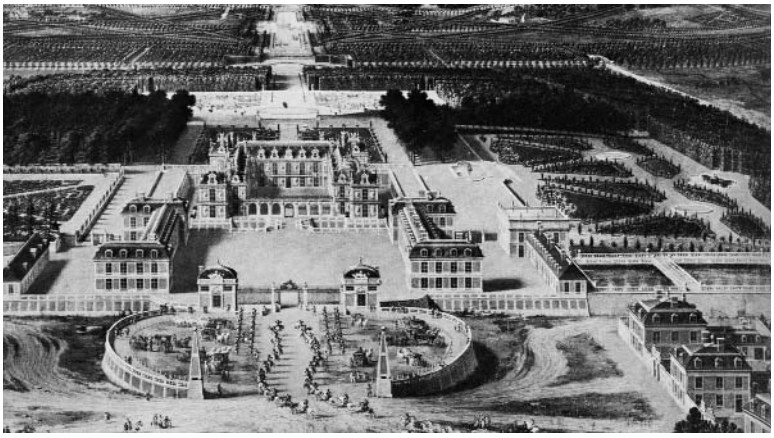
Expression of Power in Gardens

Because the garden is nature controlled and designed for human satisfaction, it became a symbol of human dominance over nature. The garden is one archetype of the relationship between people and the natural environment (Riley 1990). Power in the garden is a broad theme. The formal gardens of seventeenth century France transformed the natural landscape into a balanced and controlled work of art - a metaphor for humanity's dominion over nature (van Zuylen 1994). Versailles epitomized the design criteria of the time in that it testifies to the determination of Louis XIV to triumph over the natural landscape of the region around Paris. Versailles mirrors a period in French history during which the monarch wielded absolute power over political, social, and artistic life (van Zuylen 1994).

Creation of a garden begins with the power of nature itself. Topiary is an example of human control over nature. Bonsai, the miniature and maybe the ultimate garden, is an expression in which not only nature's forms, but nature's basic laws are under human power - the rhythms of growth and change slowed to near stasis for human delight. The demonstration of power in the garden includes the power of particular people over other people. Specifically, gardens can carry messages about the relationships between groups of people in less direct form as well, through symbols of class and sta-

tus. Social class and status can be understood as a more subtle expression of power. The medieval garden walled out wild nature and was a symbol of an early intellectual antithetical relationship between people and nature. The walled garden continues as a persistent indicator of status. The master-servant relationship is a particular form of institutionalized power, one that historians tell us was emphasized in the English garden well into the twentieth century (Riley 1990).

Elaborate gardens testify to the wealth and power of their owners. For example, the vastness, opulence, and regularity of Versailles symbolized the greatness and glory of Louis XIV's autocratic reign. In fact, Louis moved his court to Versailles as a calculated means of occupying and neutralizing opposition of the French nobles (Ross 1998). Eighteenth-century English lords spent vast sums improving their estates, and they often commissioned portraits of themselves and their families in their houses and on their grounds as a demonstration of their wealth (Ross 1998).

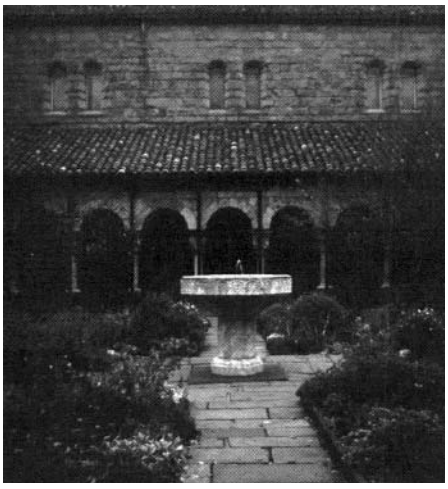


Versailles (Jellicoe 1996)

Gardens as Therapeutic Space

Gardens were used for curative purposes in Persia, Egypt, the Orient, and in Europe, prior to and during the Middle Ages. The earliest hospitals in the Western world were infirmaries in monastic communities where herbs and prayer were the focus of

healing. The cloistered garden was an essential part of this environment (Cooper Marcus 1999). Many cloister gardens were located within the walls of convents and monasteries where well and ill people alike were soothed by the beautiful and food-bearing plots (Coulter 1999). The gardens often incorporated an arcaded courtyard where residents could find a degree of shelter, sun, or shade they desired in a human-scale, enclosed setting (Cooper Marcus 1999). The importance of the garden as a healing tool lessened as monastery use declined and health care improvements focused only on diagnosis and treatment together with general hospital care (Coulter 1999). Beyond familiar rituals such as weddings and burials, however, there are other ways that gardens might accommodate special times and special needs within the cycle of our lives. A woman giving birth might prefer to walk in a garden rather than in a room; intimate gardens might nurture intimate human acts-meditation, conversation, counseling, lovemaking, or reconciliation; and gardens are good places for dying (Howett 1991).



Cloistered Garden (Tyson 1998)

Alternative Medicine Trends

Exploration in popular culture of "new age" healing techniques expressed the desire to focus on the mind body connection for physical and spiritual health (Cooper Marcus 1999). In 1997 Americans made 627 million visits to practitioners of alternative

medicine and spent $27 billion of their own money to pay for alternative therapies (Larsen 2002). In contrast, Americans made only 386 million visits to their family doctor. Alternative medicine encompasses a very large array of different systems and therapies ranging from ayurvedic medicine to vitamin therapy. Today, individuals are also seeking healing qualities in gardens and gardening that acts initially on the mind, and not body—medicine not to be taken orally but rather perceived sensually, to heal scars on the human psyche (Larsen 2002).

GARDENS RELATED TO HEALTHCARE SETTINGS

Hospital Gardens

There is evidence that hospitals existed in Persia, India, and Arabia before the Greeks instructed that hospitals and health become part of their own communities. As an example, Greek hospitals, built during the fourth century BC, were closely associated with other things that would provide physical and intellectual pleasures. The Greeks were site planners; the first consideration for planning a new hospital was the choice of the site. The Greek hospital was not a separate entity but an integral part of a health center. For example, the Hieron of Askelepios near Epidaurus, contained six temples, a stadium, a theater, a gymnasium, a library, a public bath, one or more hotels and an abaton. In addition, there were open spaces and a grove where patients might refresh the body and mind. The abaton, was a long colonnaded building where medical and psychological treatments took place. This combination of buildings and spaces was considered to be the ‘hospital’ (Morris 1946).

The sixteenth century Reformation movement in Europe resulted in the dissolution of hundreds of hospitals; in England all hospitals disappeared. During the sixteenth and seventeenth centuries hospitals were replaced to a limited extent by almshouses (Morris 1947). In the seventeenth and eighteenth centuries, the dual emergence of scientific medicine and Romanticism fortuitously combined to encourage the reemergence

of hospitals and usable outdoor spaces on the grounds (Cooper Marcus 1999). During this period, attention was given to sanitation and fresh air as well as an appreciation to the effects of nature upon the body and soul. The pavilion form of hospital design, with outdoor spaces between pavilion wards, became the predominant form throughout the nineteenth century (Epstein 1998). The influential nurse and public health reformer Florence Nightingale (1820-1910) wrote with enthusiasm of these new hygienic hospital plans, which became the predominate form throughout the nineteenth century (Coulter 1999). However, overtime, gardens, balconies and solaria were abandoned in hospitals. Landscaping turned into entrance beautifications, tennis courts for staff, and parking lots for employees and visitors (Cooper Marcus 1999).

Hospital Rooftop Garden

(http://www.homeoint.org/morrell/londonhh/roofgard.htm 2002)

The most rapid periods of social and technical changes in human history occurred during the twentieth century. In the medical world rapid advances in science included the development of germ theory, technical advances in high-rise construction and the use of elevators, increased demands for efficiency, and specialization within the medical field. These factors led to the replacement of low-rise pavilion hospitals with multistory medical complexes (Cooper Marcus 1999). In acute care hospitals, the

design emphasis shifted towards saving steps for physicians and nurses, and away from attention to the environments the patients experienced. These trends, which so captured the twentieth century American acute care hospitals, spread to long-term and chronic care facilities, Veterans Administration hospitals, mental hospitals, and nursing homes after World War II. The prestige of the big city teaching hospitals with their gardenless patient environments set the styles for all others. (Cooper Marcus 1999).

By the late twentieth century, connection to nature in a healthcare setting was almost lost and "landscaping" had been reduced to superficial decoration (Cooper Marcus 1999). The relationship to the landscape has become so distant that many hospitals in use today are primitive as far connecting the building and land together. Individuals, with their own specializations, who could see medicine and nothing else, or perhaps architecture without medical integration, planned some of these hospitals. By the 1940's, some hospitals, well located at first, had been swallowed by encroaching industry or business. Other hospitals are encircled by noisy traffic or sealed on all sides by slabs of concrete. Some mental hospitals would induce melancholia in pschologically healthy people because the buildings and grounds look so sad (Morris 1946). The development of "efficient" environments in a healthcare facility has resulted in places that are stressful and unsuited to address the emotional or psychological needs of

Modern Hospital (Cooper Marcus 1999)

patients, visitors, and staff. Behavior research suggests that poor hospital design and cumbersome organization may negatively affect health by creating a stressful setting for staff and patients (Barnhart, et al 1998).

Psychiatric Hospital

Changes in the treatment of psychiatric patients and in the design of psychiatric hospitals also occurred around the end of the eighteenth century and early nineteenth centuries. Radical reforms in the treatment of psychiatric patients and in the design of psychiatric hospitals occured. Focus changed from physical punishment to psychological treatment. Psychiatric institutions were planned with outdoor spaces planted to screen patients from curious spectators. Landscaped views were created to provide comfort. Grounds maintenance, gardening and farming became part of the patient's therapy (Epstein 1998).

Psychiatric Hospital Grounds
(www.btinternet.com/~fzemla/ hospital_garden.jpg 2002)

Sanatoriums

The first sanatoriums were conversions of existing country houses set in extensive wooded and landscaped grounds. Laid out with meandering paths, croquet lawns, shrub borders, and flower beds, their style was similar to that of parks surrounding late

nineteenth century mansions almost anywhere in the world. In reality the gardens were an integral aspect of sanatoriums planning and the grounds, with their maze-like paths, were carefully designed to provide convalescent tubercular patients with varying degrees of rehabilitative therapeutic exercise. Professor Sir Robert Philip, an internationally renowned tuberculosis physician and teacher, established his first sanatorium in 1887 on the site of the Craigleith House, a late Georgian villa. The building was converted to Philip's own specifications and the grounds were improved for walking and other exercise regimes. Planting of trees ensured adequate wind breaks and to aid the drying of the soil and to serve as dust catchers' (Campbell 2000).

Directed by King Edward VII, a model sanatorium for consumptive patients was built in England modeled after Peter Dettweiller's sanatorium at Falkenstein in southern Germany. The sanatorium, built in Davos in 1903, consisted of a central administrative section and two extending wings or pavilions which contained patients' bedrooms, balconies, and terraces. In the grounds, paths meandered on carefully controlled gradients, designed to provide different degrees of exercise appropriate for the patient's state of recovery (Campbell 2000). Gentle walks in the "health-giving resinous aroma" of pine forests were specially recommended for nineteenth century consumptive patients, and later sanatoriums were specifically sited in coniferous-wooded south-facing hillside locations. Balconies were incorporated into the buildings so that the sanative effects of fresh-air and tranquility could be experienced by the patients as they reclined on wicker chaise-lounges (Campbell 2000). In keeping with the idea that fresh air and sunshine were beneficial to patients, good nursing practice by the end of the twentieth century called for wheeling hospital beds out onto sun porches and roofs; indeed, in the treatment of tuberculosis, this fresh air and sunlight regimen was seen as the key to recovery (Cooper Marcus 1999).

During the 1920's and 1930's, new sanatoriums reflected the progressive architectural style known as International Modernism. The front entrance of one sanatorium

included a lung-shaped flowerbed planted with parallel strips of red bedding begonias representing the healing effects of fresh blood into the lungs (Campbell 2000). In the 1950s, the dramatic reduction in patient numbers as a result of triple-drug therapy meant that tuberculosis sanatoriums were no longer needed. Many sanatoriums were converted into general hospitals. Their landscaped grounds and gardens frequently became parking space and the original planting and graduated walks, the therapeutic features, were lost (Campbell 2000).

Gardens for Horticultural Therapy

Horticultural therapy professionals use the restorative and therapeutic aspects of gardening in a wide range of non-horticultural settings—hospitals, geriatric centers, drug rehabilitation centers, correctional institutions, and schools for the developmentally disabled (Lewis 1991). The formal umbrella organization for horticultural therapy in the United States, the American Horticultural Therapy Association (AHTA), was founded in 1973 and training was codified at that time (hhtp://www.naturalbrainhealth.com/gardens/htm 2002). In horticultural therapy, plants are grown specifically for the restorative and rehabilitative effects they might have on the person growing them. The primary objective is to heal the patient; producing plants

Horticultural Therapy (www.rbg.ca/services/hortther.html 2002)

and flowers is a secondary benefit. In a horticultural therapy program, guiding and promoting a program of activities and experiences in the garden is ideal (Coulter 1999).

As a participatory activity, gardening becomes a rich source of personal and social satisfaction. Patients are invited to take part in routine garden tasks, such as preparing soil, planting, and nurturing growth. This activity gives patients something to do and gives them a purpose (Coulter 1999). In teaching the developmentally disabled, plants are non-judgmental and respond to the care of a mentally disabled person, thereby providing an opportunity for vocational training that leads to success and self-sufficiency. Gardens at correctional institutions also use horticulture for therapy and rehabilitation. Maurice Seigler, former Chairman of the U.S. Board of Parole, speaking of his experiences as warden of a Nebraska penitentiary, said that though inmates might do violence to the buildings, they never destroy plants they had grown (Lewis 1991).

SPIRITUAL GARDENS

Islamic Gardens

Early Islamic gardens were designed to set out religious ideals in three dimensions. Courtyard gardens, for instance, were designed according to precepts set forth in the Koran (the Muslim sacred text). The garden tradition of Islam took root in the eighth century AD and eventually spread into Asia, Africa, and part of Europe, wherever the followers of Mohammed (c. 570-632) ventured (van Zuylen 1994). According to the Koran, gardens were to be enclosed by thick walls, and filled with “rivers of honey” and flowers and trees to provide the “spreading shade” needed to make a cool oasis in the desert climates of the Islamic world. Muslims considered the garden a universal symbol of life and hope (van Zuylen 1994). The garden had spiritual significance as the domestic version of that paradise towards which the Koran directed its disciples to strive as their reward for this life’s hardships (Macdougall 1976).

The Islamic garden is consistently cited in the Koran as a symbol for paradise, with shade and water as its ideal elements (Macdougall 1976). “Gardens underneath with rivers flow” is a frequently used expression for the bliss of the faithful, and occurs more than thirty times throughout the Koran. Four main rivers of paradise are also specified, one of water, one of milk, one of wine and one of purified honey. This is the origin of the quartered garden, known in Persian as the four gardens, which were divided by means of four water-channels and all contained within a private, walled enclosure (Brookes 1987). These traditional gardens are rectangular, but trees and low plantings soften its strict geometry (van Zuylen 1994). The Islamic garden, celebrates the sound of water flowing from various directions, and shrubs and trees are scattered with a studied carelessness to beautify nature without violating it, to emphasize its spirit rather than suppress it. It is this spirit of harmony with nature that is the most obvious characteristic of the Islamic garden.

The Islamic garden was, and still is, a private place, a retreat from the world; cool after the heat of the day, with bubbling waters, the rustle of breeze-blown and nighttime scents. The Islamic garden was a place of relaxation (Brookes 1987). Each garden was meant to be a little paradise on earth for the happy owner, and it was therefore carefully sheltered by wall from the hustle-bustle and odors of the city or, when located in the suburbs or country, from the wilderness beyond (Macdougall 1976).

Frequently mentioned in descriptions of Islamic gardens is the abundant fruit trees and the rich pavilions set among them, wherein the owners of the gardens and their friends might relax. Thus, within this concept of paradise is a clear indication as to what the garden should contain: fruit trees, water and rich pavilions, intended as places for pleasure and cool enjoyment (Brooks 1987). Within the quartered garden the central pavilion is sited at the intersection of the four sections. The pavilion provides a primary centrifugal movement outwards along the avenues and a secondary inward-directed motion through its four porches to the basin of water and the fountain – its spiritual cen-

ter – from which are generated ripples of ever-expanding diameter, recommencing the cycle of expansion and contraction (Brookes 1987). Plants are loved passionately, for if nothing else they have a rarity value in certain parts of the Arab world, and they are of course an integral part of the garden. Certain trees, too, are used structurally in the design concept, but the idea of a landscaped garden, in which flowering objects and pattern are welded together to form a total entity, is foreign to this part of the world. In the gardens of Islam, individual plants seem to be positioned at random, often as a lovely but incidental feature (Brookes 1987).

Muslim Influence on Western Gardens

The Muslim conquerors did more than create beautiful pleasure gardens; they brought with them the Greek botanical texts that had been collected and translated in

Islamic Garden
(ww.honors.uiuc.edu/ealc15097/ Resor-Gausebeck/islamic.jpg 2002)

Baghdad starting around 830 AD. The Muslims translated and preserved the scientific legacy of ancient Greece. The classical botanical literature they rescued worked its way into medieval Europe, where an awakening appreciation for the sensual delights already familiar to the Islamic world gave fresh impetus to the concept of the pleasure garden. The Muslims led the field not only in the preservation of ancient botanical learning, but in plant collecting, identification, and research. Their legacy became an integral part of

Western culture. The medieval gardens that later inspired the more elaborate botanical gardens of the Renaissance were rooted in Islamic learning (van Zuylen 1994).

Monastic Gardens

When the last Roman emperor was deposed in 476 AD, political and economic unease settled over Europe. Faced with successive waves of invaders, people secured themselves behind the heavy doors of moated castles or fortified hilltop towns, leaving little space for the cultivation of gardens. The gardens that remained took on a new character; they were walled in and protected from the danger and uncertainty that spread across Europe. Master gardeners in the employ of noblemen, churchmen, and sovereigns kept practical knowledge from disappearing altogether by passing on their horticultural skills and techniques to their apprentices. (van Zuylen 1994). The garden tradition was thus preserved, but for several centuries was largely reduced to subsistence gardening.

As noted previously, cloistered gardens located in convents and monasteries provided locations for soothing both the healthy and ill (Coulter 1999). The first hospitals in Europe were infirmaries in monastic communities. Every monastery had a physic or medicinal herb garden. Priests cultivated flowers, fruit trees and vegetables along with medicinal plants in their garden plots. Medicinal herbs were grown during the Middle Ages, particularly in monastic gardens, however, scientific classification was nonexistent and people relied on the "doctrine of signatures" in which a plant's medicinal use was indicated by its supposed resemblance to a specific human organ or part of the body (van Zuylen 1994).

During the Middle Ages there were two garden types which could be found outside the walls of the monastery. These pleasure gardens were beginning to be designed with two basic types. One type was the square or oblong flowering garden that was enclosed by trellis fencing and featured a lawn, crisscrossed paths, a fountain, raised flowerbeds, and sometimes fruit trees. The second type, the viridarium, or ornamental

orchard, provided not only elegant displays of evergreens and fruit trees but also shade for strolling, often by a pond or lake. There was a constant emphasis in the garden of the Middle Ages on geometry and containment, a taming of the wilderness that lay beyond; this tendency was manifested in tunneled arbors, trees shaped into tunnels, and in the elaborate walls and trellises shown in garden illustrations of the period. Even the plant beds, usually raised slightly from the ground, were carefully compartmentalized (van Zuylen 1994).

Monastery Garden
(www.ville.montreal.qc.ca/.../ jardin_monastere_r.jpg 2002)

TRADITIONAL GARDENS

Botanical Gardens

The first botanical gardens were established for the enlightenment of physicians during the Middle Ages (Lewis 1991). The Renaissance quest for knowledge about all forms of creation reawakened interest in botany and stimulated the appearance of gardens primarily devoted to rare and medicinal plants (van Zuylen 1994). The first botanical gardens of the sixteenth and seventeenth centuries represented within the confines of their walls the imagined Garden of Eden. Plants found in the discoveries of the four continents were brought back to re-create an Eden: a garden of perpetual fruits and

blooms (Potteiger and Purinton 1998). Current botanical gardens have more applications. These gardens are often used for public recreation and for education. In addition, botanical gardens collections may be dedicated to broaden the genetic diversity of plant collections and to attempt to preserve plants worldwide (http://aabga.org/ 2002).

An arboretum differs from a botanical garden in that the emphasis is placed on the growing of woody plants, whereas in the botanical garden emphasis is not placed on the growing of any particular kind of plant, but all types are grown. A botanical garden differs from a park in that in the former a serious effort has been made to plant an extensive collection of many kinds of labeled plants not only for the purpose of display but also for critical examination, education, and scientific study (Wyman 1947). Critical to the difference between a park and a botanical garden is that while both can be used for recreational purposes, the botanical garden encourages the education of their visitors (Wyman 1947).

Botanical Garden (lynndiana.tripod.com/.../ botanical-garden.jpg 2002)

Vernacular Gardens

The term vernacular in the context of the garden suggests a craft indigenous to a country, evolved over many years, that is not learned or borrowed (Westmacott 1990).

Gardening is a craft that encourages adaptability to changing conditions. Gardens are an expression of culture and can reflect the way one views the world. Through the specific plants and gardening practices applied, individuals are able to create meaning through experiencing a garden. In addition, individuals connect to their community through gardens (Wekerle 2000). Within the scope of vernacular gardens there is no unity of form, content, or use. There is no concept of the vernacular garden that would apply to all of them, beyond the general idea of a garden (Conan 1999). In effect, vernacular gardenshave turned out to be a system of expression, very much like language, music, painting, or dancing (Conan 1999). Gardening is participatory in that people create conditions favorable for plant growth in order to produce flowers, vegetables, trees, shrubs, vines, or lawns (Lewis 1991).

Vernacular Garden (www.alumni.iastate.edu/events/vr/arch.jpg 2002)

The garden can be an accurate reflection of an individual, and of how one interfaces with the natural world. The garden is intensely entangled with one's aesthetic life. People live in two realms—the realm of science, objects, and solidity; and the realm of dreams and patterns and rhythms of color and sound. Gardening is a synthesis of these two realms, of object and illusion (Pope 1998). The American front yard can be seen as

a common narrative tableau, adapting the received traditions of the pastoral topographies and its story of rural escapism and leisure to contemporary situations (Potteiger 1998). Each regional culture endows its gardens with a distinctive design sensibility based on a blend of geographic, climatic, horticultural, geologic, religious, and aesthetic influences that result in designs that are undeniably of that region (Messervy 1995). The yard has also shown the capacity to absorb a great mélange of other stories encoded by emblems of national myths (wagon wheels), exotic paradise (pink flamingos), local history (coal chunks displayed on the lawns of Carbon County, Pennsylvania) and ethnic origins (Blessed Virgin Mary statues) or (elaborate gravel patterns of the Portuguese in South San Francisco) (Potteiger 1998).

The garden and its elements do not carry inherent meaning; rather, meaning is culturally determined and culturally specific (Riley 1990). In a culture as diverse and fragmented as that of the United States, meaning is likely to be more specific to a subculture, life style, or individual. Some meanings will turn out to be shared and reinforced, others will not. (Riley 1990). The garden can easily accumulate sensitive and significant representations. A tree planted in front of the door now represents the one climbed in childhood. However, not all people will find the same meaning in a given plant or setting; responses are highly personal (Gadrat 2000). For example, American nurserymen consider the rampant Tree of Heaven, *Ailanthus altissima*, to be a weed; however, for residents of an inner city block its shade is most welcome. The combination of these symbols and above all, their fine-tuning allows the garden to become more expressive and a true reflection of the individual creating the space (Gadrat 2000). Psychologist Carl Jung described the important role symbols played in the human psyche as they evoke an emotional response, a sense of awe and inspiration in an individual. Jung describes the symbol as the vehicle for a modern-day spirituality (Mills and Crowley 1986). Gardens and plants must be perceived within a human context before their meaning can be fully understood (Lewis 1991).

On another level, gardening is a way to transmit cultural traditions to children, through growing plants used in family recipes or herbal medicines, and through passing on traditional garden lore (Wekerle 2000). Gardens give visual clues about the people who live there: the fuzzy melons supported by a cats cradle of string may be an Asian gardener; a grape arbor on a joined pipe trellis is often indicative of an Italian neighborhood (Wekerle 2000). Gardens and gardening, plants and landscape, come to life in the human mind, where they endlessly enrich and sustain both those who observe and those who participate. Gardens and plants must be perceived within a human context before their meaning can be fully understood (Lewis 1991).

Summary

Exploring past garden traditions and styles provides insight into how gardens were designed and used. The exploration of the garden style and the time frame of its development provide solid insight into many aspects of the design. This is especially useful as today's gardens are designed using many of the same elements which were incorporated in past gardens. There is a great variety of meanings and emotional impact associated with gardens.

Some gardens were designed specifically to be restorative, such as Islamic and monastery gardens.These gardens incorporated some of the componentsthat research has confirmed can be therapeutic for users. However, not every element or hoped for effect in a garden is therapeutic for the user. Clearly a demonstration of power such as in Versailles is not meant to reduce stress or support the user. Islamic gardens in particular were created to replicate the Koran's description of paradise. For a user of that faith, and in conjunction with design elements which are suportive, these gardens may be resotrative both physically and emotionally. A replication of the Garden of Eden included in a medieval cloister garden would have offered a site for respite and restoration of the spirit

and body of weary travelers. The ability to provide a location in which a user is able to find solace or enlightenment is a key component of a spiritual garden. These gardens represent physical depictions of sacred locations or may be abstracted versions of nature. By meeting the spiritual needs of a user and by providing the physical characteristics which are supportive to users, these gardens may provide a solid therapeutic benefit.

Psychiatric hospitals and sanatoriums in the late eighteenth century were created specifically to be therapeutic to those recovering from mental and physical aliments. Careful consideration was given to creating path systems which would encourage walking to strengthen the users recovering from tuberculosis. These gardens and grounds were crafted to support a very specific user group. However, a more active population may not have been challenged suitably to reduce stress and obtain physical benefit. Again, careful consideration of the user is critical for creating a garden that is healing.

As noted, the act of gardening can be extremely therapeutic to the gardener as it produces both physical and emotional benefits. Horticultural therapy programs take advantage of these benefits. An aesthetic result in a garden design is not the goal and the user is encouraged to preform basic gardening tasks to strengthen the body physically and nurture the spirit. In some fashion, the gardener who creates a “vernacular” garden is taking advantage of this phenomenon. A garden created by an individual enables the artistic exploration of one’s culture and provides a location for nurturing plants. While neither of these gardens require the careful design by a landscape architect, it is possible to incorporate some of the elements into gardens to produce a therapeutic benefit. A landscape architect should be aware that the act of gardening is therapeutic and ensure that a user could be involved in gardening if he or she chooses.

Some of the gardens examined in this chapter provided strong examples of therapeutic design, such as Islamic, sanatorium, and monastery gardens. The needs of the users were carefully considered and elements were incorporated to support them. On the

other hand, there were significant examples of gardens that do not provide a healing benefit but did address other concerns of users. These gardens were used to demonstrate power or wealth. To be supportive to the user, the designer must understand the physical and emotional needs and incorporate elements which support these requirements.

CHAPTER 3
TRENDS IN DESIGN:
PHILOSOPHY OF DESIGNERS THROUGH HISTORY

This chapter examines the design philosophies of seven influential designers from the late 1700s to present in order to explore the progression in the field with regard to therapeutic design. These seven individuals were chosen as they were and are leaders in the field and continue to influence designers today. The extent to which landscapes were considered therapeutic and whether these individuals believed creating a healing environment to be an important component of their designs will be examined. Today, landscape architects are able to take advantage of research in psychology and other related fields. In contrast, previous designers based many of their assumptions regarding the impact of the physical environment on intuition and commonly held beliefs.

Examining how the leaders in the field at different points in history were treating the idea of healing provides, in a general sense, insight into how this topic has been dealt with over time. First, an in-depth review of the historic design philosophies of Humphry Repton, Frederick Law Olmsted, and Gertrude Jekyll is considered, and then the philosophies of four modern landscape architects, James Rose, Clare Cooper Marcus, and Wolfgang Oehme and James van Sweden are discussed. The philosophy of each is examined as it relates to a specific overarching goal for creating designs. The design elements applied to achieve their goals are enumerated and examined for components necessary to create a restorative garden as explored in Chapter 1.

These designers were choosen to provide insight into certain time periods over history. The individuals were influential during their eras and remain so today. In addition, these seven designers left a solid legacy of written material that provided the means to assess their design intent. Rather than depend on the interpretation of scholars, it was

possible to understand the designer's goals from their own words.Therefore, this study ensures a wide range of designers through history with a complete picture of their design intent.

LANDSCAPE DESIGNERS

Humphry Repton

Humphry Repton was the third and last of the dominant figures in the English landscape garden movement, a phenomenon which flourished for roughly between 1720 and 1820. Repton created gardens to be viewed by users in the manner of a painting and he reflected a concern of how the garden and house related. Repton's eclectic taste led him to seek the best features of earlier periods in gardening history and link them with the ideals of his time (Stroud 1962). Repton claimed to be the first practitioner to use the term 'Landscape Gardening' because he said "the art can only be advanced and perfected by the united powers of the landscape painter and the practical gardener" (Daniels 1999). In part, the fascination of the Renaissance with the discovery of perspective continued to dominate garden design by Repton. Gardens were to be viewed from specific points where pictures were "composed" of landscape materials (Rose 1958).

Design Elements

In his occasional essays and more explicitly in his 'Enquiry into the Changes of Taste in Landscape Gardening' (1806) Repton described the principles of his art. "The perfection of Landscape Gardening consists in the four following requisites: First, it must display the natural beauties and hide the natural defects of every situation; Secondly, it should give the appearance of extent and freedom, by carefully disguising or hiding the boundary; Thirdly, it must studiously conceal every interference of art, however expensive, by which the scenery is improved; making the whole appear the production of nature only; and, fourthly, all objects of mere convenience or comfort, if incapable of being made ornamental, or of becoming proper parts of the general scenery,

must be removed or cancelled …" Within these guidelines the garden was free to develop in whatever direction whim or the nature of the ground suggested, subjected only to a largely theoretical observance of agreement in style between house and grounds (Clifford 1963). Repton's desire to create gardens with views of nature (or improved nature) is consistent with research achieving a healing garden. However, Repton did not include any suggestion that the needs of the user are critical to the development of the garden.

Garden by Repton (www.lib.udel.edu/ud/spec/images/udla/repton2.jpg 2002)

According to Repton, the garden is "a piece of ground fenced off from cattle, and appropriated to the use and pleasure of man: it is or ought to be, cultivated and enriched by art, with such products as are not natural to this country, and consequently, it must be artificial in its treatment, and may, without impropriety, be so in its appearance; yet, there is so much of littleness in art, when compared with nature, that they cannot well be blended; it were, therefore, to be wished, that the exterior of a garden should be made to assimilate with park scenery, or the landscape of nature; the interior may then be laid out with all the variety, contrast, and even whim, that can produce pleasing objects to the eye" (Clifford 1963) From the outset of his practice, Repton was conscious that architecture was 'an inseparable and indispensable auxiliary' to landscape gardening. (Stroud 1963). To overcome this sharp line between the obviously artificial and the supposedly

natural Repton extended the area of the obviously artificial, but with gradually diminishing artificiality. In other words, the architectural element was to be readmitted to soften the transition between the domain of man and nature (Clifford 1963).

Repton, responsible for popularizing the notion that gardening and painting were similar arts, was also well aware of the differences. He stated the purpose of gardening was 'to create a scenery more pure, more harmonious, and more expressive than any that is to be found in nature itself', but did not consider that a garden was the same thing as a painting or that it should actually imitate paintings (Clifford 1963). While he made many contributions to the field of landscape gardening, his methods were far from original. He admitted to relying on the examples set forth by Lancelot "Capability" Brown, the man who revolutionized Landscape Architecture in the 18th century by creating the "natural" English garden, insofar as the distant natural landscape was concerned, yet turning to the formalism of the Le Notre approach, a French landscape designer who was the royal gardener for Louis XIV and who created the gardens at Versailles, in connection with the mansion itself. Repton furnished his clients eclectic features from the garden types dating to before the landscape garden movement began (Mann 1993).

Garden Designed By Repton (Stroud 1962)

Design Elements

Repton did not specifically design his gardens to be therapeutic to the user. Primarily he focused on creating a tasteful picture that would be "pleasing to the eye." The sweeping vistas with mature trees and uniform ground planes characteristic of his designs provide a measure of coherence to his gardens. These spaces contained the vegetation and the landscape styles that are most preferred by users. In addition, his desires to create "paintings" provide a view of nature that is also restorative to users. It is possible that the restorative effects of viewing nature, as documented by Roger Ulrich, would be gained from a garden designed by Repton, however, this was not the intent. Repton was not concerned with the therapeutic effects of the garden on the user as a whole and he did not consider the needs of the user when planning his gardens. Thus while a number of components were included the gardens were not.

Frederick Law Olmstead

Frederick Law Olmsted considered the therapeutic effects his designs could produce to be of utmost importance. Olmstead believed the positive influence on users of the physical environment and careful design was critical. He was concerned with social change and the emotional state of the users of his designs. While he was concerned with the visual impact of his designs, this concern was related directly to how the user would be affected, rather than due to a purely aesthetic focus.

Olmstead played a pivotal role in the formulation of the field of Landscape Architecture in the nineteenth century and articulated the original concept of what the field could encompass. The influence of his style of landscape architecture is still felt in the profession today, in large part due to the social vision he brought to the profession during its formative years. Olmsted believed the physical environment, coupled with careful design, could exert a positive influence on those who experienced it. As a

designer Olmsted sought to create spaces with great psychological power and he carefully planned every detail so as to achieve that purpose. His concern with aesthetic questions was based primarily in these non-aesthetic considerations (Beveridge 1995).

Design Elements

Olmsted created a comprehensive body of theory about landscape design with a strong emphasis on the psychological effects of scenery. This emphasis gave his design principles a firm base independent of any changes of style or taste. Olmsted's design philosophy was not an aesthetic theory but one that focused on the health of the human organism (Beveridge 1995). According to Olmsted, "the experience of scenery was visual " and as he developed his own concepts, Olmsted wrote of the relation of vision to the well-being of the whole person. Olmsted asserted that "a man's eyes cannot be as much occupied as they are in large cities by artificial things . . . without harmful effect, first on his mental and nervous system and ultimately on his entire constitutional organization." According to Olmsted, landscape provided a relief from the "rigidity and confinement and protrusion of art of the ordinary conditions of the city" and was able "to refresh and delight the eye and through the eye, the mind and the spirit" (Beveridge 1995) He was certain that "the charm of natural scenery is an influence of the highest curative value; highest … because it acts directly upon the highest functions of the system, and through them upon all below, tending, more than any single form of medication … to establish shound minds in sound bodies" (Beveridge 1995).

In addition, the social agenda Olmsted developed by the mid-1850's guided many of his design principals. With regard to urban parks in particular, Olmsted believed these places could act as a foil to over crowded lower-income housing areas and the related negative health effects of slum life. In describing the effects of scenery Olmsted used such terms as "sanative" and "restoring" and spoke of his parks as "sanitary institutions." Olmsted believed that "the charm of natural scenery is an influence of the high-

est curative value; highest, if for no other reason, because it acts directly upon the highest functions of the system, and through them upon all below, tending, more than any single form of medication we can use, to establish sound minds, in sound bodies." Scenic features became the most important elements in the landscapes Olmsted created and the emotional responses he sought to produce through them (Beveridge 1995).

For Olmsted the psychological benefit of his landscape designs far exceeded in service anything that the work of a gardener could achieve. He rejected the artificiality of horticultural and floral displays that were simply decorative. He believed that "true landscape art always did more than simply give pleasure by its appearance." Olmsted believed that specimen plantings or striking vistas could hinder the most important implication of the unconscious operation of nature's restorative. What Olmsted sought to promote, especially in his design of parks and other urban places, was what he called "unconscious or indirect recreation." Objects before which people are called to a halt, and to utter mental exclamations of surprise and admiration," he taught, "are often adapted to interrupt and prevent, or interfere with the processes of indirect or unconscious recreation." In addition, Olmsted rejected specimen planting and flower bedding as it went against the "spirit of the place" (Beveridge 1995). Through his designs Olmsted attempted to mediate between the raw forces of nature and the aesthetic and social needs of people (Hall 1995).

Nature in the City (Beveridge 1995)

Gertrude Jekyll

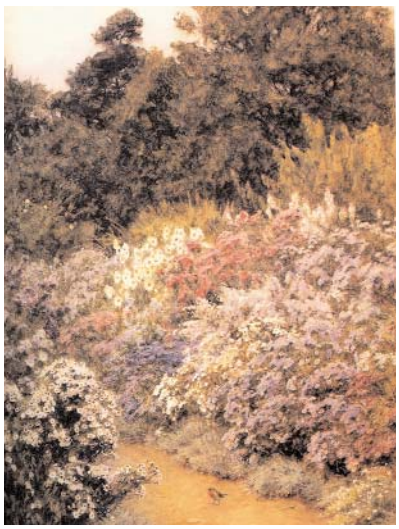
Gertrude Jekyll focused on the planting of the herbaceous border and explored the use of color to create visual interest. Her background as a painter was reflected in her gardens. She tried to create gardens that would provide a place for relaxation and uplift the spirit. However, this was a limited focus and further therapeutic design goals were not included.

Jekyll was one of the twentieth century's most important British landscape designers and writers. During the late nineteenth century and first thirty years of the twentieth century she originated the traditional herbaceous border, which depends for its effect on wide borders massed with a variety of plants with blended colors, heights, and depths for visual interest (Hobhouse 1984) Her published writing popularized her ideas on "controlled" wildness and herbaceous borders that used a collection of hardy perennial flowering plants to provide a succession of flowers throughout the seasons (Mann 1993). In large part, she created a picture with living plants, using the colors and textures of flowers and vegetation with the vision and technique of a painter, based on her earliest training and career (Hobhouse 1984).

Design Elements

Jekyll considered the emotional impact of her gardens and believed that a garden which combines her objectives of specific plant selection and placement with a harmony of color "provides for a feeling of repose and refreshment, and purest enjoyment of beauty …For I hold that the best purpose of a garden is to give delight and to give refreshment of the mind, to soothe, to refine, and to lift-up the heart in a spirit of praise and thankfulness" (Hobhouse 1984). Her philosophy combined the qualities of her painter's training with a gardener's love of flowers and woodland. She was a strong proponent of simplicity in design, with a focus on the entire effect rather than on a grand gesture of an exotic plant or statue. She advocated simplicity of plant or color scheme rather than using a complex plant palette. Jekyll grouped plants together that were in

flower at the same time, with long stretches of green of differing colors and textures to separate the groups of flowers. A garden for Jekyll was not to be a museum for plant collections; rather, the plants in the design were to produce a cohesive whole through dependence on one another. In addition to a strong emphasis on color and texture, Jekyll also emphasized the use of scent in her gardens (Hobhouse 1984).



Herbaceous Border (Hobhouse 1984)

In thinking about her gardens, Jekyll focused on the unity between house, garden, and the natural landscape in which all were contained. As the garden began to merge into the surrounding countryside, Jekyll used indigenous trees and underplantings to ensure that a plant related to its natural habitat. Careful placement of plants with similar cultural needs and in appropriate locations was a part of her philosophy. This did not, however, limit her use of annuals in season or the placement of potted flowering plants to extend the periods of color. Jekyll used ornamentation only when it served a useful function and emphasized the simplicity of design for garden statuary, seats and pergolas (Jekyll 1982).

James Rose

James Rose designed residential gardens rejecting many past design conventions and focusing on linking the garden, house and user. For Rose, the garden and user were

impossible to separate. He approached design with an informal approach that explored culture and used plants architecturally or spatially. He did not consider the garden a therapeutic tool.

James Rose, along with Garrett Eckbo and Dan Kiley, instigated the "Harvard Revolution" in landscape architectural design that occurred between 1936 and1938. Rose considered this to be a change in the manner of looking at the objective world with regard to modern landscape design. He rejected the formal Beaux-Arts style in favor of an informal and organic approach in which the attitudes one has toward landscapes are based on cultural background and are emphasized in the garden (Snow 1967; Mann 1993). Within his practice, Rose focused primarily on residential gardens and said that there were three factors involved in such a design: the site, the client, and himself: "the catalyst in a kind of chemical reaction that 'just happens' when the three are brought together in the broader field of general landscape" (Snow 1967). Rose said the field of landscape architecture includes elements such as the culture, social attitudes, climate, geology, and plant life of the region, and its customs (Snow 1967). Rose distilled the essence of a garden to a sense of being within something while remaining outdoors; he did not consider the elements that create a garden, the flowers, plants, barbeque or hardscape elements to constitute the garden (Rose 1958).

Rose considered a garden as the interplay between organisms and the environment rather than simply a luxury item or a refinement, which is how he believed most Americans perceived it. For Rose, a garden is not something you have, but something you are (Snow 1967). The viewer was critical to a garden for Rose, because without a viewer the garden would not exist (Snow 1967). Within the garden, Rose believed one's image is reflected, however it is more simplified, or more "natural" than nature. In addition, for Rose the garden experience is a sculptural one, direct, and occurring in at least the three dimensions of length, width, and height (Snow 1967). He designed a garden as a sculpture that is large enough and perforated enough to walk through, open

enough not to restrict movement, and broken enough to guide the experience which is a communion with the sky (Rose 1958). He considered that the divisions between oneself and nature are removed within the garden. However, for the garden to be truly experienced, Rose believed the context was critical. The time, place, and the people who are involved must be considered as Rose believes the personality of the persons for whom the garden is designed becomes stamped upon the garden (Snow 1967).

Design Elements

Within his designs, Rose used plants that had a strong architectural or spatial meaning. This became especially important in a design as these plants related to circulation, enclosure, division of space, and privacy. Rose did not exclude flowers from his gardens and landscapes, but did not consider them a focal point, as there may have been no focal point in the garden. Many of the gardens designed by Rose included straight lines delineating hardscape areas from vegetation. The lack of curvilinear or irregular lines and absence of a focal point contradicts the research regarding landscape preferences by users. In addition, the use of strong geometric lines for abundant hardscape elements runs counter to available research on therapeutic design. Rose would choose trees and shrubs which flower, however, the flowering plant would still need to be in the proper location (Snow 1967). Specifically, Rose used plants to create space in the landscape (Rose 1958). In defining a garden Rose stated, “the garden is really being sculpture. Not ordinary sculpture, of course. You can walk through it. You are inside something. You have to feel you are inside something, even thought you are out of doors instead of being outside of something trying to think everything else away. A garden is sculpture from anyplace you are in it, even while you are in motion, and there’s nothing outside that has to be thought away because that’s part of it too – just as you are“ (Rose 1965).

Rose saw the garden as the location that allowed the integration of the man and nature, and only secondarily the integration of house and garden. He considered the integration of the house and the garden to be critical, as he did not consider the two to be separate entities in the garden. He believed the house could function as sculpture with its placement being the same as the placement of a piece of sculpture in a garden. Rose considered that if the two were fully joined, then one could experience living within the total environment (Snow 1967). He believed a designer could use volume to create a frame of reference that makes the perception of nature more acute (Rose 1958).

Garden Elements (Rose 1965)

Clare Cooper Marcus

Clare Cooper Marcus is a practicing landscape architect who is focused on the creation of and writing about healing gardens. Cooper Marcus has written extensively about the creation of healing gardens and landscspes and has designed a number of healing gardens located in medical insititutions beginning in the early 1980's. According to Cooper Marcus, the design of a healing garden involves the intertwining of two conceptual components: a process of healing and a place in which it is supported. Furthermore,

she states that for a healing garden to be successful, the landscape architect must adopt a people-oriented perspective and carefully apply available research.

Cooper Marcus contends there may be sufficient information to create viable healing gardens and that good designers, sensitive to outdoor-space design, are able to create a healing place. However, she believes the application of much of the information is not sufficient and that there is a dearth of information with regard to patient-specific gardens, or the needs related to specific cultural or ethnic groups (Cooper Marcus 1999). Cooper Marcus believes that gardens can be healing and restorative as a result of a number of mechanisms.

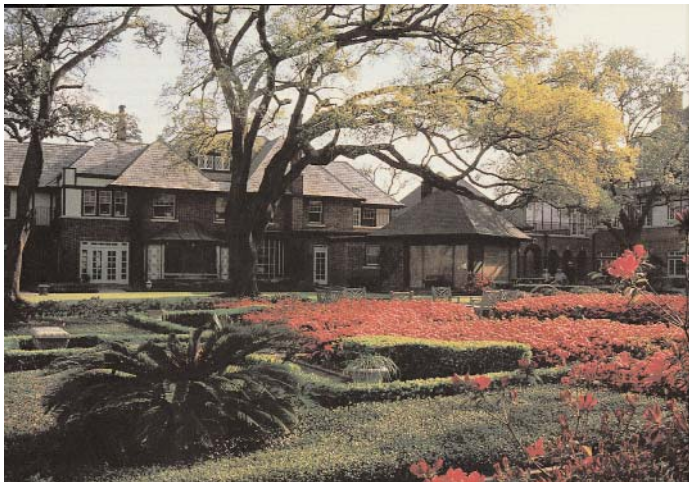
Design Elements

The most obvious tool for creating a therapeutic space is the aesthetics of nature, in which simply being in a natural or quasi-natural setting can provide measurable stress-reducing benefits. However, the healing effects of a garden would be greatly augmented if other sought-after activities beyond the basics of being in a plant-filled space were provided for in the design. The design may include elements to encourage people to socialize, to spend time alone, to stroll, to engage in more vigorous exercise, to choose being in the sun or shade, and so on. Without attention to these and other details a garden will not fulfill its potential as a healing place. While a site may provide an attractive view of nature from inside a facility, if it does not motivate and allow for individuals to spend time outside where other experiences besides viewing nature can occur, the healing functions of the garden will be severely limited (Cooper Marcus 1999).

The delicate interplay between the real environment, the observed environment, and the perceived environment is critical in the design of therapeutic spaces, according to Cooper Marcus. For a therapeutic space to be created and healing to occur, an understanding of the interactions between these three elements must direct the design and its implementation. In addition, landscape architects must be aware of and control the sym-

bolic meanings possibly contained in an environment. The careful use of plants and elements of water are critical to a successful design (Cooper Marcus 1999).

Cooper Marcus believes within this segment of the field, the landscape architect begins to incorporate considerations of emotion, support, sustenance, and health into the design and in so doing realizes that a pleasing aesthetic is only one of the design goals (Cooper Marcus 1999). By their nature, healing gardens involves subtle gestures that may not be visually arresting, stylistically innovative or challenging and therefore landscape architects who are interested in winning awards may not find this sub-field sufficiently intriguing (Thompson 2000).



Healing Garden (Cooper Marcus 1999)

Wolfgang Oehme and James van Sweden

Wolfgang Oehme and James van Sweden are noted for their creation of a new design philosophy in which masses of perennials and grasses are featured. While not specifically therapeutic in focus the two do include elements in their design that are considered healing. The designers do consider how the individual responds to nature and mystery and their designs.

Oehme and van Sweden are widely celebrated for their fresh approach to naturalizing the American landscape—from modest residential settings to large-scale public

projects such as Manhattan's Hudson River Park. Their partnership began in 1975 and has matured and influenced many of today's designers (Oehme 1998). The two men, Oehme is the team horticulturist and van Sweden's forte is design, are best known for their use of grasses, but are equally inventive "planting" ponds and pools that look at ease with the land (Merser 1995).

The style of planting, consisting of massed grasses and perennial flowers, can be traced back to the early twentieth century through the prairie style of Jens Jensen, a Danish émigré working in the U.S. (Richardson 2000). The significance of work by Oehme and van Sweden goes far beyond good timing and popular appeal. It is grounded in the basic tenets of biological fit and how people respond to the mystery and the intrigue of natural things (Johnson 1996).

In discussing the impact of their landscapes, Oehme and van Sweden recognize the impact of nature on those in an urban setting. According to the two, American cities and towns exist in nature, but largely ignore or suppress it to the great expense of human health, safety and welfare. As a means of mediating the negative impacts of urban environments, Oehme and van Sweden view gardens as a powerful tool of efforts to reclaim the urban wasteland and make it hospitable to life. From their perspective, people like to feel surrounded by a loose screen of plants, protected and not endangered. They perceive the principles of spatial layering and temporal change as a means to mediate between nature and the city (Oehme 1998).

Design Elements

The 'wilderness' effect of an Oehme van Sweden garden is carefully planned to look interesting throughout the year. In spring, a profusion of bulbs and flowering perennials erupts, followed by summer's grasses, perennial foliage and blossoms; in autumn, the grasses flower and change color, merging hues with late-blooming perennials and falling leaves. Even in winter the stark skeletons of dried grasses and the limbs of trees and shrubs—some festooned with winterberries—add a haunting, sculptural

effect to the landscape. The garden, as Oehme and van Sweden have conceived it, is a mirror of life's cycles, warts and all. (Johnson 1996). One of Oehme and van Sweden's strengths is that there are no 'dead' areas in their gardens. Every square foot is planted following extremely simple plans, with a relatively limited palette and no close intermixing of plants in either a wildflower meadow style or the familiar herbaceous tradition. There are no borders, simply areas of massed planting which can extend over several acres (Richardson 2000).

Oehme and van Sweden's work shows the importance of layered landscapes where flowing herbaceous vegetation patterns enrich a strong spatial framework made up of trees, shrubs, and structural elements (Morrison 1999). The palette changes from garden to garden, but there are some shared qualities. The layering of plants, for example, is done not only in horizontal planes but in vertical ones as well. A small tree may be placed in the foreground of a view, to stop the eye and force its peregrination through the garden. There is also the manipulation of scale. Further from the house there may be a jungle like array of plants which are looser and bigger (Higgins 1998).

The use of blowsy grasses is their signature, but so too is its counterpoint—elegant and disciplined hard landscaping (to boldly go 2000). In addition, they take simplicity of plant selection to new lengths, juxtaposing cultivars and species of the same genus. They chose plants of the same species to ensure varied heights, textures, and shades of color to make for a more subtle, less "carpeted" effect (to boldly go 2000). Massed plantings of a single variety are a trademark of James and Wolfgang's style, and one that works particularly well in the U.S. where a naturalistic garden style still has to fit in with a strong public expectation of gardens as being convent ally 'tidy' (Kingsbury 2000).

Every design accounts for the client's program of needs, but the real starting point is with personal, physical experience (Oehme 1998). People want sensual stimulation; they take pleasure in movement and arrival; and they love a garden best if it gives

Herbaceous Planting (Oehme 1998)

a sense of security and wholeness. People like to touch, too, so tactile character and contrast is a central proposition of their design, even more important than color. The design works through unfolding layers of space and time. Gardens are organized as a progression of spaces that become less geometric, more irregular as they move out from the building. Function comes first in the design process because it is more useful to ask how an area should work, than what it should be. One constant of every garden is change, and perennials are ideally suited to express it (Oehme 1998).

Lush plantings of decorative grasses, bulbs and perennials are planned for year-round viewing. Trees may be massed as dark, free form backdrops or placed to cast lay-

Plantings and Seating (Oehme 1998)

ers of delicate sunlit tracery over a pathway or space. Shrubs may be chosen for viewing in the round, clumped loosely, or strewn about in informal drifts. Perennial flowering plants are woven into luxuriant, verdant tapestries; annuals and vegetables may be set apart in containers. Ferns, mosses and succulents are selected and placed with infinite care to renewal the full beauty of their individual form, color and texture (Oehme 1998).

Summary

The seven designers share a common desire to create a space that is well received and creates a specific sensation on the part of the viewer. However, the desire to create a place that offers therapeutic attributes was not evident in all seven individuals. While some components of therapeutic design may be included, inadvertent inclusion does not create a therapeutic space in the fullest sense. Rather, these gardens may provide a site for respite and relaxation for some, but not all users. The needs of the user may not be considered sufficiently to include all the components that would produce a therapeutic space crafted for that individual.

Repton, Jekyll, and Oehme and van Sweden considered the designing of a garden to be an aesthetic endeavor in which the designer uses plants and other elements to create a "picture." Rose, on the other hand, approached garden design from a functional perspective in which the individual's culture and personality were reflected. Rose wanted to design a space that was functional, in keeping with the site, and the individual for whom it was designed, he did not express a consideration of a therapeutic component as being important. Primarily, Repton focused on creating a tasteful picture that would be "pleasing to the eye." Jekyll believed that a garden could soothe or refresh the mind, but that the design quality of the garden must not be compromised to achieve that goal. However, neither Repton, Jekyll, or Oehme and van Sweden approached a project specifically with the intent of creating a therapeutic garden regardless of the aesthetic

outcome.

Olmsted and Cooper Marcus both believed the therapeutic agenda was very important, possibly surpassing the immediate visual impact of their design. Both recognized the healing qualities of nature and each chose to interpret natural elements in their designs. Olmsted worked to create a natural experience that would ensure that his social agenda was met. He considered improvement of the human condition to be the cornerstone of his designs. Cooper Marcus focuses almost exclusively on the creation of healing gardens at medical institutions and states that the aesthetics of such gardens may not win awards, but that the endeavor to create a therapeutic space is more important.

Since most early designers based their design decisions on an intuitive understanding of nature, healing, and users it is difficult to assess whether the designer intended a therapeutic outcome strictly by reviewing their work or writing. Specific comments made by Olmsted and Cooper Marcus make it clear that creating a therapeutic design was a first priority, while Repton did not address this issue in his publications. Repton, Jekyll, Rose and Oehme and van Sweden included elements in their gardens that could be considered therapeutic; however, this possibly unintended inclusion of a therapeutic design element cannot be considered an indication of a design objective. The following section provides details of the design philosophies of the seven designers.

Understanding the needs of the user and applying the available research is the only comprehensive way to ensure a restorative outcome in a garden. The same attention given to assessing the site, its history and its ecosystem connections must be paid to the user and his or her needs. Aesthetic decisions can be made in such a way as to include therapeutic outcomes without compromising an artistic agenda.

CONCLUSION

In the beginning of this exploration, the author set out to identify healing qualities of gardens and to determine how designers have employed these characteristics and ideas throughout time. This was done to understand and reveal the premise that healing gardens should not be seen as a specialization within the profession, rather that employing concepts of nature and healing as a basis for design is just as universal, viable, and defensible, as is an ecological, historic, or artistic foundation.

As discussed in Chapter 1, stress is a major contributor to health problems in today's fast paced society. Scientific evidence shows direct correlation between excess stress and major illnesses including heart disease and various forms of cancer. Therefore, in order to promote broader positive impacts on societal wellness, designers need to be more proactive by including landscape features and qualities that reduce stress more abundantly in their designs. these qualities are not mutually exclusive to good design. In fact, it has been established in this thesis that some design elements that are considered therapeutic are also features that are considered good in any design such as the Kaplan's four elements - coherence, complexity, legibility, and mystery. However, good design practices will not necessarily result in a design that is considered therapeutic unless the specific needs of the user are fully understood and supported in the design

After exploring the components of therapeutic gardens, the meaning of gardens through history, and design trends and philosophies (past and present), it was hoped that identifiable themes and threads would emerge which could be used by landscape architects to consult and employ to create more theapeutic gardens. The results were enlightening. In fact, what was discovered through this process is that there are no universal

design elements which can be uniformly applied to create a healing garden. The process of creating a viable therapeutic garden is completly user driven. A simple check list would undermine the ability of the landscape architect to craft a garden that was uniquely suited to the user. The designer must understand the desired psychological and physical outcomes being sought and include the relavant design element to achieve the goals.

Good design practices will not necessarily result in therapeutic design. The needs of the user coupled with solid design is critical to producing a therapeutic outcome. “Good design elements” includes what is aesthetically desireable and possibly psychologically pleasing. For example, the Kaplans’ four elements of coherence, complexity, legibility. and mystery are “good design” components; however, without careful consideration of the user including these in a garden will not result in a restorative outcome. The needs of a healthy adult differ considerably from those of an elderly adult or a child. To produce a restorative garden for either individual, a landscape architect must take into consideration these differences and reflect such distinctions in the design of the garden. As noted in the Introduction, the concepts related to the terms healing, restorative, and therapeutic include “curing,” “helping to heal,” “bringing back to a state of health,” and “pertaining to treating or curing of disease.” A landscape architect is able to provide a venue to accomplish these positive benefits if careful study of the needs of the user is is done. With an understanding of these needs and knowledge of the available research a landscape architect can craft a therapeutic garden supportive to the individual.

With so much stress, fast paced lives, and domestic terrorist acts, there is a desperate need for places which support and nurture individuals emotionally and physically. A well-designed garden can provide such a setting. It appears individuals intuitively recognize the power of the garden and are in a sense "self medicating". There seems to be resurgence in the interest in gardens as evidenced by the number of gardening books, magazines, and the rise of gardening as the number one hobby in the United States.

However, the understanding of the benefits of a well-designed garden does not seem to be broadly reflected in the field of landscape architecture.

While there are many key qualities necessary to create a healing garden, this thesis did not attempt to cover all cultural views and beliefs. The design comsiderations above are intented to be inclusive and rigorous and have broad applications, however, they are posed as criteria for western culture only.

With advancing technology, leaps in scientific and medical understanding, and the growing access to information, the intellectual and disciplinary tendency is to specialize rather than generalize. Specialization in many ways has lead to isolation. As a result of the specialist perspective the idea of healing gardens is perhaps seen as a professional sub-set in landscape architecture rather than a borad based ideology to be widely and liverally applied in all designs. With this thesis it is hoped that more landscape architects may know that with a focus on how design impacts specific users they will begin to incorporate in a more deliberate way, characteristics and components that promote wellness. The ability to make sweeping impacts on the built environment are well within the sphere of influence of the designer. With a little specialized knowledge and a broader understanding of the potential positive impact of landscapes on human wellness, designers are in an ideal position to make far ranging positive impacts on public health.

Recommendations

All garden design should originate from a foundation of therapeutic design. This focus would ensure landscape architects will be relevant and responsive to the needs of the individual. Gardens will not reach their full potential if a therapeutic outcome is not the goal. Landscape architects consider elements such as the environmental conditions and the history of a site when beginning a design for a garden. It is critical that at this stage the emotional and physical needs of users be of equal concern. If gardens were

planned to be restorative as well as meeting other design goals, the opportunities presented for landscape architects expands dramatically. Another consideration is that if gardens represent elements of a culture, perhaps it is most appropriate that today gardens represent a people-oriented approach to design.

Having data to support and fine-tune designs will ensure a new and higher level of credibility on the part of landscape architects. There is considerable research available to guide a landscape architect in creating a restorative garden. While there is no formula that can be applied to all situations, understanding the needs of the user and including as many elements of therapeutic design will ensure garden that will be supportive to the user. This knowledge must be applied broadly with regard to the design of all gardens and not limited to a sub-set of “healing gardens” in medical settings.Further research on this topic of therapeutic design is necessary. Post occupancy surveys of gardens, both therapeutic and non-therapeutic would provide useful information to designers.

BIBLIOGRAPHY

Appleton, J. The Aesthetics of Landscape. Hull, 1979.

—-, The Experience of Landscape. Chichester, 1975.

Alexander, C.; Ishikawa, S; Silverstein, M. A Pattern Language. New York, 1977.

Altman, Irwin and Joachim Wohlwill, eds. Human Behavior and Environment: Advances in Theory and Research. New York, 1976.

Baird, C. and Paul Bell. *Place Attachment, Isolation, and the Power of a Window in a Hospital Environment: A Case Study.* Psychological Reports. 76m (1995) 847-850.

Balling, J and John Falk. *Development of Visual Preference for Natural Environments* Environment and Behavior. 14(1982) 5-28.

Barnes, M. "A Study of the Process of Emotional Healing in Outdoor Spaces and the Concomitant Landscape Design Implications." Unpublished thesis. Berkeley, 1994.

—, A Study of the Process of Emotional Healing in Outdoor Spaces and the Concomitant Landscape Design Implications. Unpublished thesis, University Of California, 1994.

Barnhart, S, Nathan Perkins, and John Fitzsimonds. *Behavior and Outdoor Setting Preferences at a Psychiatric Hospital*. Landscape and Urban Planning. 42 (1998) 147-156.

Beveridge, Charles E. and Paul Rocheleau, ed. Larkin, David. Frederick Law Olmsted: Desiging the American Landscape. New York, 1995.

Brechin, Gary. *Grace Marchant and the Global Garden.* From Francis, M. and Randolph Hester, Jr., Eds. The Meaning of Gardens: Idea, Place and Action. Cambridge 1990.

Bring, M. and J. Wayembergh. Japanese Gardens: Design and Meaning. New York, 1981.

Brookes, J. Gardens of Paradise: The History and Design of the Great Islamic Gardens. New York, 1987.

Buhyoff, G., J.D. Wellman, H. Harvey and R.A. Fraser. *Landscape Architects' Interpretations of People's Landscape Preferences.* Journal of Environmental Management. 6 (1978) 255-262.

Burt, V. *Achieving Spiritual Balance Within the Spatia Landscapes of a Healing Garden*. Visionscapes. http://www.spirithealinggardens.com/wbart.html.

Campbell, M. Therapeutic Gardens. http://www/historicgardens.freeserve.co.uk/hgf/pages/issues/win98/english/therapeutic.html. Nov 2000.

Canter, D. and S. Canter. Designing for Therapeutic Environments: A Review of Research. Chichester, UK, 1979.

Clamp, P. *The Landscape Evaluation Controversy.* Landscape Research Group. 6,2 (1981) 13-16.

Clifford, Derek. A History of Garden Design. New York, 1963.

Conan, Michel, eds. Perspectives on Garden Histories. Washington D.C., 1999.

—-, From Vernacular Gardens to a Social Anthropology of Gardening.Washington D.C. 1999.

Cooper Marcus, Clare. *Hospital Oasis*. Landscape Architecture. 91(October 2001) No. 10 36-41, 99.

Cooper Marcus, Clare and Marni Barns, eds. Healing Gardens: Therapeutic Benefits and Design Recommendations. New York, 1999.

Coulter, A. *Healing Gardens: When Nature is the Therapy.* Alternative and Complementary Therapies. 1999, 5, No. 2:64-73.

Daniels, Stephen. Humphry Repton: Landscape Gardening and the Geography of Georgian England. New Haven, 1999.

Dannenmaier, Molly. *Healing Gardens*. Landscape Architecture. 85(Jan 1995) No. 1:56-58.

Drew, C. *Research on the Psychological-Behavioral Effects of the Physical Environment.* Review of Educational Research. 41,5 (1971) 447-465.

Driver, B.L., R.C. Knoph. "Temporary Escape: One Product of Sport Fisheries Management." Fisheries. Vol 1: 24-29.

Eisenberg, David, Roger Davis, Susan Ettner, et al. *Trends in Alternative Medicine Use in the United States.* Journal of the American Medical Association. 280(Nov 11, 1998) No. 18: 1569-1575,

Engel, David. Japanese Gardens for Today. Tokyo, 1969.

Epstein, M. *The Garden as Healer.* Seattle Daily Journal of Commerce. Seattle, 1998.

Falick, James. *Humanistic Design Sells Your Hospital.* Hospital. February 16,1981, 68-74.

Fieldhouse, K. *A Healing Art.* Landscape Design. 237-241 (1995) 17-19.

Francis, M. and Randolph Hester, Jr., Eds. The Meaning of Gardens: Idea, Place and Action. Cambridge 1991.

Gadrat, Bruno. Read and write the symbols of the garden with plants. Nov 11, 2000. **http://www.designvegetal.com/gadrat**

Gatchel, R.J., A. Baum, and D.S. Krantz. An Introduction to Health Psychology. 2nd ed. New York, 1989.

Gerlach-Spriggs, N. *A Healing Vision: Gardens in Health-Care Facilities Are Expanding Traditional Ideas of Project Promotion and Development.* Landscape Architecture. April 1999 Vol. 89, No 4. 134-135.

Grant, Charlotte. The Healing Garden: Incorporating Garden Experience in Hospitals and Other Health Care Facilities. Unpublished thesis, University of Georgia, 1994.

Griswold, Marc. *The Therapeutic Garden*. Landscape Architecture. 84 10 (1994) 66-67.

—*More of Less* Garden Design. April 2000, p. 73-79.

Gy, Julius, Gordon T. Milde and V. Michael Weinmayr. Fredrick Law Olmsted, Sr: Founder of Landscape Architecture in America. Massachusetts, 1968.

Hall, Lee. Olmsted's America: An "Unpractical" Man and His Vision of Civilization. Boston, 1995.

Harrison, Jimmie. Creating Outdoor Spaces for Individuals with Alzheimer's Disease. Unpublished thesis, University of Georgia, 1996.

Healy, Vicent. *The Garden as a Healing Place.* Places. 3(1986)3:40-41.

Higgens, Adrian. *At Home With Wolfgang Oehme* Horticulture. June 1998, p. 43-46.

Hobhouse, Penelope, ed. Gertrude Jekyll on Gardening. Boston. 1984.

Howett, Catherine. *The Garden as Art.* Places: A Quarterly Journal of Environmental Design. Vol. 3, No. 3, 1986.

—*Gardens are a Good Place to Die.* From Francis, M. and Randolph Hester, Jr., Eds. The Meaning of Gardens: Idea, Place and Action. Cambridge 1991.

Hunt, John. *Aproaches (New and Old) to Garden History.* From Conan, M., eds. Perspectives on Garden Histories. Washington, D.C. 1999.

Jackson, John Brinckerhoff. A Sense of Place, a Sense of Time: Vernacular Gardens. Yale University Press, 1994.

Jackson, Lisa. *Healing: Gardens Healthy for Repairing Body and Soul.* The Detroit News. March 6, 1997.

Jekyll, Gertrude. Wood and Garden. 1899.

Jekyll, Gertrude. Home and Garden: Notes and Thoughts, Practical and Critical of a Worker in Both. Woodbridge.1982

Johnson, William. *Preface*. Process: Architecture. Wolfgang Oehme & James van Sweden: New World Landscapes. No. 130 (1996).

Kahn, P. The Human Relationship with Nature. Cambridge, Mass. 1999.

Kaplan, R., Steven Kaplan and R. Ryan. With People in Mind: Design and Management of Everyday Nature. Washington, D.C. 1998.

—, *Restorative Experience: The Healing Power of Nearby Nature.* From Francis, M. and Randolph Hester, Jr., Eds. The Meaning of Gardens: Idea, Place and Action. Cambridge 1991.

Kaplan, S. *Aesthetics, Affect and Congnition Enviornmental Preference from an Evolutionary Perspective.* Environment and Behaviour 19(1), 3-32.

Kelly, Bruce, Gail Travis Guillet and Mary Ellen W. Hern. The Art of the Olmsted Landscape. New York, 1981.

Kingsbury, Noel. *Mowing Down the Lawn*. House and Garden. October 2000 Vol. 55 No. 10, Whole Number 591, p. 191-197.

Knopf, R. *Human Behavior, Cognition, and Affect in the Natural Environment.* In: Stokols, D., Altman, I. Eds. Handbook of Environmental Psychology, Wiley, New York, pp. 783-825.

Krog, S. *Whither the Garden?* In Denatured Visions: Landscape and Culture in the Twentieth Century. New York, 1991.

LaBorde, Paige. Gardens as Sanctuary Symposium: The State Botanical Garden of Georgia, February 14, 1997. Georgia, November 1997.

Lawliss, Lucy. Magnolia Essays: Occasional Papers of the Southern Garden. History Society. No. 1 Spring 93.

Larsen, Hans. *Alternative Medicine: Why So Popular?* International Health News. Jan 1, 2002. http://www.yourhealthbase.com/alternative_medicine.html.

Lawton, P. "Therapeutic Environments for the Aged." In Canter, D., Designing for Therapeutic Environments: A Review of Research. Chichester, UK, 1979.

Lewis, Cherry, ed. The Making of a Garden: Gertrude Jekyll. England, 1987.

Lewis, Charles. *Gardening as Healing Process*. From Francis, M. and Randolph Hester, Jr., Eds. The Meaning of Gardens: Idea, Place and Action. Cambridge 1991.

Loudon, J. C., The Landscape Gardening and Landscape Architecture of the Late Humphry Repton, Esq. London, 1840.

Macdougall, Elisabeth and Richard Ettinghausen, eds. Dumbarton Oaks Colloquium on the History of Landscape Architecture, IV. Washington D.C.,1976.

Majsztrik, Andrew. Healing Gardens in Healthcare Facilities: A Design for the Loran Smith Center. Unpublished thesis, University of Georgia, 2001.

Mann, William A. Landscape Architecture: An Illustrated History in Timelines, Site Plans, and Biography. New York, 1993.

Merser, Cheryl. *Making Peace with the Land*. Garden Design. October/November 1995, p. 62-65.

Messervy, J. The Inward Garden: Creating a Place of Beauty and Meaning. Boston, 1995.

Mills, Joyce and Richard Crowley. Therapeutic Metaphors for Children and the Child Within. New York, 1986.

Moore, R. ”Healing Gardens for Children.” In Healing Gardens: Therapeutic Benefits and Design Recommendations. Ed. Clare Cooper Marcus, Marni Barnes. New York, 1999.

Morris, L. *Hospitals and Land: The Value of Good Landscape for the Convalescent.* Landscape Architecture. 37 (October 1946): 6-11.

Morrison, Darrel. *Beyond Planting Design*. Landscape Architecture. November 1999, p. 92-95.

McBride, D. “Nursing Home Gardens.” In Healing Gardens: Therapeutic Benefits and Design Recommendations. Ed. Clare Cooper Marcus, Marni Barnes. New York, 1999.

McCormick, Kathleen. *Realm of the Senses.* Landscape Architecture. 85(Jan 1995) No. 1:61-63.

Nightengale, F. Notes on Nursing: What It Is and What It Is Not. New York, 1873.

Oehme, Wolfgang and James van Sweden with Susan Rademacher. Bold Romantic Gardens. Washington, D.C., 1998.

Parry-Jones, W. *“Natural Landscape, Psychological Well-Being and Mental Health.* Landscape Research 15(2) (Summer 1990): 7-11.

Petruccioli, Attilio, eds. Gardens in the Time of the Great Muslim Empires: Theory and Design. New York, 1997.

Pope, Nori and Sandra Pope. Color by Design: Planting the Contemporary Garden. China, 1998.

Potteiger, M and Jamie Purinton. Landscape Narrative: Design Practices for Telling Stories. New York, 1998.

Pregill, Philip and Nancy Volkman. Landscapes in History. New York: Van Nostrand Reinhold, 1993.

Proshansky, H, William Ittelson and Leanne Rivlin. Environmental Psychology: Man and His Physical Setting. New York, 1970.

Richardson, Tim. *Going with the Flow Beside the Sea.* Country Life. Vol CXCIV No 46 (November 16, 2000), 66-71.

Riley, R. *Flowers, Power, and Sex*. In Francis, M. and Randolph Hester, Jr., Eds. The Meaning of Gardens: Idea, Place and Action. Cambridge 1990.

Rivlin, L and Wolfe, M. "Understanding and Evaluating Therapeutic Environments for Children." New York, 1979.

Rockaway, R.J. Garden Designs for the Elderly: A Guide to Disigning Successful Outdoor Landscapes. Master of Landscape Architecture Thesis at the University of Georgia. Georgia, 1994.
Rose, James. Creative Gardens. New York, 1958.

—-, Gardens Makes Me Laugh. Connecticut. 1965.

Ross, S. What Gardens Mean. Chicago 1998.

Rybczynski, Witold. A Clearing in the Distance: Fredrick Law Olmsted an American In The Nineteenth Centrury. New York, 1999.

Shepard, P. Man in the Landscape. New York, 1967.

Shinkokai, Kokusai Bunka. Tradition of Japanese Garden. Tokyo, 1962.

Slawson, David. Secret Teachings In The Art of Japanese Gardens: Design Principles, Aesthetic Values. Tokyo, 1987.

Smail, L. *Healing Gardens.* National Council of State Garden Clubs, Inc. http://207.201.142.186/marcheco.htm 1987.

Snow, Marc. Modern American Gardens – Designed by James Rose. New York, 1967.

Stroud, Dorothy. Humphry Repton. London, 1962.

Stokols, D. and Irwin Altman, eds. Handbook of Environmental Psychology. New York, 1987.

Taylor, Gordon and Guy Cooper. *Anatomy of a Healing Garden*. Landscape Architect and Specifier News. 47(February 2001) Num 02. 64-72.

Thompson, William, J. *Healing Words: Whither the Design of Therapeutic Gardens.* Landscape Architecture. 90 (Jan 2000) Num 1.

—-, *A Question of Healing.* Landscape Architecture. 88(April 98) No. 4 66-73, 89-92,

—, *A Question of Healing.* Landscape Architecture. 88 (April 1998) Num 4.66-73.

Tomkins, C. *Profile: The Garden Artist* The New Yorker. Oct. 16, 1995.

Treib, Marc, ed. Modern Landscape Architecture: A Critical Review. Cambridge, 1993.

Tunnard, C. Gardens in the Modern Landscape. Great Britian, 1948.

Tyson, Martha. The Healing Landscape: Therapeutic Outdoor Environments. New York, 1998.

Ulrich, R. "Effects of Gardens on Health Outcomes: Theory and Research." In Healing Gardens: Therapeutic Benefits and Design Recommendations. Ed. Clare Cooper Marcus, Marni Barnes. New York, 1999.

—-, *"Human Responses to Vegetation and Landscapes."* Landscape and Urban Planning 13 (1986) 29-44.

—-, *View Through a Window May Influence Recovery from Surgery.* Science. (1984) 224, 420-421.

—-, *Nature Versus Urban Scenes: Some Psychophysiological Effects.* Environment and Behaviour 1981,13(5), 523-556.

—-, Psycho-Physiological Indicators of Leisure-Related Causes of Well-Being in Natural Environments. Library Copy from Rocky Mnt. Forest and Range Experiment Station, 1989.

Uzzell, D. and Lewand, K. *The Psychology of Landscape.* Landscape Design. April 1990. p. 34-35.

Van Zuylen, Paradise on Earth: The Gardens of Western Europe. New York, 1994.

Westmacott, Richard. The Gardens of African-Americans in the Rural South. Knoxville, 1992.

Wasserman, Judith. *To Trace the Shifting Sands: Community, Ritual, and the Memorial Landscape.* Landscape Journal. 1998, 17(1), 42-60.

Wekerle, Gerda R. Multicultural Gardens: Changing the Landscape of the City. From Urban Agriculture and Horticulture - The Linkage with Urban Planning International Symposium, Berlin, 7.- 9. July 2000. http://www.agrar.hu-berlin.de/foa/arc/symp2000/papers/Wekerle.htm.

Westmacott, Richard. Gardens, Yards, Pieces, and Grounds: The Domestic Places and Spaces of the Cayman Islands. Georgia, 1999.

Westphal, J. *More Hype than Healing? A Status Report on the Therapeutic Garden.*Landscape Architecture April 1999 Vol. 89, No 4, p. 133-134.

—-, *Stress Recovery During Exposure to Natural and Urban Environments.* Journal of Environmental Psychology. 1991, 11, 201-230.

Webster's Encyclopedic Unabridged Dictionary of the English Language. New York, 1989.

Whiteside, Katherine. *City Garden East.* Metropolitan Home. July/August 1998, p. 125-127.

Wolff, P. "The Adventure Playground as a Therapeutic Environment." In Designing for Therapeutic Environments: A Review of Research. Ed. Canter, D. and S. Canter.

Wyman, Donald. The Arboretums and Botanical Gardens of North America. 1947.

Interaction by Design: Brining People and Plants Together for Health and Well-Being – Sixth International People-Plant Symposium. Chicago, July 20-22, 2000.

Linking Horticulture with Human Well-Being. People-Plant Council News. Vol 7, Fall/Winter 1998 Issue 2.

Healing Gardens http://www.naturalbrainhealth.com/gardens.htm

Therapeutic Gardens http://www.historicgardens.freeserve.co.uk/hgf/pages/issues/win98/english/therapeutic.html

The Greening of Medicine. http://www.wholehealthmd.com/news/viewarticle/0,1513,1033,00.html

Winning Big: The landscape Itself is Therapy at the Institute for Child and Adolescent Development in Wellesley, Massachusetts. Landscape Architecture. 87 11 (1997) 44-47.

Aggregate Data Analysis of the Case Study Sites. Gardens in Healthcare Facilities: Uses, Therapeutic Benefits, and Design Recommendations. Martinez, 1995, p. 53-57.

To Boldly Go Gardens: Illustrated. December 2000, p. 76-79.