Clare Apartments: Design and Evaluation Of A Therapeutic Landscape For People Living with HIV Disease

MLA Capstone Thesis
Steve Mitrione, M.D.
University of Minnesota
Department of Landscape Architecture
2006
Dedication

This book is dedicated to my wife Shana, who has always helped and encouraged me to pursue my dreams and to my daughter Li Le, to whom I wish to leave this world a better place.
# Table of Contents

1. Dedication .................................................................................................................. 1  
2. Summary .................................................................................................................... 4  
3. Introduction ................................................................................................................ 5  
5. The Theory of Therapeutic Gardens ....................................................................... 7  
6. Current Design Guidelines ....................................................................................... 9  
7. Prescribing With The Landscape ........................................................................... 11  
8. Precedents ................................................................................................................ 13  
9. HIV Disease ............................................................................................................. 18  
10. Context and Site Analysis ...................................................................................... 19  
11. User Group Analysis ............................................................................................. 21  
12. Master Plan ............................................................................................................. 22  
13. Therapeutic Spaces ................................................................................................. 24  
14. Planting Plan ........................................................................................................... 27  
15. Grading Plan .......................................................................................................... 29  
16. Lighting Plan .......................................................................................................... 30  
17. Materials ................................................................................................................ 31  
18. Research Proposal .................................................................................................. 33  
19. Getting the Project Accomplished ......................................................................... 35  
19. Toward A New Paradigm of Therapeutic Gardens ............................................... 36  
20. Conclusion .............................................................................................................. 37  
21. References .............................................................................................................. 38
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Islamic Garden Miniature</td>
</tr>
<tr>
<td>2</td>
<td>Medieval Garden</td>
</tr>
<tr>
<td>3</td>
<td>Pavilion at Brigham and Women's Hospital, Boston</td>
</tr>
<tr>
<td>4</td>
<td>Rehab Garden, Patricia Neal Rehab Center</td>
</tr>
<tr>
<td>5</td>
<td>Prescribing With The Landscape Flowchart</td>
</tr>
<tr>
<td>6</td>
<td>Joel Schapner Memorial Garden</td>
</tr>
<tr>
<td>7</td>
<td>Healing Garden at Good Samaritan Hospital, Plan</td>
</tr>
<tr>
<td>8</td>
<td>Planting Beds at Good Samaritan Hospital</td>
</tr>
<tr>
<td>9</td>
<td>Healing Garden at Good Samaritan Hospital</td>
</tr>
<tr>
<td>10</td>
<td>Tabitha Memory Care Garden</td>
</tr>
<tr>
<td>11</td>
<td>Cancer Survival Park, Minneapolis</td>
</tr>
<tr>
<td>12</td>
<td>Cancer Survival Park, Arizona</td>
</tr>
<tr>
<td>13</td>
<td>Cancer Survival Park, Arizona</td>
</tr>
<tr>
<td>14</td>
<td>HIV Infected Cell</td>
</tr>
<tr>
<td>15</td>
<td>Site Context</td>
</tr>
<tr>
<td>16</td>
<td>Site Analysis</td>
</tr>
<tr>
<td>17</td>
<td>Master Plan And Section</td>
</tr>
<tr>
<td>18</td>
<td>Clare Apartments Therapeutic Garden Axon</td>
</tr>
<tr>
<td>19</td>
<td>Communal Area</td>
</tr>
<tr>
<td>20</td>
<td>Meditative Area</td>
</tr>
<tr>
<td>21</td>
<td>Natural Area</td>
</tr>
<tr>
<td>22</td>
<td>Garden Walkway</td>
</tr>
<tr>
<td>23</td>
<td>Circulation Pattern</td>
</tr>
<tr>
<td>24</td>
<td>Planting Plan</td>
</tr>
<tr>
<td>25</td>
<td>Grading Plan</td>
</tr>
<tr>
<td>26</td>
<td>Lighting Plan</td>
</tr>
<tr>
<td>27</td>
<td>Materials</td>
</tr>
<tr>
<td>28</td>
<td>Research Design</td>
</tr>
</tbody>
</table>
Summary

Gardens have played a role in healthcare for centuries. With the advent of modern medicine in the beginning of the twentieth century, this historical role has been lost. Recently, there has been renewed interest in utilizing garden environments as therapeutic entities to enhance the process of healing that occurs in healthcare environments.

There has, however, been little research into the precise characteristics of these gardens and their impact upon the process of healing. This capstone project “Clare Apartments: Design and Evaluation of A Therapeutic Landscape” utilizes the design of a therapeutic garden for a group apartment building to illustrate the process by which therapeutic garden spaces may be scientifically analyzed to determine their safety and effectiveness for a given user group.

The theoretical basis for the effect of therapeutic gardens upon the body is first discussed in terms of the emerging field of psychoneuroimmunology. This theory, illustrates a complex interplay between our immune systems, the central nervous system and our endocrine system. It is proposed that by minimizing the stress response by the body, therapeutic gardens can positively intervene to promote recovery from illness or to preserve health. This is particularly relevant to the case study for this thesis, in which immune dysfunction is the hallmark of HIV disease.

Current therapeutic garden design guidelines, based upon research into the effect of gardens upon the stress response, anecdotal evidence based upon experiences with installed gardens and theories regarding stress reduction in well population groups are utilized as a basis for the initial design.

The therapeutic garden is then constructed around four currently recognized mechanisms for stress reduction:

1. Socialization and peer support.
2. Meditative states
3. Exercise and movement
4. Viewing of nature.

Other general design characteristics are discussed, such as grading, lighting and materials. At present there are no specific design guidelines with respect to these areas with the exception to utilize natural forms and materials whenever possible.

Finally, this project outlines a methodology for conducting research based upon the design I have proposed. While the parameters of this research are specific to this project, this methodology is generalizable to other settings both in the acute care and residential setting.
Introduction

Gardens have been a component of the healthcare environment for centuries. Gardens, as part of a therapeutic milieu, can be found in Greek, Roman, Islamic and Medieval cultures. These cultures all viewed gardens as restorative to the spirit and thus conducive to healing.

This legacy was carried forward well into the nineteenth century as hospitals and healthcare institutions often maintained extensive gardens and landscapes. Theories of health and disease supported the opening up of spaces to the outdoors as key to the treatment of patients, particularly tuberculosis patients. Hospitals were often designed with balconies upon which patients could be wheeled out onto to receive fresh air and sunshine.

Beginning in the middle of the twentieth century and continuing to this day, healthcare environments became increasingly technologically focused. Gardens were abandoned or paved over, rooms were sealed and the climate controlled by modern HVAC equipment. Views from the patient rooms were not considered important and the layout of the building was built upon the technologies contained within.

Within the last twenty years, there has, however, been a renewed interest in the role of the designed natural environment and health. An emerging area of research and design focus within landscape architecture has sought to address the relationship of designed natural environments to health and healing.
As the area of landscape architecture that addresses the interface of the designed environment and health grows, confusion has developed regarding various terms applied to this concept. Healing gardens is a term frequently applied to gardens designed to promote healing from illness. Healing, within the context of healthcare, is a broad term, not necessarily referring to a cure from a given illness. Rather, healing is seen as an improvement in overall well being that incorporates the spiritual as well as the physical. A “Healing Garden” may provide relief from the psychological distress of disease and an improved sense of well being, but it may or may not alter the disease outcome.

A Therapeutic Garden, is however, more specific and relates to a particular aspect of a disease or healing process. The Therapeutic Garden is designed to produce a given effect and outcome upon a disease process. It can be thought of as similar to a medication that is taken for a specific disease or illness where a target symptom or disease process is expected to be altered by the intervention. The Therapeutic Garden is thus less focused on healing in a spiritual context, (although it may also have this effect), and more akin to the disease model of illness as practiced by most allopathic medical systems.

In the example to the right, Rehab Garden at Patricia Neal Rehab Center was specifically designed to provide a variety of surfaces for patients to practice moving on. As such it has a specific patient group and a specific function, to improve mobility in rehab patients. This would classify it as a therapeutic garden.

Figure 4. Rehab Garden at Patricia Neal Rehab Center
Source: Landscape Architecture, 85 no. 1
Gardens are believed to be therapeutic primarily through amelioration of the stress response which may be chronically activated in certain disease states. Gardens can decrease arousal, increase relaxation and produce brain patterns that are similar to meditative states. This may induce CNS mediated changes in immunological, endocrine and nervous system that benefit the disease state.

The emerging field of psychoneuroimmunology seeks to understand this complex interplay between these mechanisms. While stress is generally viewed as immunosuppressive, the interplay between the immune system and the brain is bidirectional. That is the immune system itself can affect the central nervous system through the release of chemicals called cytokines. These chemicals can induce “sick” behavior in individuals characterized by decreased motor activity, loss of appetite, depressed mood and increased sleep. These same responses can be found in depressed individuals, leading some to conclude that depression may be related to chronic inflammatory states. In addition it should be noted that stress can sometimes activate the immune system.

While acute stress can lead to physiological changes that are adaptive, it is generally agreed that chronic stress leads to maladaptive changes that eventually impair our abilities to heal from illness. It is this component of illness that is most amenable to intervention by therapeutic gardens. One can theorize that this effect is mediated by the sensory inputs associated with gardens. These inputs can involve all sense organs, but it is not currently known which is more important. For example is the viewing of a garden mediated by our sense of vision, more important than sounds associated with a garden, mediated by our sense of hearing. Where do taste, touch and smell play a role if any? These are questions that lie largely unanswered by our current state of knowledge.

In the current example of a therapeutic garden for people living with HIV disease, it is known that stress can lead to increased viral replication and decrease the effectiveness of drugs used to treat the disease. It is thus hypothesized that if the therapeutic garden can decrease the stress response in afflicted individuals, the health of these same individuals should be positively impacted.
Current Design Guidelines

At present, there is little data to guide the design of specific details of a therapeutic garden, nor are there data that differentiate between different disease groups in terms of design criteria. Instead, design guidelines have been developed and generally accepted based upon theories of stress reduction that encompass six principles as outlined by Ulrich:

1. Therapeutic Gardens Should Provide a Sense of Control By Creating a Variety of Spaces:
   Research has show that when individuals are stressed, if they perceive themselves as having some control over that stress, they are less likely to have negative consequences from that stress as compared to individuals who perceive themselves as having no control over that stress. This stress can be measured by higher levels of stress hormones, blood pressure and supression of immune functioning. This research is nonetheless not particular to hospitalized and sick individuals nor has it pertained to gardens exclusively. Nevertheless, it is considered an important design principle that spaces within a garden be easily accessable by all user groups, provide for privacy, and include a variety of spaces that allow the individual to seek out a space that best suites them at the moment.

2. Therapeutic Gardens Should Provide For Social Support:
   Social support is associated with less stress in individuals as compared to individuals who are isolated. Social support is associated with improved outcomes after heart attacks and cancer.
   Gardens can function as facilitators of social support by providing a setting for this support to be given. The occurence of social interaction in gardens is supported by patient interviews that highlight talking as a primary activity in garden settings. Gardens should thus provide spaces that can accomodate various group sizes in a setting that encourages conversation.

3. Therapeutic Gardens Should Provide For Physical Movement and Exercise:
   Exercise is associate with reduced stress and alleviation of depression in almost all population groups, but especially those with chronic illness.
   Gardens, because of their perceived pleasantness, can encourage exercise and movement. Gardens should thus offer easy wayfinding and provide destinations that encourage mild exercise.

4. Therapeutic Gardens Should Provide For Access to Nature and Positive Distractions:
   Exposure to nature and natural scenes is associated with decreased physiological stress responses.
   This response is dose related, in that the greater the percentage of greenery, as opposed to hardscape, the more likely the relaxation response is to occur. This relaxation response is believed to be “hardwired” into our nervous systems by evolutionary responded to environments that favored survival.
5. **Therapeutic Gardens Should Minimize Ambiguity**
Stressed individuals respond negatively to ambiguity. Studies of inpatients recovering from surgery showed increased stressed levels when exposed to abstract paintings as compared to natural scenes. This is believed to be due to the perception of ambiguous stimuli as negative in stressed individuals, congruent with their emotional state.  

6. **Therapeutic Gardens Should Minimize Intrusive Stimuli**
In order to exert their effect, therapeutic gardens need to minimize negative distractions such as noise, odor and bright lights. Noise in particular can negate the positive effects associated with viewing of nature.
Creating a therapeutic landscape involves three steps:

1. The process of creating a therapeutic landscape begins with the evaluation of the patient and or disease that one wishes to effect. The designer must understand the disease process, what impairments it results in and how medical treatments may impact the patients. In addition, social and psychological functioning of the patient group must be understood. This evaluation is used to generate potential target symptoms or disease processes that are to be addressed by the design.

2. After attaining a thorough understanding of the disease, disease processs and social and psychological factors, the design is created based upon the target symptom or symptoms that the designer wishes to ameliorate. In addition, the methodology for evaluating the influence on the garden on the patient population is developed. This methodology is based upon the intent of the design and is used to measure its effectiveness.

3. Once the garden is installed and occupied, the health, psychological and social parameter determined in the previous step are evaluated. The data collected are then used to determine the effectiveness of the design based upon the intended function of the garden. Untoward effects are also evaluated.

At right this process is depicted along with how that process is translated into design elements and research methodology for Clare Apartments. This same process can be applied to any disease or patient group.
Create Design and Methodology For Evaluation of Outcomes

Evaluate Patient Group or Disease

Evaluate Outcomes After Instillation and Occupancy

Process

Assessment

Design will increase opportunities for socialization, decrease stress through the creation of a variety of spaces. Evaluation will be through specific disease markers of HIV and quality of life assessment questionnaires.

Thirty residents with HIV disease. HIV disease characterized by immune dysfunction. Social isolation, homelessness, mobility and photosensitivity also factors in the disease.

Prior to and yearly after occupancy, residents health will be assessed based upon previously determined criteria.

Programming

The design needs to accommodate the following elements:
1. The design needs to be accessible as mobility may be an issue for many with HIV disease.
2. Waysfinding should be clear, as dementia may also affect people with HIV disease.
3. Shade is needed as many drugs associated with HIV treatment can cause photosensitivity.
4. Provide areas for socialization among residents as isolation often accompanies the diagnosis of HIV.
5. Create a variety of spaces that allows the individual to control the type of environment that they occupy.
6. Create spaces for gardening by residents as a form of relaxation and exercise.
7. Create a homelike environment that creates a sense of belonging for the residents.
8. Provide an area to accommodate 30-40 people for the residents of Clare Housing and for fundraising and other events hosted by Clare Housing.
At present, there are numerous examples of gardens incorporated into healthcare facilities. Many of these designs are “add-ons” or constructed on “left-over” spaces such as rooftops. These spaces are often designed for use by inpatients, residents of extended care facilities and by staff who often use them to relieve the stresses of working in healthcare facilities.

These spaces fall into various typologies and some are remote from healthcare facilities, yet attempt to address aspects of healthcare and “healing”. The precedents selected for study represent some of the variety of spaces that have been designed as therapeutic or healings spaces.
The Joel Schnapner Memorial Garden was built in 1995 on a rooftop measuring 3,000 square feet at the Terrance Cardinal Cooke Health Care Center. The garden is adjacent to a residential AIDS unit at the hospital. The garden consists of planters, seating areas and tent canopies to provide shade. Since dementia is often a component of AIDS, orientation is maintained in the garden through the use of a central focal point of bright marigolds in a planter and a simple circulation pattern. Sound design is also incorporated into the garden to mask the sounds of HVAC units on the rooftop. Plantings are designed to stimulate the senses both through visual, textural and olfactory means. Typologically, this garden would be considered a viewing and or rooftop garden.

Directional Sense
To keep patients suffering from dementia from getting lost within the garden, ramps provide a compass design emanating from a central planter with bright marigolds. Port of the access is controlled on the pavers leads to a garden room defined by lattice screens. Other garden rooms include tented planters and a view-covered hills that provide shade for patients extremely sensitive to the sun. Ramps carefully angulate the mazes, tables and seating to provide privacy. The garden is bordered by a “farm area” that includes vegetable and flower beds, dwarf fruit trees and potted plants, situated at different elevations so patients can tend them.

Project Credits
Landscape architect and construction manager: David Kopp, Ortnworks, New York City
Initial project coordinator: The Tambour Foundation
Garden committee: John Danzo, Bili Dossi, Mehr Feine, Jennifer Gray, David Kopp, Peter Korbin, Sarah Price, James Reyes, Nancy Sender, Han Snyder, Yvonne Shinn, Elda van Gal
Client: Terrance Cardinal Cooke Health Care Center, New York City
Cost: $50,000 (including initial maintenance fund of $5,000)

Figure 6. Joel Schnapner Memorial Garden
Source: Landscape Architecture, 85 no. 1
Healing Garden At Good Samaritan Hospital

Located in an acute care facility in Portland, Oregon, this garden is created in the entry foyer of a medical complex. The garden forms a place of respite for both inpatients, visitors and staff to relax in. The garden is not designed specifically for any particular patient group but is used extensively for rehabilitation purposes. The hospital has a full time horticultural therapy program that utilizes the garden for therapeutic and rehabilitative purposes. Walking surfaces are varied to include rubberized, gravel and concrete to provide a variety of surfaces for the mobility impaired to train on. The walls of the planting beds are varied in height so as to permit those in wheelchairs direct access to the edge of the plantings. Plantings are rich and varied with multiple levels and canopies. Seating is provided in the form of wooden benches. This garden is typologically an entry garden.

Figure 7. Healing Garden at Good Samaritan Hosp. Plan View
Source: Landscape Architecture 93 vol 8.

Figure 8. Healing Garden at Good Samaritan Hosp. Plan View
Source: Landscape Architecture 93 vol 8.

Figure 9. Healing Garden at Good Samaritan Hosp. Plan View
Source: Landscape Architecture 93 vol 8.
Tabitha Memory Care Garden

This garden is adjacent to an assisted living facility for people living with dementia in Hastings, MN. Dementia impairs the acquisition of new memories, but often leaves old memories intact. The design intent is to provide residents of this long term care facility with a home like environment that was reminiscent of their former lives. By providing a useful diversion, the garden is intended to calm agitated residents and thereby reduce some of the behavioral problems often seen with dementia. The garden was designed with a circular circulation pattern to promote wayfinding and avoid wandering. Screening was considered important in the design to block views into the larger world that could evoke frustration in not being able to occupy them. This garden represents a design for a specific population in a residential setting. Typologically, this garden is similar to a courtyard garden.

Figure 10. Tabitha Memory Care Garden
Source Architecture Minnesota. January-February, 2004
Richard Bloch Cancer Survivors Parks

Based upon a grants and formula created by Richard Bloch of H&R Bloch tax preparation services, these parks have been installed in seventeen locations around the country. These parks are designed to educate and inspire those afflicted with cancer as well as the general public. The benefactor strongly believes that the greatest asset to fighting cancer is hope and belief in survival. To this end, these parks are all required to have signage that indicates the park as a “Richard and Annette Cancer Survivor Park”. The parks must be placed in areas with high visibility. The parks must include the following elements: a sculpture entitled “Cancer... There’s Hope”, fourteen plaques placed along a walk called the “Positive Mental Attitude Walk”, and seven plaques along a path designated as the “Road to Recovery”. The plaques contain informational messages as well as inspirational statements. The design of the park is left open to various interpretations and submissions are selected by Bloch himself. The parks are designed with the therapeutic intent of increasing survival from cancer as well as a public service message regarding cancer treatment for the larger public. The design manifestations are varied and they are usually heavy with abstract architectural elements and plantings are usually minimal. In this sense these parks are a departure from established design guidelines for therapeutic spaces.

Figure 11. Cancer Survivor Park, Minneapolis
Source: Landscape Architecture, 2 2003.

Figure 12. Cancer Survivor Park, Arizona
Source: Landscape Architecture, 2 2003.

Figure 13. Cancer Survivor Park, Arizona
Source: Landscape Architecture, 2 2003.
HIV Disease

To understand the specific needs of people with HIV disease, one must have a basic understanding of the disease itself. Human immunodeficiency virus (HIV) attacks the immune system. The virus is transmitted by exposure to the body fluids of an infected individual during sex, needle sharing, blood product transfusion or organ donation. Once the virus enters the body it attacks cells that regulate the immune system. These cells, referred to as T4 helper cells or CD4 cells, are essential to the proper functioning of the immune system. The virus utilizes these cells to replicate itself, destroying these cells in the process. With the loss of these CD4 cells, the body’s immune system begins to fail and the individual becomes susceptible to infections by organisms that normally do not cause disease in people with intact immune system. These infections termed “opportunistic infections”, are the hallmark of AIDS. Death from HIV disease is often the result of these infections or the direct effect of the virus. In the latter stages of the disease dementia, muscle wasting, skin cancers, pneumonia and diarrhea are all common. Untreated, HIV disease is progressive and fatal. Death takes place over a period of months to years.

Recent changes in the drug therapy of HIV disease has, however, created the opportunity to greatly extend the lives of people infected with HIV and in some cases a remission of the disease. This life extension has paradoxically led to an increase in the number of individuals living with HIV disease, even as the rate of new infections has declined.

Design considerations based upon the health needs of people with HIV disease must therefore accommodate the following:

1. Minimize exposure to potential infections. Chosen plant material should be thornless and unlikely to harbor potential bacterial and fungal pathogens. In addition, standing water should not be present to avoid transmission of west nile fever.

2. The design should provide accessibiltiy as the disease progresses and mobility decreases.

3. Way finding should be clear as dementia may develop in the majority of those afflicted.

4. Shade should be provided to minimize sun sensitivity due to medications used to treat HIV.

Figure 14. HIV Infected T cell.
Source: www.med.umich.edu
Context

Clare Apartments is located in Northeast Minneapolis in the Saint Anthony East neighborhood. The apartment fronts onto Central Avenue, a fairly busy four lane roadway. Railroad tracks lie to the south of the site and the Minneapolis skyline is easily visible when looking to the south from the site. A large high rise apartment borders the site to the north. The west and southwest of the site are largely residential neighborhoods. Immediately east from the site is an industrial area.

Figure 15. Site Context of Clare Apartments
Site Analysis

The site is roughly trapezoidal with dimensions of: 170’ x 190’ x 110’ x 80’.

The site contains two stormwater infiltration areas that are designed to handle runoff from the parking lot and the roof of Clare Apartments. Part of the large stormwater pond is on the parcel for the highrise.

Constraints for the site include:

• The proposed townhomes which will look directly into the site, decreasing the sense of privacy.
• Noise from Central Avenue which can be a source of intrusive stimuli.
• The current circulation pattern creates a transection of the site, which decreases the sense of privacy.

Opportunities for the site include:

• Distant views to downtown Minneapolis skyline which is beautiful at night.
• Large existing cottonwood trees on the site which provide shade and scale.
• Potential views from Clare Apartments into the garden, allowing residents to view the garden even if they cannot or choose not to occupy it.
User Group Analysis

In order to design a space that meets the needs of its intended users, an investigation into the primary and secondary users of the space was performed. The primary users of the site were the apartment residents themselves. This group is demographically described as follows:

• Thirty single adults between the ages of 18-63.
• Most of the residents HIV positive.
• Potentially experiencing homelessness either currently or in the past.
• Potentially suffering from mental illness.
• Variably employed.
• Variably disabled, but able to function independently.
• Economically disadvantaged.

Secondary users of the site were identified as social workers, case managers and Clare Housing administrative staff.

Surveys were conducted before occupancy of Clare Housing of potential residents. These surveys indicated desires for a water feature, areas to cook outdoors, flower gardens, opportunities to garden and spaces to socialize as well as meditate.

Secondary users desired a space to hold staff meetings, hold events and fund raisers and to relax in.

The goal of Clare Housing is to develop a continuum of care that will meet the housing need of persons living with HIV/AIDS today and as those needs may change in the future. We hope to provide those with HIV/AIDS the safety, comfort and dignity they deserve in the least restrictive, most economical setting possible.

-Mission Statement Clare Housing.
Master Plan

The master plan depicts the final design expression of the preceding theory of Therapeutic Gardens, understanding of the needs of those living with hive disease, site analysis and user group analysis.

The design is comprised of four therapeutic spaces that each relate to a specific theory and mechanism for stress reduction and amelioration of the disease process.

These spaces are:

1. Communal Area
2. Meditative Area
3. Natural Area
4. Garden Walk

Figure 17. Master plan and section
Communal Area:

The communal area functions to increase social support. Isolation is a major problem for those living with HIV disease. Isolation can lead to depression, failure to comply with medical regimens and poorer outcomes. This patio area provides an informal area for residents to gather and socialize. Wall seat plantings are accessible and encourage residents to garden as a form of relaxation.

In addition, the space can also function as an area for Clare Housing to hold fund raisers and other events to support its mission.
Natural Area

The viewing of nature is universally associated with decreased stress and a sense of psychological restoration. This space provides a place for small groups of people to view an area planted in a more natural form. Plant selection is designed to enhance wildlife occupying the space, providing additional contact with nature.
Meditative Area

The meditative area functions to decrease arousal and stress. Meditative states are associated with positive physiological states of lowered blood pressure, pulse and circulating stress hormones. The water feature is designed to enhance this state by providing a focus, positive distraction and screening out intrusive visual and auditory stimuli. The conifer plantings are designed to provide a quiet and restful compliment to the space.
Garden Walkway

Exercise is associated with relaxation and induces a relaxation response. The site is designed to encourage walking within the site with positive distraction. The walkways are circular in layout to provide easy wayfinding for those residents who may suffer from dementia. The plantings are colorful and active.
Planting Plan

The planting plan for the Clare Apartments Therapeutic garden attempts to augment the therapeutic effects of the various spaces by emphasizing the design characteristics of the space.

Communal Space:
The communal space planters are purposely not specified. This space is intended to be planted by the residents who would choose plants to their liking. This would emphasize communal involvement in designing and working in the space, providing a creative outlet for the residents and a chance to interact during the planting. The trellis structure of the communal space would be planted with climbing vines such as Wisteria or perhaps grape vines.

Garden Walkway:
The garden walkway plantings are bold and colorful. The plantings are designed to stimulate the senses in a positive way and encourage movement to see what lies ahead. The plantings are designed for four season interest. The trees bordering on the street side of the garden walk provide shade and a place to rest while viewing the garden. This also allows residents to view the street from inside the garden, providing a safe place to “people watch”.

Meditative Space:
The meditative space is planted with conifers. Conifers are selected for their ease upon the eye and maximal enclosure due to their density. This creates a space that is calm and enclosed, facilitating the meditative experience of the space.

Natural Area:
Plants for this area are native to Minnesota and chosen for their tolerance of wet conditions associated with the stormwater infiltration site. The plantings are loosely arranged but clumped to create visual impact. Plants that attract wildlife are also prioritized as this will increase the sense of wildness that the site is intended to imbue.
Grading Plan

The grading plan is designed to emphasize the separation of the spaces into distinct rooms. The meditative space is separated by a subtle yet distinct grade change between the other three spaces. The garden walk includes a bridge structure over a miniature ravine. This is designed to provide interest and destination to encourage movement. The natural areas contours are irregular and designed to mimic natural land forms to enhance the sense of wildness and nature. All spaces are accessible to those with disabilities.
Lighting Plan

The lighting plan provides soft lighting for walking in the evening as well as illumination of the patio space for events. It also provides for an interesting visual at night for those viewing the garden from above from Clare Apartments as well as the highrise adjacent to the site. The natural area is intentionally left dark to emphasize a remote aspect if visited at night.
Materials

Communal Space:
Materials for this space are brick and stone. The planters are constructed of native limestone. The ground plane is a combination of brick and flagstone. These materials commonly found in residential spaces give the space a homelike garden feel. The trellis is constructed of corten steel. This material is strong and able to be fashioned into the desired shape of the design. It nevertheless has an earthen tone which gives it a natural feeling despite its being a manufactured material.

Meditative Space:
The meditative space utilizes black granite for a visually calming effect, in addition to grey flagstone. The walls of the spiral enclosure are limestone to create a natural feel to the space.

Garden Walkway:
The walkway will be brick pavers to create a residential garden feel to the walk.

Natural Area:
The natural area bench seat will be constructed of limestone, again to create a natural feeling to the space. The ground plane will be flagstone.
As outlined previously, the process for designing a therapeutic garden must include a methodology for evaluation of its effectiveness. The methodology for evaluating the Clare Apartments therapeutic garden will include a prospective analysis of various health indicators before and after instillation of the garden. The hypothesis is that the instillation of the garden will lead to an improvement in medical, psychiatric and social indicators among the residents.

The Clare Apartments therapeutic garden will be evaluated through several disease specific biological markers of disease activity, measures of mental health status, social functioning and quality of life measurements:

**Baseline Data**
Baseline demographic obtained from residents will include sex, age and race.

**Medical Indicators**
Pre and post instillation information will be analyzed for the following disease indicators:
- HIV related illness
- CD4 counts
- Viral loads
- Contact with primary and HIV care providers

**Psychiatric Indicators**
Pre and post instillation information will be collected regarding:
- DSMIV diagnostic categories
- Substance Abuse
- Engagement with mental health providers

**Social Indicators**:
Pre and post occupancy evaluation of social functioning will include:
- Relationship status.

**Quality of Life Indicators**:
Pre and post occupancy evaluation of quality of life will be accomplished using standardized questionnaire instruments that evaluate the overall quality of a person's life.

In addition to gathering this overall data, it may be useful to ascertain which areas of the garden are frequented the most by residents. This may be done either with self reporting by the residents or by observational analysis. Since the garden is comprised of four separate spaces, this may be a way to determine which of the areas are preferred and hence which are most successful or not in accomplishing the goals of the garden.
Figure 27 Research Design

Garden Instillation

Obtain Baseline Data

Yearly Evaluation of Health Indicators

Viral Loads

CD4 Counts

AIDS Related Illness

DATA
Getting The Project Accomplished

In addition to a lack of methodology in evaluating therapeutic gardens, the area of therapeutic garden research has also suffered from a mechanism of funding research. At present there is no funding mechanism that specifically deals with research in this area. Landscape architecture must then seek to tap into funding mechanisms that currently exist.

Suggestions for tapping into these resources include:

**Collaborate**
This area of landscape architecture is rich in potential for collaboration. Numerous other medical, psychological, sociological disciplines can form ready partners. In addition to having the expertise to design and evaluate research, many of these disciplines have experience writing and obtaining grants for research. In the current example of Clare Apartments, I was able to collaborate with the AIDS Clinical Trial Unit (ACTU) at the University of Minnesota. Normally involved with drug trial testing for HIV disease treatment, the ACTU is also interested in alternative therapies for HIV disease and expressed an interest in being involved in the project.

**Seek Out Sources of Funding:**
One potential source of funding for this type of research could be the National Institute Of Health. The NIH specifically has a program in Complimentary and Alternative Medicine (CAM), into which much of the research on therapeutic landscapes could be applicable. In addition, the potential exists to utilize the Robert Woods Johnson Foundation Pioneers program as a platform for the funding of therapeutic landscape research. This program seeks out innovative projects that can lead to fundamental breakthroughs in health and health care in nontraditional sources and fields.

**Link the Building of the Landscape With Research:**
Donors, foundations and other grants currently form the basis for much of the funding for the design and installation of therapeutic gardens. These philanthropic sources are often attracted to the notion of gardens as healing and want to contribute to this. If research is linked to the garden design and installation, it becomes another component of the project, much like maintenance, that can be funded. The linking of research to the project also may attract other donors who may be interested in funding more than just a “pretty garden”, with the added benefit of improving our knowledge as to how best to design these spaces.
As the field of therapeutic gardens continues to expand in interest, it must of necessity begin to develop a system for research. As quoted recently in the ASLA Therapeutic Garden Design Professional Interest Group, the chairs state:

*We propose a renewed effort to encourage academic research that is useful to practitioners, and to provide publicity for the new research to get the word out. Research is important to validate intuition and to motivate policy change ... We need research approaches that address current problems.*  

These same sentiments are echoed throughout the literature and writings of landscape architects interested in this field. And yet, there appears to be little progress in the answer to these calls.

Perhaps what is missing is a paradigm that allows research to develop out of the design process. Landscape architecture is first and foremost a design profession and landscape architects are primarily designers. The language of research and the language of design are different. What is needed is a process to translate design into research and research into design. The two must become linked for any progress to be made.

The process I envision is cyclical and seamless. Research, design and analysis form a continuous loop that ultimately lead to the development of design guidelines. These guidelines themselves are constantly in flux as new information is collected, new designs are created and analysis leads to new insights.

ASLA must also begin to exert some control over what is considered a therapeutic garden. Just as the FDA certifies the safety and effectiveness of our nation's drugs and medical devices, so too could ASLA create a certification of therapeutic spaces with a requirement, much like the FDA's, that a claim of “therapeutic” be proven. This will of course place a large burden on designers in this field, but will nevertheless ensure the growth of knowledge in this field. As a profession, we owe this to the public we wish to serve.

*Every design is an experiment, with human subjects.*
Conclusion

In the course of this thesis project I have sought to accomplish several goals. The first is to develop a process for the development of therapeutic gardens that incorporates research into the design process. It is hoped that this process if applied broadly in our field will lead to an improvement in the current lack of data to support therapeutic design.

The second goal is to take this process and apply it to the design of a therapeutic landscape for people living with HIV disease living in a residential setting utilizing current design guidelines. The hope is that by doing so, these design guidelines can be tested in a specific patient population that will then lead to a better understanding of their applicability to this group.

The third goal is to demonstrate to our profession how these projects that include research as part of their process, can be accomplished through collaboration and existing funding resources.

The fourth goal is a challenge to our profession to create a design standard that protects the public from untoward therapeutic design and creates an expectation that design and research be linked.

The key strength of our profession is it’s willingness to collaborate. Collaboration is the key to making these proposals a reality. In addition we must fearlessly look at the outcomes of our designs in a scientific manner and have the courage to ask the hard questions. Failure to do so will lead to the marginalization of our profession.
References


