

Healing Gardens' Design

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(Offering a practical framework for designing of private healing gardens)

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Abstract

The paper addresses a research gap dealing with landscape and health. Stress is always a burden on our shoulders whether at work, on the street, or even at the house. In a search to find a deep form of sustainable landscape that would act as a stress reliever, the notion of healing gardens came into light. The paper offers a practical case study for designing and formulating Healing Gardens (HG). It utilises the notion of design patterns in composing a framework that would empower the achievement of the therapeutic goals of the garden, thus providing the ability to label the garden as a healing garden. The framework is to be presented, applied, tested and reported upon by the author, who has experienced the challenge of creating Healing Gardens.

Keywords:

Health, Sustainable Landscape, Healing Gardens, Healing Garden's Design

1. Introduction

(Health, Landscape, Sustainability and the notion of Healing Gardens)

'Health' and 'well being' have always been indicators for the 'quality of life', while 'quality of life' could be perceived as a method of measuring the degree of 'community sustainability' (Johnson, 1995; and Dave, 2011). World Health Organisation defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (Vapaa, 2002:4). Vapaa (2002) added that "it [health] is this basic need for a connection with nature that keeps us going" (Vapaa, 2002:18). Investigating and proving the connection between nature, healing and health a number of studies have been conducted (Kellert et al., 2008). Three of which are mentioned below:

- Gull Bladder Surgery patients were studied in their recovery rooms. Some rooms had a view of nature while others had a view of a brick wall. It was found that patients whose rooms overlooked trees and greenery have had a faster recovery time, faster hospital departure, experienced fewer difficulties, suffered less pain and used less medication than those patients facing a wall.
- Michigan State Prison conducted a similar study between prisoners in cells facing a courtyard and prisoners in cells overlooking farmlands. It was found that 24% more sick calls existed among those facing the courtyard.
- A school in Germany conducted another similar study, students were observed in classrooms that contained plants and others in classrooms with no plants. It was found that plants reduced student health problems, and helped reduce the number of health complaints. This provided evidence that plants have a positive effect on the students' well being. (Vapaa, 2002:22-26)

Health studies and horticultural therapeutic programs prove that there is a relationship between health and gardens (Wells, 1996; Kellert et al., 2008; and Haller et al., 2006). Gardens are not only looked at as sources of physical healing but, as mental and emotional healing sources as well (Wells, 1996). The subject of health is always important as health is something we all strive for and hope to achieve (Kellert et al., 2008). It is a positive state of life encompassing the entire life situation, and environment (Morse et al., 2011). The notion of Healing gardens should not just be restricted as a requirement for sick people, it is important for the healthy people as much as it is important for those who are sick. The paper aims to study the various types of healing gardens, targeting the most efficient form of healing gardens identified by researchers as Private Homes Healing Gardens. Moreover, the paper also presents a practical framework for the design and implementation of healing gardens through a case study. The framework was adopted and implemented by a Healing Garden Design Project Team which reports, through this paper, on the practical experience in the field of designing, planning and creating private healing gardens.

2. The Notion of Healing Gardens (HG)

2.1. Sustainability and the notion of Healing Gardens

Greenery, as a sustainable form of landscape, has the potential of inducing active living and public health; thus linking the importance of the natural environment to the built environment and the citizen's health. In the Western and Eastern communities it has been noticed that greenery in the city is essential for the health of the city dwellers. The brain is capable of two types of attention; directed attention belonging to the higher cognitive centres, and soft fascination linked to the memorial part of the brain. In a natural environment, the higher cognitive centres rest while the old part of the brain is stimulated giving the sense of restoration, rest and healing.

It is vital for public green areas to be located near residential areas. Studies have proved that natural environments outside a 50 meters radius from residential areas would result in a decrease in the amount of visits to the gardens, and an increase in stress levels. These findings reveal the significance of locating a natural environment directly adjacent to dwellings (Stigsdotter, 2005). While designing a healing garden it has been noted that 'sight' is the most immediate physical sense that reacts to a garden. Sight is important because a person only needs to open his/her eyes to experience an ever-changing kaleidoscope of light and colour. Researches and studies have proven the effect of colour on human thoughts, actions, health and even relationships with others (Vapaa, 2000:64). The human sense of 'smell' is also very important in designing a healing garden. Scientists have discovered that sweet essences produce alpha, theta, and delta brainwave patterns which leads to a state of total relaxation. Other fragrances could stimulate beta brainwaves inducing a state of alertness in the human brain. If the produced fragrances of a garden is disliked it would block any effect upon the nervous system empowering the sense of alertness. It would thus limit the chances of a garden to promote its healing powers. This emphasises the importance of providing the garden with the proper scents.

If healing gardens are to symbolize health promoters, then they have to offer a considered balance between the body, the mind, and the spirit (Vapaa, 2002). A Healing Garden is to represent the ability to promote the sustainability status between the three matters as presented in [figure \(1\)](#). Franke (1996) made it clear through his statement that health is the core of the sustainable landscape, stating that "the only

path to true sustainability is one which promotes the importance of the health of the local environment" (Franke, 1996: 246). Thus Healing Garden can be considered as a deep form of sustainable landscape where both humans as well as the environment are to mutually benefit from promoting it.

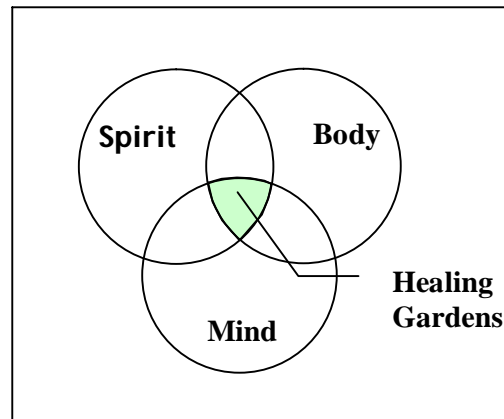
2.2 History of Healing Gardens

The idea of Healing Gardens is both ancient and modern. Following the beginning of human settlements and erect of communities, local healing places were nearly always found in nature (Brown et al, 2010; and Marcus and Barnes, 1999). The earliest hospitals and infirmaries in the Western world were dependent on plants, herbs and a cloistered garden as essential parts of the healing process. For a long time the importance of health and well-being has been noticed in the presence of urban green space, green ways, parks, green areas, schoolyards, and house private gardens. All these factors are viewed as the health creating elements of the city (Morse et al., 2011; and Stigsdotter, 2005). The great gardens of Egypt were built to offer an escape from the external environment offering a healing relief. Restorative or healing gardens for the sick have been part of the landscape of healing since medieval times (Clark, 2004). Gardens were always portrayed as a paradise that offered respite from illness to the healing of the soul and the body. By the end of the 80's and the start of the 90's a decline of the concept was witnessed all around the world. The connection between healing and nature was gradually superseded by advancing treatment technologies and methods. By the late twentieth century the idea of nature and healing was totally lost; nature 'landscaping' came to be merely portrayed as a green sort of decoration. Starting from the 1990's the idea of healing gardens, once again, gained interest and began to appear in the research field of sustainable landscape (Vapaa, 2002). Today the aspect of Healing Gardens is gaining its popularity due to the harsh living and environmental conditions that people are suffering from all over the world.

2.3. Defining Healing Gardens

A garden, in general, is portrayed as a heaven where people find a welcoming escape from the everyday stresses of the outside world. On some level all gardens have healing effects (Rawlings, 1998). Since this research focuses upon healing gardens, a profound theoretical analysis is required to define the term. Vapaa (2002) stated a very important definition explaining functions of a healing garden, he stated that "instead of stressing the idea that they can cure a person, the benefits are related more to the alleviation of stress and the abilities of the space to soothe, to calm, to rejuvenate or to restore one's mental and emotional health" (Vapaa, 2002:4). In other words healing gardens are not just for sick people, they serve the healthy and the ailing. A healing garden is able to restore the natural balance in humans so that they do not feel stress and other pressures. It is defined as a category that includes outdoor or indoor garden spaces. Some scholars seem to think that those gardens belong to

Figure (1) The Notion of Healing Gardens



Source: after Vapaa, 2002

hospitals and health care centres (Stigsdotter, 2005), while others see that they are very personal spaces that could be successfully located in private homes. Vapaa (2002) concluded his study stating that, "a healing garden is one where the designer pays close attention to the needs and likes of the user(s) or client(s) and is able to provide therapeutic qualities in the space that addresses them" (Vapaa, 2002:73). Stark (2004) has a vision of the healing garden as a microcosm of the larger world, where each feature of the garden is to represent a larger feature in the landscape. He argues that through this modelling healing has to be able to "stimulate the senses, improve immune response, and promote recuperation from physical and emotional illness a healing garden is a keeper of a sacred place. Its users can access higher levels of spiritual power by their simple presence in its space" (Stark, 2004:3). Starks sees the power of the healing garden in its ability to bring the human back to nature. The nostalgic power of nature, which is embedded in each person's higher cognitive part of the brain, can rest while the old part of the brain is stimulated, thus achieving the healing power.

Based on literature analysis, the power of healing gardens lies in its ability to bring humans back into connection with their private imaginative nature. Accordingly, healing gardens is defined as the broad collective term that encompasses various types of gardens that aim to promote health and well-being to the human life and the adjacent environment.

2.4. Types of Healing Gardens

The positive health effect of staying in urban green spaces has been recognized. If the goal of the community is to promote sustainable development, then in the heart of the sustainability process is the ability to promote better health for all city inhabitants. Studies proved that each dweller has the right to have free access to an urban green space within a maximum radius of 50 meters from their residence. Consequently, the types of healing gardens can be classified as follows: The first type of healing gardens is like a sanctuary or a natural reservoir, where natural and wildlife are preserved. This is presented by the city's green infrastructure elements, encompassing the city's open spaces, green ways, nature parks and greenbelts. The second type is a meditation garden within the premises of a hospital or a health care centre. Finally, the third type is a privately owned garden. The third type is agreed upon by most healing researchers to be the best type of meditation garden with healing effect. This is based on the fact that the more time a human is in contact with nature; the more profound the healing results will be (Hopper, 2007; Vapaa, 2002; and Marcus and Barnes, 1999).

A residential or a private garden is the climax of the healing garden typology. It allows the user(s) to gain the maximum benefit from the healing qualities of a garden because it is their own personal space where they express their individual identity, needs and level of engagement (Vapaa, 2002). The research will target the private healing gardens for the case study, trying to investigate the 'healing' reality of such type of gardens. It presents a framework that would guide the landscape design process to promote and create healing gardens.

3. Healing Gardens a facilitator for the users' horticulture and aesthetics needs

A healing garden's main role is to provide a sanctuary to allow for meditation and, to fulfil other social and emotional requirements of its user (Johnson, 1995; and Li and Mander, 2009). A talented designer's main job is not only to fulfil the

requirements and needs of his/her client but, to go far beyond client expectations. Healing garden designers should use their expertise, knowledge and tools to create a unique garden for the client. As previously deduced from studying the notion, history, and definition of healing gardens along with the users' intervention; one can infer that the designer's ability to integrate the user in the healing garden design process is a key factor for the success of the design (Brown et al., 2010). There are various means for achieving such integration between designer and client; the most efficient are personal interviews, written surveys and questionnaires. During the first session with the client, the designer should investigate some site ideas and have feedback on them; a good designer should be a good listener. Following the first session, a series of meeting and interviews with the client is a crucial step for determining and fulfilling the clients' social and emotional requirements. The client should be involved in every detail concerning the design. When working on designs for healing premises, the scope of the design capabilities should go far beyond the utilization of the sense of sight to all the other senses. The designer should consider what the client would like to hear, smell, taste and touch in their garden. The designer should constantly pay attention to the client and if there is any reservation about a certain element of the design it should be re-considered. It is always easy to re-evaluate and to refine a design than to implement, demolish and re-implement. Design elements and garden components should be selected thoroughly and according to the user's needs and opinions. This is done to maximize the healing effects on the environment as well as the user, thus granting the garden with a healing label.

This study stresses the importance of being able to satisfy the needs and wants of healing garden user(s) or client(s). Client satisfaction is the key issue that determines the success of the design process. The user(s) have to be acknowledged as effective members of the design team. The success of a healing garden is only attained if the garden has managed to relate to its owner at the most achievable personal level.

4. Healing Gardens Design Process/framework

The design process is essential for the health concept to be correctly integrated in the garden (Ji, 2009). The design should be based on the users' special needs and requirements. Stigsdotter, (2005) noticing the importance of the design process in achieving the required healing gardens stated that, "there is a great need for scientific knowledge concerning how these gardens should be designed" (Stigsdotter, 2005:8). McDowell and Tricia Clark-McDowell (1998) stated that, "the key to a healing garden is to honour and celebrate our broader human relationship with nature and spirit, not just plants." As clarified from various resources a basic set of guidelines would be very important for directing any designer through the design process (Ji, 2009). The design process of healing gardens differs than that of any normal garden in that it has two layers of objectives. In the cognitive layer, lie the therapeutic objectives such as the ability to provide stress relief, alleviation of physical symptoms and improvement in the human overall sense of welfare. The physical layer includes the designers' objectives/principles for fulfilling the therapeutic objective of the cognitive layer. Based on the former analysis and previous academic and professional experience, [figure \(2\)](#) presents a proposed vision/framework for the healing garden design process.

4.1 HG Design Framework

4.1.1. Inventory Stage (Site and Users Visits)

The inventory stage of the HG design process differs from any other garden design stage in that this stage has to include the user/client as one of the design members. This is to be achieved through a number of visits. The visits should aim to investigate and listen to the user/client's own ideas. The design team aims to identify client's needs to be able to profoundly analyze, categories and prioritizes them.

4.1.2. Developing Ideas.

Based on the former stage the designer should start setting the first layer of ideas and thoughts regarding how to fulfil the user/client needs. The designer should keep their own vision into consideration, the one that has to be beyond the expectation of the user/client.

4.1.3. Setting Therapeutic Goals

One may argue that this design stage should come before the previous stage of developing the ideas. It is arguable as the framework is not rigid. Some designers may find it more appropriate to consider setting the therapeutic goals before developing the design ideas. Others may argue that the therapeutic goals should be hidden between the designers and their design. The therapeutic effect on the receivers should be accounted on.

4.1.4. Selecting HG Design Patterns

The design patterns aim to assist the designer in achieving his/her therapeutic goals. These patterns are already tested for their efficiency in achieving the therapeutic objectives. Table 1, presents a list of HG design patterns. Each design pattern stands for the elements of the language of design, they are the individual words or phrases that when joined form the final story. Again this list is not compulsory and not a closed list; on the contrary, it has to be a continuous updatable list based on designers' experiences' and the special design conditions of each case (environmental, social, and economic).

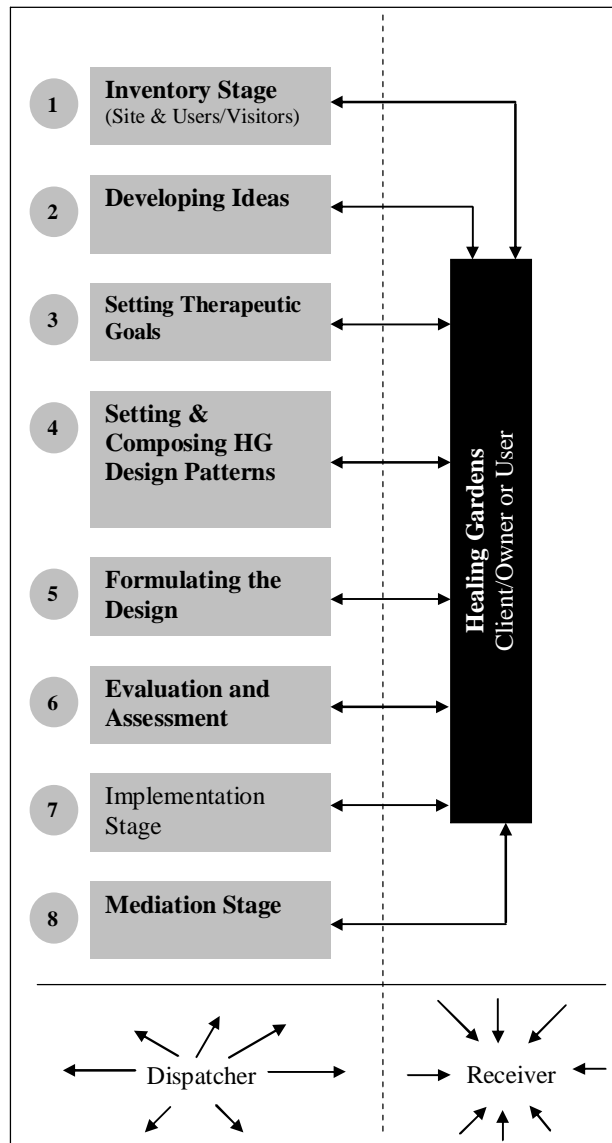


Figure (2) Healing Gardens' Design Proposed Framework

Table (1) HG Design Patterns Proposed Open List

Pattern Code	Pattern Name
HG 01.	Garden Entrance
HG 02.	Garden Gates and Fences
HG 03.	Garden Walls (natural as possible using plants and earth materials)
HG 04.	Positive Outdoors Spaces (positive outdoors spaces functionally related to your home or building)
HG 05.	Hierarchy of Open Spaces
HG 06.	Intimacy Gradient (space hierarchy, unfolding story, introduction spaces)
HG 07.	Anchor points at the heart (try to present interest points in the middle of the spaces)
HG 08.	Connection with Nature (connect your garden with Mother Nature whenever it is possible, through views from spaces)
HG 09.	Tree place (try to make them as natural as possible)
HG 10.	Vegetable and Fruit Garden
HG 11.	Raising Flowers
HG 12.	Supporting wildlife (colours, materials, and plants)
HG 13.	Shading Areas (natural as possible, pergolas or trees)
HG 14.	Arcades and Archways (providing interesting walking paths)
HG 15.	Paths and Goals (paths layout linking spaces together)
HG 16.	Path Shape
HG 17.	Paths smoothing roughly in the middle (the middle of the path should smooth roughly to include an interest anchor/space or point)
HG 18.	Sequence of Sitting Areas
HG 19.	Connection with the Sun
HG 20.	Garden Seats (place, function, material and views)
HG21.	Alcove (small sitting areas)
HG22.	Sitting Circles
HG23.	Seats Spots (location advantages)
HG24.	Front Door Bench
HG25.	Using Water (ponds and pools)
HG26.	Fountains and Water drops
HG27.	Water Falls
HG28.	Activity Pocket (working, studying....)
HG29.	Settled Work in the Garden
HG30.	Waist High Shelf (sort of working areas)
HG31.	Car Homes (caring and working areas)

(after, Christopher et al., 1977; Vapaa, 2002 and Tyson, 2007)

4.1.5. Formulating the Design (HG Design Stage)

The design formulation/creation is the heart of the design process of Healing Gardens. A healing garden needs to express and present nature and its forms. It should escape and avoid rigidity, conceptual thinking and preconceived notions of design. A successful Healing garden design should be able to **achieve the following design objectives:**

1. Maintain the spiritual character of the site
2. Accentuate the aesthetics values of the design
3. Create a variety of spaces
4. Encourage exercise
5. Minimise intrusion
6. Encourage vegetation and wildlife
7. Support the intention and care of its owners
8. Prevalence of green material
9. Provide positive destruction
10. Minimise ambiguity

(after: Stark, 2004; Vapaa, 2002; Cooper and Barnes, 1999; and Stigsdotter, 2005)

Whilst designing, designers should avoid straight lines, volumes and planes and excessive use of symmetry. Also, among the guidelines that would help in achieving the required HG design objectives are:

- Involve the user/client throughout the process
- Easiness to comprehend and navigate
- Considering mobility in and around
- Support all forms of wildlife
- Promote reflection and self awareness
- Maximum use of water elements
- Special consideration for the garden walls
- Providing working natural environment
- Creative use of colour and light
- Anchor points and creative nodes
- The integration of art to support
- Stimulating the users senses
- Creative use of water elements
- Offering contrast as a source of relief
- Views from inside and outside
- Utilise the cycle of life and seasons
- Special entrance that would invite and embrace users into the garden
- Utilising white noises whenever possible
- Emphasis of natural features as grounding points
- Sitting areas

(after: Marcus and Francis, 1998; Foley; 2010 Stark, 2004; Vapaa, 2002; Cooper and Barnes, 1999; and Stigsdotter, 2005)

4.1.6. Evaluating the Design (HG Certification Process)

The continuous evaluation of the process in every stage is a core for its success. The evaluation is to be conducted merely by the client(s)/user(s) and the design team. The evaluation should recognise two matters; the continuous evaluation of the targeted healing objectives and the changes required to the targeted HG design patterns. The creativity of the design team in designing the elements of the requested design pattern is a determinant of HG success.

4.1.7. Implementation Process

The implementation process may differ than that of an ordinary garden in two main points. First is the special need and consideration that has to be provided in selecting the construction material. The material has to be completely related to earth. The second point is engaging the user(s)/client(s) in the construction process. Every construction detail of hardscapes and softscapes has to be done in consideration to the client's needs and desires.

4.1.8. Mediation Process (HG users gardening)

A healthy plant is a main factor in a successful HG, where the impact of these healthy plants is mediated to its user. HG is unique in its ability to engage its user in the gardening tasks, through which mediation is maintained, and the therapeutic goals are achieved. In other words, the extent to which a HG is successful in engaging its user(s) in the gardening work is the expected extent of achieving a high level of health, therapeutic and mediation effects.

5. Healing Garden Proposed Design Framework in action

The case study of creating a Healing Garden Design is to be presented on three stages: the first is to report on the arrangement prior to the actual engagement of the design process. The second stage is to report on the framework presenting the HG design process. The final stage concerns the mediation process of the garden with its user(s).

5.1 HG Pre-design Stage

The preparation prior to the start of the HG design process is of vital importance for the success of the process and for achieving the required objectives. The main task of the HG pre-design stage is composing the design team. The design team is to act as

the tool through which the required design is to be formulated. The composition of the right team (design team) is essential for the success of any design. There are some factors that can guide the process of composing the required team. They include:

- The technical head of the team should have the required knowledge of the HG design process (to be identified based on the already developed fields of expertise in each country).
- Depending on the client's gender, age, norms, ethics and religion, a number of design members should be included that have the privilege of being able to get in close contact with the user(s). If the client is a family unit including husband and wife, then the team should include at least a female and a male member. The aim here is to establish a personal link with the clients.
- The team should include a local softscape and hardscape designer.
- The team should include a designer with the required lightning design experience.
- An assisting team, to the main HG design team, should include economic, soil, agriculture, irrigation and construction experts.
- The head of the team should be the client; he/she should be convinced that they are to play an important role in the success of the HG design process.

In composing the team for the presented case study, the client was a business man. His family had four members, his wife, daughter and two sons. The assignment was to design a private and special garden to his already constructed new house. The client already possessed a design prepared for him by a professional landscape firm. He commented that, "I am not happy with that design. I can't see myself in it".

Accordingly, the composed main team was set to include HG design professional, a female internal designer (an architect, who is close in age, social, economical and ethical class to the client's wife), a local landscape designer (softscape and hardscape), an assistant landscape designer (a male member close in age to the client's two sons). The composed team provided the required expertise in the identified fields and ensured the maximum integration with the client's family. In addition to the main team there was an assisting team which included lightening, economic, agricultural, soil and construction experts.

In presenting this case study, if the design team is referred to without mentioning the assisting team this addresses the main HG design team members only. Also, the paper focuses on the exclusive requirements of the HG design process, thus it skips the mutual points that are common for any ordinary garden design.

5.2 HG Proposed Design Framework Process

5.2.1 The Project Inventory Stage

The inventory stage of the HG design process should include:

1. Site Visit

Site visit(s) is the first step of the HG design process. The main team has to accomplish the objective of getting to know the client and the project site very well. During this stage the design team focuses on achieving maximum socialization with the site and the client(s). A documentation plan of the healing garden's special requirements includes documents inquiring: security issues, privacy issues, various sources of pollution (health, sound and visual), prevailing wind, serene natural outer views and all possible local environmental records.

2. Defining the User(s) Needs

For any design to succeed it needs to meet the needs of its users. Thus the ability to define the user's needs is an essential task for the success of any design. For HGs defining needs is not only essential, but is the core, and the fundamental, stem from where the design of the HG should branch. Based on the first inventory socializing stage included in the 'site visit', the design team was able to formulate a prime list for each member of the client's family. These prime lists were finalised upon on a number of meetings that were conducted with each member of the client's family. These meetings consisted of one member from the client's family and members of the design team. This allowed for a relaxed conversation where the design team was able to understand the needs of each member. According to the results of those meetings a final list of needs was written up to be implemented in the garden.

3. Studying the User(s) Regime

One of the basic requirements of the HG design process is the ability to set the targeted therapeutic objectives of the garden. The therapeutic objectives should be set to achieve the required healing effects on the family members. Therefore, to help set the therapeutic objectives, the design team had to define the daily/weekly regime of each family member. Finding out the daily/weekly routines was easily accomplished as the design team had already formulated a degree of relation with the client.

5.2.2 The Stage of Developing Ideas and the Design Concept

In this stage, based on the former stage of the HG Design process, the design team formulates and discusses a number of ideas. The proposed ideas from the team have to go beyond the expectations of the client without undermining any of the client's needs. Among the conceptual design challenges that the design team faced during this stage was:

- The need to establish a connection between the inner spaces of the house and the outer spaces of the garden. Entrance and views from, and to the garden play an important role in maximising the healing effect of the garden.
- The other challenge was the need to achieve the family requirement regarding a prestigious garden entrance; which directly falls under the category of a formal entrance. A formal entrance usually has a negative effect on the healing powers of the garden. Adding to that, the architectural designer neglected the approach to the house from the garden gates.

Following a series of meetings between the team members and the family, the first layer of the final design concept of the garden was formulated. The garden is divided into two parts; the first part is regarded as a welcoming and introductory garden to the house. The inner, main, garden was divided to a number of functional spaces to achieve the maximum integration between the house's inner spaces and the garden's space. Space articulation led to a successful garden design that achieved the needs of the family.

5.2.3 Setting the HG Therapeutic Goals

Based on the former analysis of the inventory stage, regarding both the environment and the users, the levels of stress facing the local environment and the garden user(s) were identified. The environmental stresses were defined based on the environmental analysis of the garden's local and adjacent environments. On the other hand, the daily and weekly routines for each member of the family were studied,

aiming to identify the types and levels of stress each member is exposed to. Accordingly, the design team composed a list for the targeted therapeutic objectives of the garden, taking into consideration and analysis of the site local environment. The therapeutic objectives were classified into three levels: a. personal client(s)/user(s) therapeutic needs, b. place physical environmental therapeutic needs, and c. the achievement of maximum interaction (between the family member and the garden's natural environment). [Table \(2\)](#), presents the personal, physical and interaction targeted therapeutic goals for the case study. After setting the final therapeutic goals, the design team added the therapeutic layer to the design concept formulating the final HG design concept for the garden.

5.2.4 Selecting HG Design Patterns

After defining the list of therapeutic objectives, the next step would be the selection of the required design patterns. These design patterns have the ability of achieving the targeted therapeutic objectives. Studies by Christopher et al. (1977) and Tyson (2007) regarding design patterns language and therapeutic achievements are considered as a bible for the HG design process. Their works provided a method for testing the healing effects of the garden. As presented in [table \(2\)](#), the case study utilised 29 design patterns that coincide with the family's needs, the physical environment of the site and the targeted therapeutic goals. [Figure \(3\)](#), presents the HG design patterns chosen for the garden and the proposed functional design for each of them. There is no limit for the number of selected HG design patterns. However, designers should aim to utilise as many as possible since they are regarded as tools for achieving the targeted therapeutic objectives. Therefore by increasing the number of design patterns you are increasing the probability of achieving the therapeutic objectives of the garden. The patterns can be classified into:

- Entrances and wall patterns
- Paths and spaces patterns
- Anchor points and sitting areas patterns
- Senses simulation patterns
- Water, earth and wildlife patterns
- Interaction patterns.

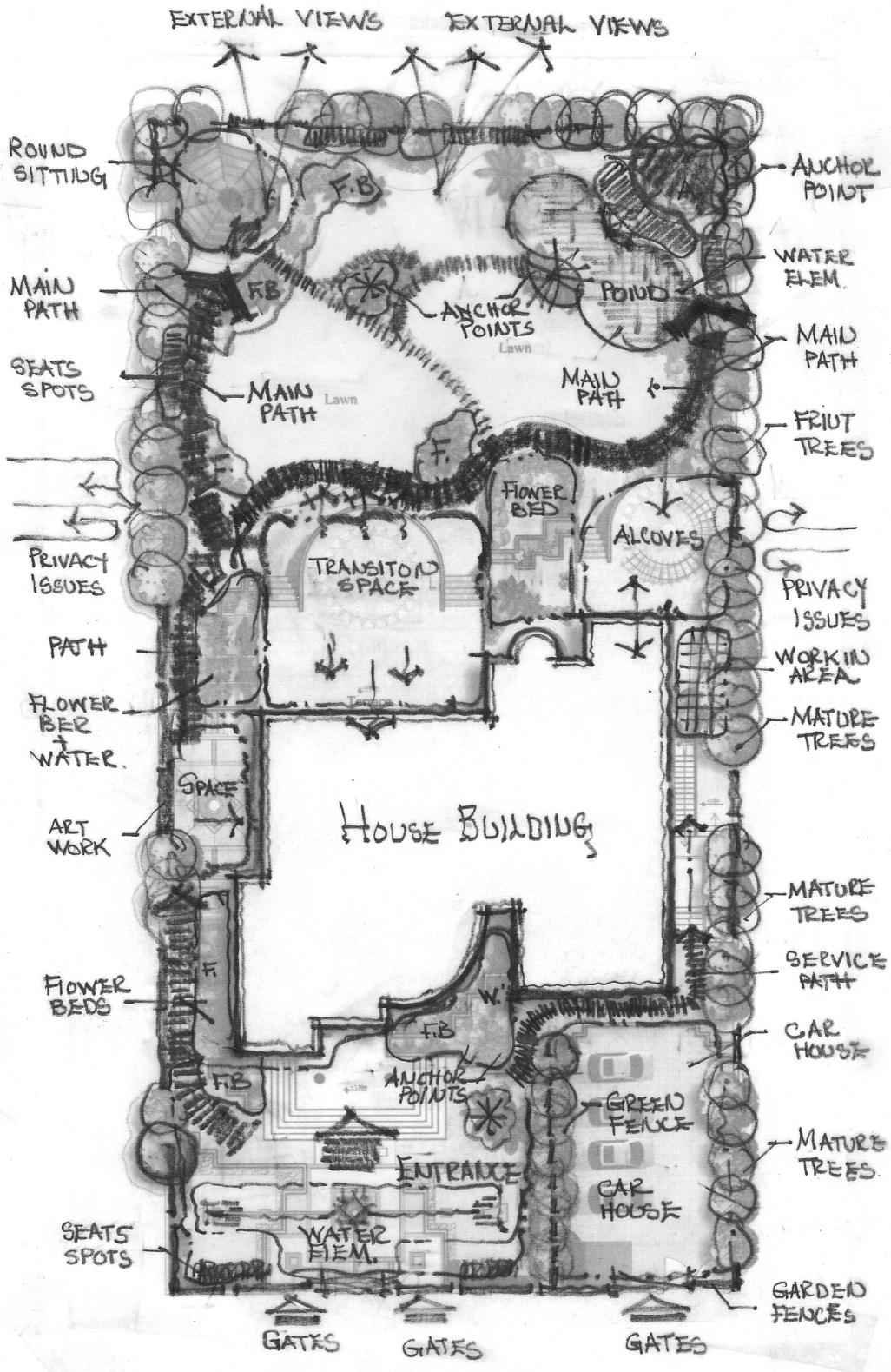
During this stage, the design team was proposing the idea of adding a swimming pool as a sort of water design pattern (the symbol of the pool as a HG design pattern stands for: activity, art, nature and view ... it has the ability to provide: contemplation, purity and soul healing therapeutic effects). As the core of the HG design process the family has to be involved in every decision. In discussing that issue the family disagreed. The parents rejected the idea, the two boys supported the idea and the girl was neutral. The design team adapted the utilisation of water as a design pattern by changing idea of a swimming pool into a waterfall design with a small pond. Also the team convinced the parents to construct the necessary installations for a swimming pool, just in case their needs change in the future. This decision created a sort of design flexibility in the final proposed HG design master plan, which defiantly minimized any cognitive dissonance felt by the client. Furthermore, the decision triggered the team into realizing that any proposed HG design should have the required flexibility to change and adapt, on the long run, according to changes in the user's needs.

Table (2) Healing Garden Therapeutic Program Formulation Matrix

Therapeutic Objectives	HG Design Patterns	
	Therapeutic: Human Needs	HG selected design patterns
Safety and Security	Integration between indoor and outdoor	HG 01
Independence and Freedom	Comfort Microclimate	HG 02
Awareness, Beauty and satisfaction	Compensate to Nature	HG 03
Personal Privacy	Supporting wildlife habitat	HG 04
Ownership	Familiar Character and Earth	HG 05
	Creating interactive environment	HG 06
	Variety of activities and abilities	HG 07
	Clarity and spatial orientation	HG 08
	Attractiveness, Mystery and Enjoyment	HG 09
	Observation and relaxation	HG 10
	Familiar tasks (work, recreation & care)	HG 11
		HG 12
		HG 13
		HG 14
		HG 15
		HG 16
		HG 17
		HG 18
		HG 19
		HG 20
		HG 21
		HG 22
		HG 23
		HG 24
		HG 25
		HG26
		HG 27
		HG 28
		HG 29
		HG 30
		HG 31

(after: Vapaa, 2002; Christopher et al., 1977 and Tyson, 2007)

Figure (3) Case Study Utilised HG Design Patterns



5.2.5 Formulating the HG Design (master plan)

The proposed HG design framework adopted a number of design guidelines that aim to maximise the HGs ability to fulfil its horticultural therapy program and functional goals (Moore, 1989; and Simson and Straus, 1998). However, the design guidelines cannot guarantee the efficiency or the output of the design process. The formation of the design process has been widely portrayed as a spiral metaphor that reflects the designer's pattern of thinking. Translating notions, ideas and abstracts into physical design requires certain design methods: knowledge, experience and talent. These methods are used to bridge the gap between the scientific path of thinking and the creative line of thought (Tyson, 2007).

The technical head of the design team, the one with the knowledge of HG design, has a vital role in this stage. He needs to guide the design team in order to maximise the healing ability of the garden. He is required to change colours, materials, plant types and the position of HG design patterns. He should also keep in mind the design guidelines, work with his previous experience and be in full co-operation with the client.

Figure (4) Final Healing Garden Landscape Design

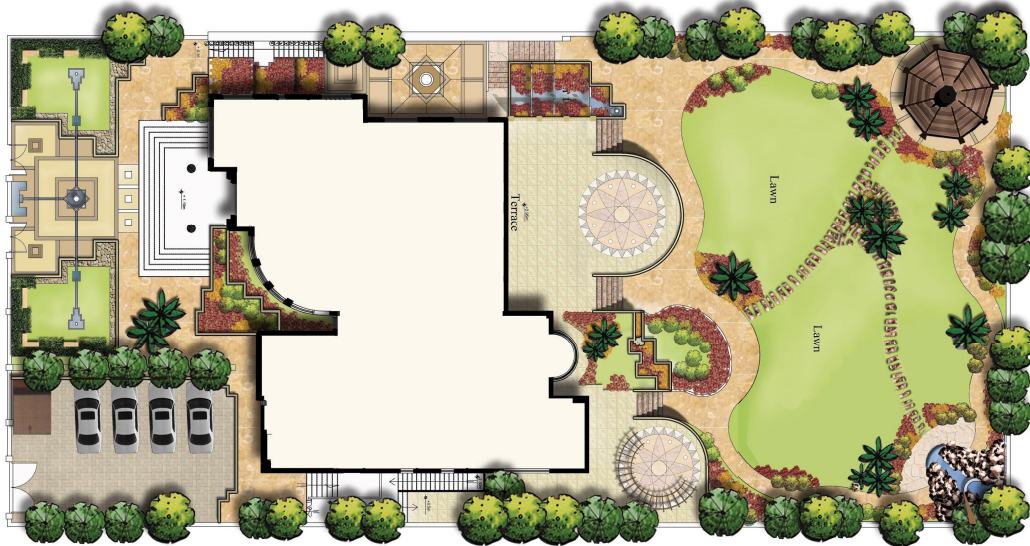
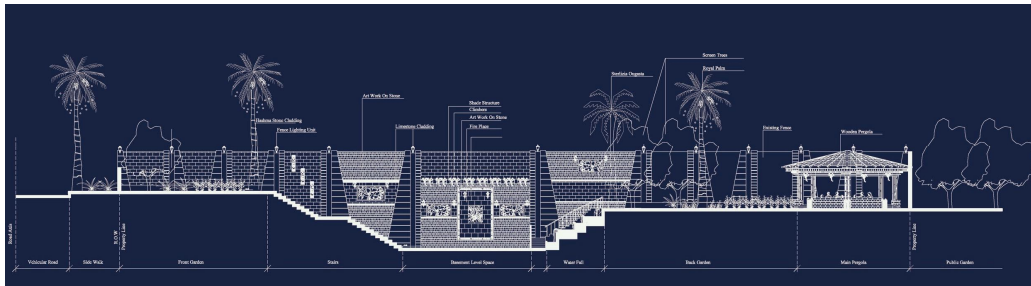


Figure (4), presents the final master plan for the garden. As explained in the concept stage, due to architectural limitations, the garden is divided into two parts. The design team decided to use the front part of the garden as an introductory space for the main garden. Baring in mind the family's requirement of having a luxury entrance, the entrance space was articulated using a soft fence which created a centre of symmetry on the house's axis. Knowing that symmetry is to be avoided in the design of healing gardens, the team started using a number of HG design patterns to outdo this symmetry. Design patterns used include: motion water paths, a classic fountain, a luxury gate and sitting areas overlooking the outer environment of the garden.

Surrounding the house there is a flower bed containing colourful flowers that create a smell which stimulates the human senses. The bed is positioned above the basement level, so the design team used that change of level to create a soft waterfall with natural rocks. The selected recourses are all natural earth materials. The design team integrated stone edges and marble paths in a unique design which emphasis the importance of natural materials. A number of archways were constructed, in the plan, to soften the entrance of the main garden where a change of level is overwhelming. A number of seats and flower beds were added to further release the impact of exaggerated level changing.

Figure (5) Art Work an efficient HG design pattern



To the left of the house there is a nine meter high wall. The wall is set up along the side path leading to the main garden; the design team articulated the wall then decorated it with artwork to release any sense of imprisonment (figure 5). The other side of the entrance is to accommodate a number of evergreen mature trees providing shade for the car parking area, screen for the house kitchen and shelter for wildlife. Through this area we can reach the path to the right of the house that contains some family activity areas.

The main garden is at the back of the house. For family members, the main entrance to the garden is from the living area. The living area overlooks the main terrace; this provides a natural and visual extension to the house's inner space as the terrace flooring is made from the same material. The material is integrated into a coloured gravel and marble plaza as a form of earth material. The width of the terrace was designed to fit the client's weekly routine of having family and friend gatherings. The terrace was elevated above the garden level to insure scenic views of the different garden elements. To the right of that terrace there is a shaded sitting area. The sitting area is sheltered with dense erect evergreen plants to provide the required privacy from the neighbours. This sitting area may also be a quiet space for sitting alone reading or just recovering and enjoying the healing power of nature. Beside the sitting area we can find the family's activity zone. Flower beds are located near the activity zone and sitting areas to enrich the human senses with sweat scents and views. The terrace also functions as an entrance plane to the garden. Access is gained from the terrace plane to the garden's main footpath which overlooks a wide and expanse of lawn, carpeted by the natural shade from trees, leading all the way to an adjacent field. These aesthetic views are beyond of the garden premises; however, it forms a HG design pattern as it softly connects the garden to the outer natural premises.

The main part of the path is made from random shaped marbles and fine gravel divider. The path connects the various parts of the garden together and moves to one of the garden corners where a lovely pergola (a circular sitting HG design pattern) is located. The sides of the path are defined by natural stones and whenever

possible plants are allowed to creep on the path. The left and right walls of the garden are to host a number of planting groves. These groves provide the garden with a sense of wildlife habitat, fruit and vegetable vegetation to add to the sense of taste and texture. Also, flower beds and seats are provided as soft anchor points. These areas provide the garden with activity pockets, ones that stimulate the interaction between the users and the natural environment of the garden. The main footpath steams to a natural stepping stone path that circulates the garden joining its different parts together. On the inner right corner of the garden, there is a natural waterfall utilising water and natural rocks aiming to achieve maximum stimulating powers of nature to the cognitive human brain, and thus triggering the healing power of nature. The waterfall is to provide the garden with a source of white noise and to stimulate the hearing sense. Attached to the waterfall is a small shallow pond, acting as a great source of light reflection, and a couple of stone seats, where users can sit and enjoy the healing power.

Knowing the green colour to be the colour of peace, the rest of the garden is covered with lawn adding the green cover and colour to the garden growth. Surrounding the lawn are pockets of shrubs and flowers, providing wildlife and adding various colours to the garden. Through the analysis of the family regime, the colours which best complimented the regime were found to be orange (colour of motivation, activity and passion), purple (symbol of mystery, deep love, contemplation and unconscious) and blue (a source of spiritual release, calmness, sincerity and rest). Also the garden contains a central anchor point that is to contain three erected palm trees providing an internal and external landmark for the garden and a scenic point of interest. The location of the planting pockets and the various HG design patterns of the garden were defined in respect to the internal views from the house spaces and furniture.

5.2.6 The Design Evaluation Process

The evaluation stage should be regarded as a continuous adjacent process to the HG design process. Every step of the HG design process was evaluated by the HG professional, by the design team and finally by the members of the family. The HG design professional has two very important evaluations to continuously conduct and measure. The first of which is the evaluation of the expected healing capabilities of the garden, while the second would be the ability to design and create successful HG design patterns. The design team is to evaluate the healing elements of the design patterns. Finally, the family is to perform the final evaluation of the HG design concerning its, elements, materials, colours, and plants. It has to be clear that it is always easier to adjust or even change a design than to construct the garden, and then demolish part of it simply because it does not satisfy its user's needs.

5.2.7 Implementation Process

Private Healing Garden's implementation process is unique in that it involves the users in the construction of their garden. The process can be considered as a start towards the mediation stage or the healing process. The users should be involved in the various implementation stages. This sort of engagement is the core upon which the healing abilities of the garden are boosted.

5.3 The Mediation Stage of the Healing Garden

Healing gardens provide a new way of living, a regime change, for its users. It urges its users to engage in more activities. The mediation process of the garden starts

during the implementation process of the garden and thrives after its construction. The HG design team should apply continuous monitoring and observation of the garden elements and their affects on the users over a period of two years. An evaluation of the HG therapeutic program should be conducted and the required adjustments should be carried out.

6. Case Study Findings

Listed below are the findings the design team reported.

1. The user gained appreciation and satisfaction in being part of every step in creating the garden. Being involved in every detail created a sense of belonging between the user and the garden, even before the final construction stages were achieved.
2. Giving the family members the chance and freedom to create the views they wish to see from their windows or chairs initiated a sense of comfort or healing that directly associated itself with the garden.
3. The ability of the design team to identify the daily/weekly regime for each family member helped in personalizing the garden to uniquely fit each member's life. This allowed each user to self reflect and feel familiarity with the garden details. However, the team has recognised the need to hire a professional therapist (as a member of the assisting team) to conduct the study of the clients' daily/weekly routines, and to help in setting the therapeutic program of the garden.
4. The integration of natural art in the garden design helped in creating pride and care towards the garden.
5. The evaluation process is always highly subjective; this highlights the need for an objective tool that would help to certify the healing powers of a garden.
6. The stimulation of the user's senses can be recognised all around the garden. There are: different attractive views, various colours, sounds of water and birds, smell of flowers and fragrances, a variety of feelings from various textures, and finally, but not yet achieved, the ability to taste.
7. The design team did not announce their target of achieving a healing garden to the family. Nevertheless, the client's family expressed their deep satisfaction with the garden. This supports the notion of creating healing gardens as a deep form of sustainable landscape rather than creating a normal garden with a shallow form of landscape that lacks sustainability and focuses only on decor.
8. The implementation and construction costs of healing gardens are similar to that of any ordinary garden; and sometimes even lower. Nevertheless, the efficiency of the garden is highly beyond that of any ordinary garden. This proves that promoting a deep form of sustainable landscape is a matter of a design quality and knowledge rather than economic potentialities and budgets.

7. Conclusions and Recommendations

- The paper presents a practical research for promoting a sustainable form of landscape labelled as 'Healing Gardens'. The proposed HG design framework aims to guide the landscape profession for promoting healing gardens. The framework utilises the therapeutic design patterns (table 1) as a method for ensuring the achievement of the garden's targeted therapeutic objectives.

- The paper composes a genuine therapeutic manual (table 2), through which any landscape designer can compose a healing program for their garden.
- The proposed framework is designed to provide a friendly guiding tool rather than a compulsory systematic process. It is better portrayed as an open learning process where professionals are invited to perform any adaptations based on their expertise and knowledge.
- The practical application of the case study has proven the need to include a professional therapist as a member of the HG assistant design team.
- The paper proposed three stages for designing and promoting of HG. Starting with the pre-design stage, the HG design framework stage, and the HG meditation stage.
- Healing gardens have proved to be a deep form of sustainable landscape, a form that would benefit both human-beings as well as the natural environment. Landscape professionals have an obligation to further contribute to all forms of deep ecological landscape rather than being involved in the shallow decor form of landscape practised nowadays.
- Although this paper has contributed to the field of healing gardens (health and landscape); the field is still considered as a research gap area. Researchers should target such field knowing the great benefits different communities could gain. Health and healing are the core of any sustainable form of landscape. A number of issues have been raised during the research that could be identified as points for further studies. The most highly rated priority is the ability to develop a sustainable tool that would test and certify the healing power of any landscape design.

Notes

1. In presenting this case study, if the design team is referred to without mentioning the assisting team this addresses the main HG design team members only.
2. The paper focuses on the exclusive requirements of the HG design process, thus it skips the mutual points that are common for any ordinary garden design.
3. Frameworks presented are not compulsory or rigid. They many differ according to the different sites, and customer needs.

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