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Sustainable landscape and healing gardens: Introducing healing gardens as a deep form of sustainable landscape

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Abstract

Sustainable landscape has been pointed at lately, in most of the sustainability literature, as an ecological way for promoting sustainable development. The paper, in its search for an appropriate landscape typology to promote sustainable landscape, targeted the healing gardens landscape. The concept of healing gardens is an ambiguous concept that has been mistakenly interpreted by many as a sort of infirmary garden attached to a hospital or a health institution. The paper aims to investigate and test the ability of 'healing gardens' to contribute to the aim of promoting sustainable landscape. A comparative analytical study is to be conducted between the principles of sustainable landscape and the principles of healing gardens; aiming to prove and define the efficiency of healing gardens as a deep form of sustainable landscape.

Keywords: Sustainable landscape; Sustainable Landscape principles; Healing Garden Principles

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1. Introduction

The world is facing consecutive everlasting challenges and crisis nowadays. These current confrontations are characterized by a security crisis due to the global phenomena, a local security crises driven by political change, environmental crises led by unguided industrial implications, escalating poverty, social inequality, and a health crisis resulting in the death of millions (Morse et al., 2011; Quental et al., 2011). Stress is mainly caused from the lack of proper health. The long-term frequency of intensive stress is harmful, and is noted by academic professionals as a sign of ill-health (Stigsdotter, 2005). Studies prove that the environment surrounding a person is of great importance to his or her stress level and health. Stigsdotter (2005) asserts that the major affliction facing society today is the "mental conditions;" which include "fatigue reactions, or in popular speech 'burnout', fatigue, depression, anxiety, and various more serious diagnoses such as psychosis, schizophrenia, and borderline personality disorder" (Stigsdotter, 2005:10). There is an ongoing debate regarding the effect of population density on the degree of stress. On one side, high physical density is seen as a main source of stress thus imposing negative impact on health. Others perceive that density, such as crowded dwellings, has no relation with stress or peoples' health. This debate might be valid whilst studying cases of developed countries; however, the situation in developing countries is totally different. For developing nations, research has proved the adverse effects of densely populated areas on health. Impacts are detrimental due to the higher levels of crowding within dwellings, poor maintenance and inadequate infrastructure causing all types and forms of pollution and stress. In the case of Egypt, dense living and stress aren't just the case. The country is constantly suffering from: lack of security, occasional strikes, lack of power sources especially fuel and electricity, increasing unemployment rate due to the absence of proper job opportunities and inflation of basic necessary commodities. Some may argue that the current situation is of more importance than the focus on health, well-being, or peoples' stress levels. The Swedish government noted that good health has become the country's most important resource for sustainable development (Stigsdotter, 2005). Swedes are found to be living longer; however, the number of years a Swedish person lives in good health is decreasing. Apart from personal suffering, pain and aches the cost of increased ill-health creates a threat to the welfare of Swedish Country.

Developing nations are in crucial need for an approach that can introduce sound practical sustainability on action (Dave, 2011; Krank et al., 2010; Benson and Roe, 2007). With the economic limitation of these countries, the critical social and health crises, sustainable landscape (SL) can be seen as a panacea from heaven. But what is sustainable landscape? Is it an applicable approach or it is just a propagation of the sustainability rhetoric aims and hopes? The paper adopted a methodology that aims to investigate the history of sustainability and how the notion of sustainable landscape is related to it, aiming to define sustainable landscape and the principles of sustainable landscape. Also, the paper studies the principles of Healing Gardens (HGs) proving its ability as a social and environmental landscaping approach to promote health and well-being to human-beings and the environment. Finally, the paper investigates the ability of HGs to promote sustainable landscape through conducting a comparative correlative analysis between the principles of healing gardens and those of sustainable landscape.

2. Sustainability and sustainable landscape

The sustainability rhetoric was argued by many to be a vague and oxymoron term that can mean anything. It can be seen as an idea, a label so over-used that is easily manipulated (Benson and Roe, 2007; Andre Botequilha Leitao, 2002). The need for definitions, precision, and practical tools for the implementation of the term in the various fields is recorded (Krank et al., 2010). Knowing that sustainability is only an embracing principle for developing and managing nature and resources, it can only achieved if economy, ecology and culture are coordinated in a unique process where economic prosperity would take place without nature and human resources being deployed or destroyed (Nohl, 2001; Quental et al., 2011).

Reviewing the history of sustainability reveals the term to have conceived from three consecutive stages (Quental et al., 2011; Andre Botequilha Leitao, 2002; Krank et al., 2011; Dave, 2011):

- The first peak was conceived in the 1970s and was known as the start up stage. Sustainability was merely an environmental approach; the Stockholm Conference in 1972 was a recognizable milestone in this stage. One of the most successful contributions of the first sustainability era was the creation of the UNEP.
- The second stage witnesses the transformation of sustainability from its environmental concerns into sustainable development; with a shift of concern from emphasis on pollution and protection of natural resources to a more balanced position covering human, environment and economic concerns. This stage comprises two periods of significant international efforts to push sustainable development into the global level. The first was the Brundtland Commission report 'Our Common Future' in 1987. The second was in 1992, another breakthrough during the international conference of the UNCED with the Rio Declaration, Agenda 21.
- The third stage started around 1996 and was marked by a decline in global sustainable development. This stage contains an attention shift to implementation concerns. The institutional pillar was then added to the three famous pillars of sustainability.

Based on the former analysis and study of the history of sustainability, sustainable landscape can be asserted as one of the fundamental basis of the sustainability process. 'Sustainable landscape' can be seen as a call for minimizing impact on the natural environment (Antrop, 2006). As the first peak of the sustainability process was merely an environmental approach, the sustainability paradigm emerged based on concerns regarding depletion of resources and decreasing quality of human habitat (Andre Botequilha Leitao, 2002). During the second peak, the environmental issues got set back a little bit giving the way to the economic issues to be interpreted within the concept of sustainability (Quental et al., 2011). In the current peak the environmental issues has retained its position as the centre of the sustainability concept not undermining the importance of the other dimensions, socio-cultural and economic; also the term has developed to add the institutional dimension (Dave, 2011; Quental et al., 2011; Krank et al., 2011). Landscape can be seen as one of the most promising fields for promoting sustainable development (Morse et al., 2011; Andre Botequilha Leitao, 2002). However, the landscape of sustainability as asserted by Benson and Roe (2007): "is just as vast, difficult, slippery and mercurial as landscape itself" (Benson and Roe, 2007:4). Sustainable landscapes need to focus on damage occurring to the natural environmental not only to the present and past landscapes, but to the future landscapes as well (Opdam et al., 2006). It has to be recognized that there is no single

sustainable landscape state; however, there might be a whole set of types and forms of landscapes that are more or less sustainable (Opdam et al., 2006).

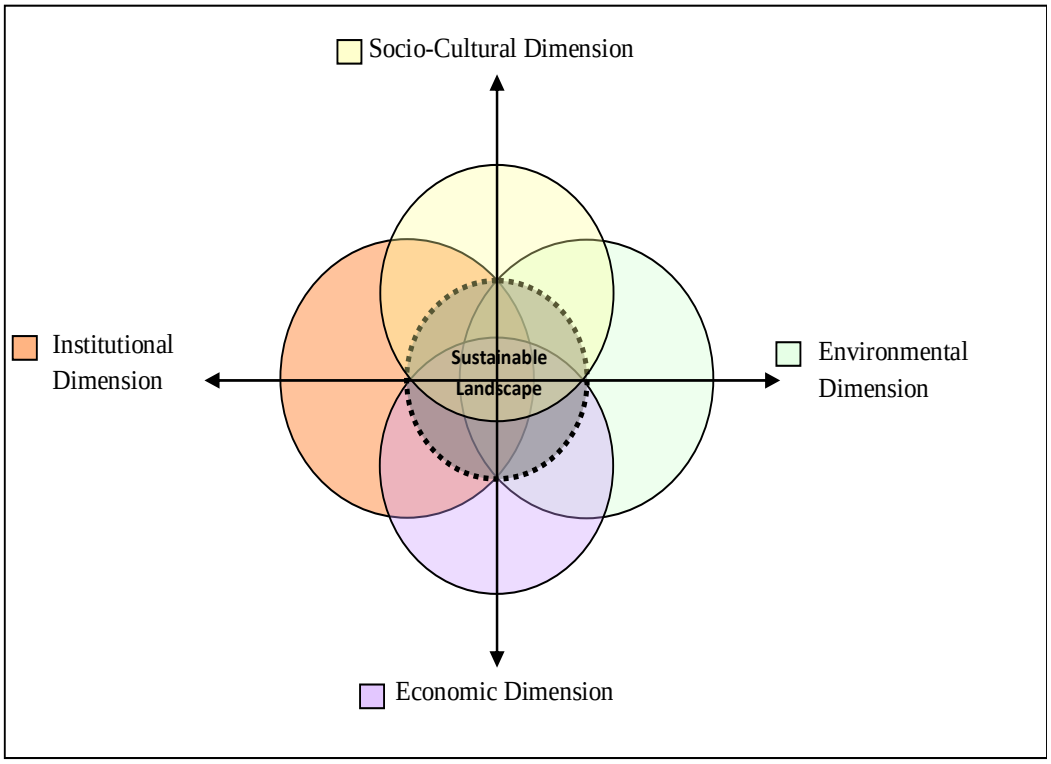


Figure 1.
Sustainable Landscape

Sustainable landscape can be regarded simply when nature can develop freely and spontaneously in an area or a place (Nohl, 2001), where the holistic basis of landscape implies the integration between natural and human aspects in the most possible sustainable manner (Antrop, 2006). Sustainable landscape might also be considered as a utopian goal for a very comprehensive process that integrates a 4 dimensional process in the most ecological manner for the sake of nature as well as mankind. Even if we speak about a beautiful landscape, the improvement of landscape aesthetics has to do with a sustainable development of landscape being integrated in a process aiming to promote the beautiful, the sublime, the interesting, and the plain landscape; rather than the shallow decorative unsustainable forms being in practice. For a landscape to be ecologically sustainable (Figure 1), the landscape structure should support the ecological, social and economic process required while maintaining the institutional requirements to deliver biodiversity services for present and future generations (Opdam et al., 2006; Antrop, 2006; Bassi, 2011).

3. Principles of sustainable landscape

During the last decade, sustainable landscape has been noticed as a promising field for promoting sustainable development (Morse et al., 2011). The paper adopted definition for the term sustainable landscape as a development that is economically functional, ecologically sound and socio-cultural useful in a way that

economic benefits can be gained without nature and resources being deployed. The definition devoted the *benefit and the well-being of the humankind* and the environment as the core interest of the term (after Nohl, 2001: 227), not undermining the institutional dimension (Dave, 2011; Quental et al., 2011). This part of the paper aims to study and define the principles of sustainable landscape, classifying them under the four main pillars of sustainability.

The paper aimed, through a profound literature analysis, to define the principles of sustainable landscape in a practical attempt to provide guidelines for promoting and creating sustainable landscape. Opdam et al. (2006) have set three main principles for achieving sustainable landscapes: the first of which is the ability to achieve a condition of stability in physical and social systems. Secondly, the ability of the landscape to support the ecological, social and economic process required to deliver goods and services. Thirdly, is the ability to involve land managers, policy makers and other stakeholders in the decision-making (Opdam et al., 2006: 323). Nohl (2001) put forward the importance of 'aesthetic consideration' as one of the main principles for achieving sustainable landscape developments (Nohl, 2001). The achievement of sustainable landscape development requires the ability to create, manage and preserve a continuous decision making process (Opadam et al., 2006; Andre Botequilha Leitao, 2002). In addition to the former defined principles, Thompson and Sorvig (2008), in their book entitled 'Sustainable Landscape Construction,' have defined 10 principles for achieving sustainable landscape. Their contribution is well noticed and is considered of the core principles of sustainable landscape. Table 1, report on the result of the analytical study regarding the principles of sustainable landscape. The study analyzed 5 main researches that aimed either to define the principles of sustainable landscape or to promote sustainable landscape, based on theoretical and practical knowledge. The selected studies where: Thompson and Sorvig (2008), Benson and Roe (2007), Nakano (2008), Aston and Jordon (2009), Klett and Cummins (2013). Table 1 presents the final proposed principles of sustainable landscape development.

4. Healing gardens important for the human-kind

Various human activities produce pressures that alter the environment, leading to negative impacts on the human health and the environmental eco-system (Coelho et al., 2010). Landscape can be seen as the mitigation process in which health and well-being can be achieved through the sustainability process. Greenery has the potential of inducing an active living and increasing public health. Overtime, it has been noted that greenery is essential for the health of the residents. The idea of healing is based on nature's ability to create a spiritual power on its users. Such power would encourage ones' cognitive brain to relax; once this act occurs, the old part of the brain can initiate the therapeutic healing powers of nature. Vertical relation does exist among the typology of sustainability leading to that of sustainable landscape. However, among the chorology, the horizontal level of various forms of landscapes that can assist the achievement of sustainable landscape are those of the Healing landscapes and healing gardens.

Table 1. Principles of Sustainable Landscape

Principles of Sustainable Landscape	Thompson and Sorvig (2008)	Benson and Roe (2007)	Nakano (2008)	Aston and Jordon (2009)	Klett and Cummins (2013)
Environmental Dimension					
Keep healthy sites healthy (survey and knowledge, minimize utility damage, protect site, preserve healthy top soil)	√	√	√	√	√
Heal injured sites (restore landscape structurally, restore damaged soils, uses appropriate local vegetation)	√	√	√	√	√
Favour living flexible materials (accentuate functional uses of the natural site components, construct for and with plants, rely on plants to sustain)	√	√	√	√	√
Respect the water of life (collect and conserve water, irrigate intelligently and sparingly, reuse Gray water, restore natural wetlands, purify water at every opportunity)	√	√	√	√	√
Encourage wildlife (support and enhance all forms of wildlife)		√	√	√	√
Minimize the use of Hardscape elements (plan and design to reduce paving, whenever possible utilize natural earth materials, use anti-glare materials, minimize Hardscape to less than third of the total area)	√		√	√	√
Consider local climate; origin and fate of materials (use appropriate machinery and fuels, use fertilizers sustainably, support on site recourses, adapt to using native plants)	√	√	√	√	√
Socio-cultural Dimension					
Social and spiritual satisfaction		√	√		
Use lighting efficiently (celebrate light, respect darkness)	√	√	√	√	√
Enhance Soundscape through planning (understand noise terminology, fight noise with noise, utilise noise barriers,)	√	√	√	√	
Accentuating the aesthetic values (the beautiful; the sublime; the interesting; the plain)		√	√		√
Economic Dimension					
Know the cost of energy over time (efficient management of energy, machine, tools and labor, utilize natural life-cycle)	√	√	√	√	√
Economic feasibility and benefits (manage the environmental and human costs and benefits, Protect natural assets)	√	√	√	√	√
Institutional Dimension					
Maintain to sustain (knowledge as sustainability, appropriate construction machinery, apply integrated management)	√	√	√	√	√
Involve all stakeholders in decision making (Involve the community, expect change, coordination and follow-up)		√	√		

(after; Thompson and Sorvig, 2008; Benson and Roe, 2007; Nakano 2008; Aston and Jordon, 2009; Klett and Cummins, 2013)

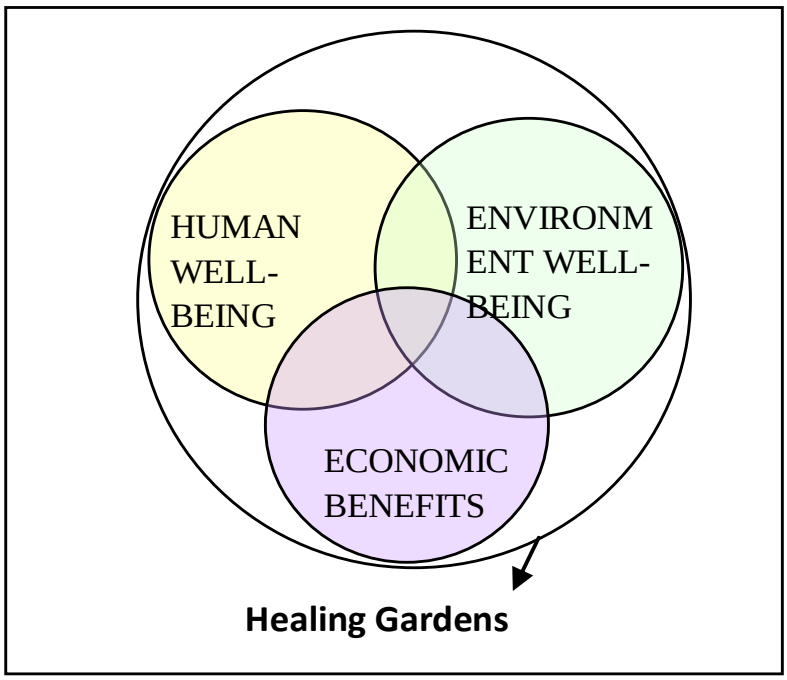


Figure 2. Healing Gardens

Evidence from research supports the notion of nature as a healer (Marcus and Francis, 1998). Studies confirm that inhabitants could benefit from nature, greening and landscape through direct contact with such an environment. Every garden has a healing effect even if it is not present in its design intentions (Ji, 2010; Dargan et al., 2007; Marcus and Barnes, 1999). The capability of gardens to have a healing influence, on the inhabitants, stems from their effectiveness in releasing stress, healing souls and restoring emotions. The most important factor concerns the duration of visits to urban green spaces. It is thus of great importance to integrate such elements with the elements of city planning, thereby creating a city green master plan. This plan is a crucial step for sustaining the health and well-being of the communities (Ji, 2010; Meijer, et al., 2011). Visiting green areas, parks and greenways for long periods is important for maximizing the effects these areas could have on their visitors' perceived health (Rawlings, 1998; Stigsdotter, 2005; Ji, 2010). Health is a core element in sustainable landscapes. The paper adopted the definition of healing gardens (Figure 2) as a broad collective term that encompass any type of landscape that aims to promote health and well-being to the human life and the adjacent environment within the urban context. Franke, Vapaa, and Stigsdotter among others assert that: among the true path to real sustainability comes the ability to promote health to human beings and the environment (Franke, 1996; Vapaa, 2002; Stigsdotter, 2005; Foley, 2010). Thus one of the main objectives of sustainable landscape, not decorative landscape, would be the ability to promote and support human health and well-being. That would and could be achieved through the ability to design, promote and implement healing landscapes (Simson, 1998; Tyson, 2007; Stigsdotter, 2005; Dave, 2011). Based on the former analysis HGs can be regarded as a sustainable form of landscape with three main pillars as presented in Figure 2. The first pillar stands for the health and the well-being parameters of the human

beings. The second pillar stands for the restoration effect and the well-being of the local environment. The third pillar will be the economic benefits of the landscape profession itself; sustaining business and more economic benefits for humans and the environment.

5. Principles of healing garden

Noticing the core objective of sustainable landscape as the ability to promote and support human health and environmental well-being, such an objective is achieved through the ability to design, promote and implement urban healing landscapes (Vapaa, 2002; Stigsdotter, 2005; Tyson, 2007; Dave, 2011). Table 2 presents the principles of Healing Gardens based on a profound theoretical and practical analysis of a number of core studies in the field of healing gardens and healing landscape. The principles of HGs where found to cover various aspects of social, environmental, economic and institutional dimensions (Table 2).

Table 2. Principles of Healing Gardens

Principles of Healing Gardens	Marcus & Barnes (1999)	Vapaa (2002)	Stigsdotter (2005)	Stark (2013)
Environmental Dimension				
Maintain the spiritual character of the site	√	√		√
Provide relief from stressful environment	√		√	√
Heal and support the local environment		√		√
Encourage wildlife in the garden	√	√	√	√
Reinforce the cycle of life	√	√	√	√
Use the healing power of water	√			√
Promote respect and support to nature	√		√	√
Prevalence of green materials (healing powers of plants)	√		√	√
Socio-cultural Dimension				
Provide serene (peace, silence and care)	√	√	√	√
Accentuate the aesthetics values of the design (avoid straight lines and excessive use of symmetry, add colour and play with light,)	√	√	√	√

Simulate and accentuate the users senses	√	√	√	√
Encourage social and spiritual integration between human and environment	√	√	√	√
Integration of art to enhance the spiritual capabilities of the garden	√	√		√
Minimize intrusion and ambiguity (simplicity of design, thinking small round and natural)	√	√		√
Provide positive destruction and contrast, variety of activities, spaces and attractions	√	√	√	√
Provide security, privacy and pleasure	√		√	√
Attract the attention and care of user(s)	√	√		
Economic Dimension				
Boosting the profession revenues				√
Human and environment benefit wise	√	√		√
Utilize the healing powers of earth (the emphasis of natural and local features and materials)	√		√	√
Institutional Dimension				
Involving the various stakeholders in the creation process		√		√
User(s) continuous management and maintenance	√	√	√	√
Provide a continuous adaptable mediation process		√		√

(after; Marcus and Barnes, 1999; Vapaa, 2002; Stigsdotter, 2005; Stark, 2013)

6. Comparative analytical study for principles of SL and HGs

The paper conducted a comparative analysis between a set of principles for sustainable landscape and those of healing garden designs (Table 3). As presented in Table 3, healing gardens has proven as a sustainable form of landscape where a great correlation between principles of healing gardens and those of sustainable landscapes is recognized. The final column of the table presents the sum of the expected number of positive contribution from the HG's principles toward each principle of SLs.

Table 3. Correlation Analytical Study for Principles of Sustainable Landscape and Healing Gardens

HGs Principles / SL Principles	Maintain site spiritual character	Provide relief form stressful environment	Heal and support the local environment	Encourage wildlife	Reinforce the cycle of life	Use the healing power of water	Respect and support to nature	Prevalence of green materials	Provide serene	Accentuate the aesthetic values	Stimulate the users senses	Social and spiritual integration bet human and environment	Integration of art	Minimize intrusion and ambiguity	Provide positive destruction and contrast	Provide security, privacy and pleasure	Attract users attention and care	Boosting the profession revenues	Human and environment benefit wise	Utilize the healing power of earth	Involving the various stakeholders	Continuous management and maintenance	Adaptable mediation process	**Number of positive contribution of HG principles to SL Principles**
Environmental Dimension																								
Keep healthy sites healthy	√	√	√		√	√	√	√	√	√		√			√	√	√		√	√		√		16
Heal injured sites	√	√	√		√	√	√	√	√	√		√			√	√	√	√	√			√		16
Favour living flexible materials	√	√	√		√		√	√	√	√	√	√			√			√	√	√				14
Respect the water of life	√	√	√		√	√	√		√	√	√	√			√	√			√					13
Encourage wildlife	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√			√	√		√		18
Minimise the use of Hardscape	√	√	√	√			√	√	√	√		√			√					√				11
Consider local climate; origin and fate of materials	√	√	√	√	√	√	√	√	√	√		√			√	√		√	√	√				16
Socio-cultural Dimension																								

Social and spiritual satisfaction	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	23
Use lighting efficiently	√	√			√	√			√	√	√	√	√	√	√	√				√			√	14
Enhance Soundscape through plan.	√	√		√		√	√		√	√	√	√		√	√	√				√			√	14
Accentuating the aesthetic values	√	√	√	√	√	√	√	√		√	√	√	√	√	√	√			√	√		√	√	19
Economic Dimension																								
Know the cost of energy over time	√		√		√		√									√	√	√	√		√		9
Economic feasibility and benefits	√	√	√	√	√		√		√			√				√	√	√	√	√			13
Institutional Dimension																								
Maintain to sustain	√						√									√			√	√	√	√	7
Involve all stakeholders	√		√				√		√		√	√				√				√		√	9

7. Findings and recommendations

The paper managed, through conducting a profound theoretical analysis, to define principles of both sustainable landscape and urban healing gardens. The defined principles where utilized in a comparative analytical study that aims to predict the relation between healing gardens and sustainable landscape, and the ability of healing gardens to promote sustainable forms of landscapes. Among the findings of this study are the following:

- Based on the results of the comparative analysis conducted earlier, Table 3, Healing Gardens have proved to be a sustainable form of landscape (Figure 3). However, as presented in Figure 3, an expected shift of interest regarding the ecological and socio-cultural human dimension has been noticed.

- Landscape design professionals are challenged with designing and building according to health requirements. They have to aim for providing comfort and dignity resulting in a better quality of life, however; the real challenge is that there is no ready formula for a perfect environment.

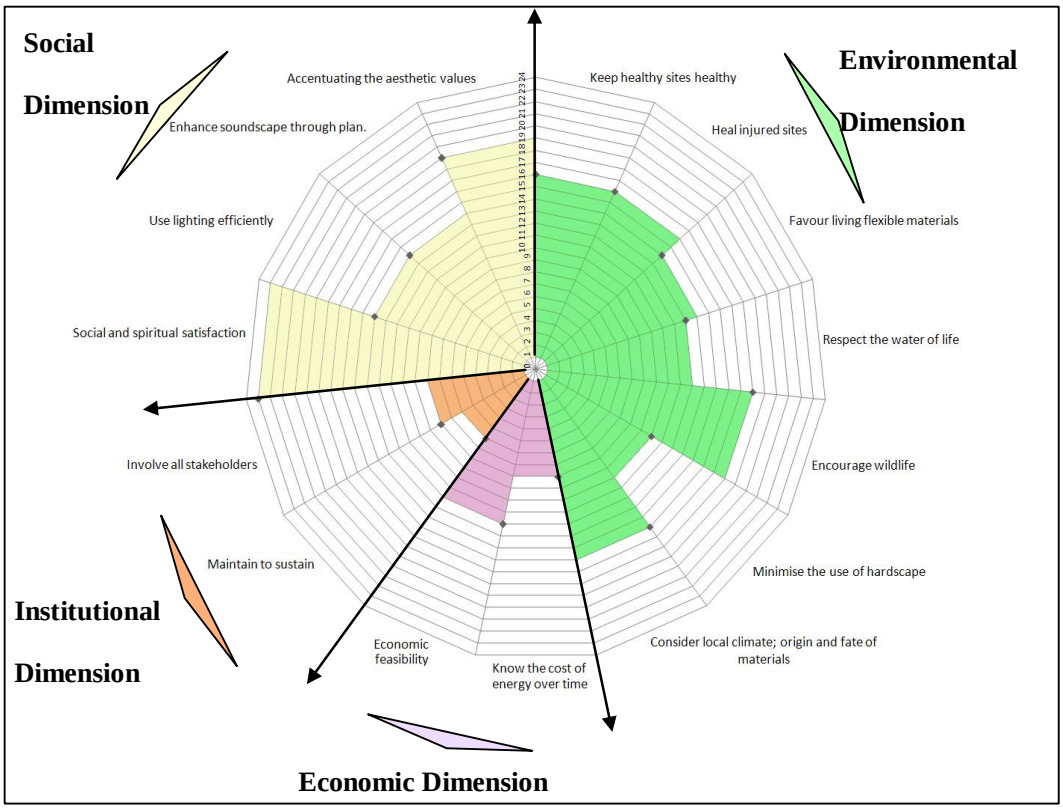


Figure 3. Graphic presentation for the correlation of principles of SL and HGs
Based on the results of the correlation analytical study Table 3)

- Landscape architecture is both research and practical oriented to the shaping of the outdoor environment, based on peoples' needs. Landscape can be viewed as a form of applied art, with a target for promoting health. This art is given shape based on its ability to create integration between the design process and the needs and expectation of the users; thus creating the required environment.
- It is so important to understand the real importance of landscape as a source of rehabilitation and health promotion and not as a decorative source as most conceived, designed and implemented nowadays.
- Health can be regarded as a sin quo for any form of sustainable development; Healing Gardens boost the ability to promote better health in equal terms.
- Healing gardens and healing landscapes, as presented in Figure 4 have proven to be a deep socio-environmental form of sustainable landscape. Figure 4 present the high trends of the 'Healing Gardens' concept to move deeply in the direction of the socio-environment sustainability dimension.

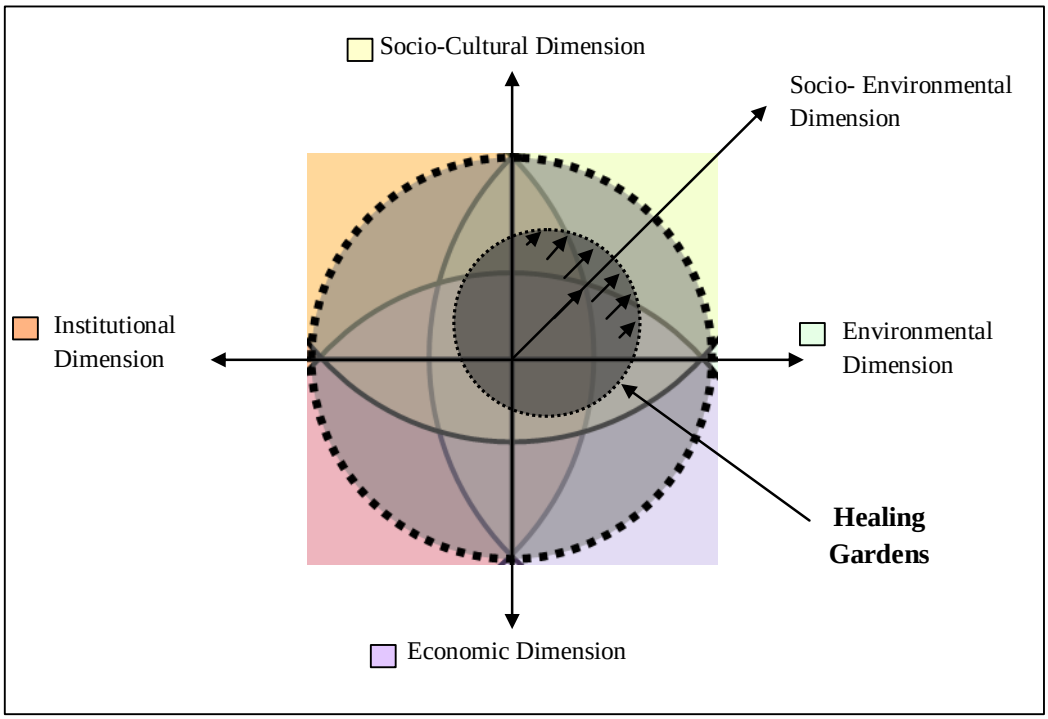


Figure 4. HGs as a deep form of SL
(Based on the findings of Figures 1 and 3 and Table 3)

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