Aesthetic Challenges in the Field of Sustainability

Art, Architectural Design, and Sustainability in the Projects of Michael Singer

Else Marie Bukdahl

Abstract: *One of the biggest issues every country has faced in the last four decades is the following: what can we do to protect our beautiful world? What have the visual arts and architectural design done to regenerate it? In the new millennium, however, the focus on the relationship between nature, architectural design, and sustainability began to occupy an increasing amount of space in both art and architecture. In the early 1970s and the following decades, several artists began to tackle this problem, notably the American artist and architectural designer Michael Singer, who placed new creations relating to the relation between art, architecture and sustainability at the top of his agenda. This became a key challenge in his small and big projects, which were "woven into nature" and were inspired by concepts of beauty in traditions, such as Shinto, Zen aesthetics, and ancient Chinese gardens. Michael Singer's teaching practice at several art and architectural schools made him realize that creating new artistic interpretations of the frequently neglected concept of nature and beauty was not sufficient. It was also important to regenerate nature and create landscape and architectural projects in which artistic and ecological goals were integrated in the construction process. An example is the large Waterfront of West Palm Beach and Sculptural Biofiltration Wall in Coconut Creek, Florida. The originality of Michael Singer's projects lies in their interconnecting art, architectural design, and sustainability.*

Keywords: *ecological art, sustainability, art and nature, regeneration of nature and urban space, landscape art, biofiltration, somaesthetics, atmospheric turn.*

One of the biggest issues every country has faced over the past four decades has concerned protection of the beautiful world, which we have polluted so profoundly. What have visual arts and architectural design done to preserve and regenerate the environment? In the past 20 years, both visual artists and architects have worked to solve these problems (Kagan & Kirchberg, 2008; McGrath, 2013). When did this development begin?

Much more than poetry has, visual art has focused on interpreting the changing aspects of nature and the complicated organic growth processes underlying it. Some of the earliest endeavors

to protect nature and demonstrate greater care in the use of its resources were conducted in the field of landscape art and in attempts to create an earthly paradise, such as in Chinese, Japanese, Arabic, and English Romantic gardens, (Bukdahl, 2011, pp. 37–41) (Figs. 17 and 18).

1. The Birth of Ecological Art

Environmental art and ecological art emerged in the 1960s. In America, environmental art or land art was founded by artists such as Robert Smithson, Michael Heizer, and Walter de Maria, who used the site as the basis of creative activity, whether on land, in the water, or in the air. Robert Smithson named the new artform "dialectical landscape" because "people are not dualistically separated from the landscape, rather they are always immersed within it." Moreover, the terms "mind" and "world" or "mind" and "body" were not opposites but "fused wholes that mirrored each other." Robert Smithson's concept was also influenced by Zen Buddhism, in which body and mind are unified (Smithson, 1979, pp. 117–128; Gondon, 1998, p. 46) and by John Dewey's notion of the "body-mind" as an essential unity (Costa, 2017). He pointed out that art is not necessarily a single object but a landscape that works in contrast to its surroundings to provide meaningful content and reveal "layers of the earth's history" (Smithson, 1979, p. 119). This idea was expressed in works such as *Spiral Jetty* (1970), where he used natural materials in the area to create an island that was shaped as a spiral, which was inspired by the growth formations of red crystals. In this project, he imbued a vast, seemingly insignificant desert with a new identity and profile. Environmental remediation was not realized in Smithson's large projects. However, like his wife, Nancy Holt and other Land artists, he "often positioned large-scale works outside the traditional gallery setting, looking to the expanses of the western United States as a terrain rich in sites for massive interventions that would call attention to ecology and natural forces."[1]

Beginning in the 1970s, two continental artists, Joseph Beuys and Friedensreich Hundertwasser, created works that inspired environmental ethics. One of Beuys' unique characteristics was his capacity for "rebuilding rather than conquering new territories, discovering rather than inventing, therapeutically improving rather than replacing."[2] An example is a project that was launched in 1982 at Documenta in Kaswsel, in which 7,000 trees were planted, which he called a "social sculpture" (Schulz, 1986, p. 32) and which he described as follows:

> *I believe that planting these oaks is necessary not only in biosphere terms, that is to say, in the context of matter and ecology, but in that it will raise ecological consciousness – raise it increasingly, in the course of the years to come because we shall never stop planting.* (Stüttgen, 1982, p. 1)

Part of the project was executed in New York on West 22nd Street between 10th and 11th Avenues, and it continues to inspire young artists today.

Friedensreich Hundertwasser worked with concepts of green architecture, ecology, and "urban gardening," particularly in the early 1980s. These were visualized in both his paintings and his installations as well as in buildings such as *The Hundertwasser House* in Vienna (1983–1986), which he described as follows: "It features undulating floors (an uneven floor is a melody to the feet), a roof covered with earth and grass and large trees growing from inside the rooms,

1 Smithson's *Bingham Copper Mining Pit—Utah Reclamation* Project is an example. See Jennifer Padgett, "On Robert Smithson, http://notations.aboutdrawing.org/robert-smithson/

2 De Domizio Durini, L. *Who Is Joseph Beuys*; Venice International Performance Art Week: Venice, Italy, 2014. http://www.veniceperformanceart.org/index.php?page=230&lang=en

with limbs extending from the window" (Karberg & Jalvig, 2014, pp. 36–38). This building was aimed to make the world a better and greener place and to teach people to work with green technology.

After Robert Smithson's breakthrough, several other prominent American artists, such as Michael Singer, Alan Sonfist, and Newton and Helen Mayer Harrison (or "the Harrisons"), began to engage in shaping the landscape based on nature. They could be regarded as the pioneers or forerunners of *ecological art*, which was later called *sustainable art* or *green art*. As individuals, they were quite different, but they shared an interest in creating works that were in nature and/or restoring nature, changing it as little as possible. They started to deal seriously with the aesthetic and technological challenges in the field of sustainability. Some were also influenced by the "body-mind connection" in Zen Buddhism. They created a new concept of art, which they also called a new concept of beauty, which inspired artists and architects in the following decades, focusing on the problems of sustainability in the fields of art and architecture (Baker, 1983, pp. 73–84).

2. Michael Singer. Art as Process and Experience of Ritual Interaction

The artist Michael Singer was the first among seminal figures in the Environmental Art movement to create poetic projects in nature through outdoor and indoor sculptures. He later designed many major environmental projects and collaborated with several architects in the design of innovative spaces, buildings, and infrastructure, which focused on light, shadow, materiality, sustainability, and sculptural detail.

In the 1970s, Singer worked in remote and vulnerable natural areas in the US, building projects that communicated the important message of sustainability through their artistic form, their content, and "natural" materials. He described them as "woven into nature" (Hjort, 2011, p. 98). He wanted to recall what Lucy R. Lippard named "the function of art, by looking back to times where art has been inseparable from life" (Lippard, 1983, p. 4) and where "human activity wouldn't be destructive and would provide a positive interface with the natural environment" (Grande, 1998, p. 3) In 2010, he defined the following key principle of motivation:

> *Throughout my life the natural world as opposed to the human-built environment has been the inspiration and focus of my work. From my perspective western religions and cultures have evolved from their origins into dichotomy, a separation between humans and the natural world. In the western model humans have become observers, managers, as well as fearful and wishful controllers of nature. Early on in my work I searched for and studied cultures that represented a different perspective; humans as participants who are actively integrated with nature in every aspect of their lives.* (Bukdahl, 2011, p. 15)

In this excerpt, he reveals the reason that his artworks were inspired by concepts of beauty in Japanese Shinto and Zen aesthetics, Chinese gardens, and aspects of native North and South American cultural and artistic practices. He described art as a process and experience of ritual interaction. His interpretation of ritual was inspired by centuries-old views of ritual practices of native culture throughout the world, in which art, nature, and the human world were closely connected. However, there was no metaphysical perception in his concept of the ritual.

His installation, Lily Pond Ritual Series 7/75 (1975) (Fig. 1) clearly demonstrates a poetic and intimate relationship between art and nature. The finely tuned structures of the branches bend

in rhythmic sequences, and the light effects continuously change in character. They resemble calligraphic patterns. The project was constructed using thin natural elements, bamboo, and jute rope. Hence, it is so closely linked to its surroundings that it appears to be a natural extension of them. In this fragile project, we find echoes of Shintoism, which is the fountainhead of Japanese culture and aesthetics, emphasizing the unity of nature and the intimate interactions between art, nature, and humanity. These values acquired a deeper meaning when Zen Buddhism entered Japanese culture and a dialogue with Shinto was begun. The evocative project First Gate Ritual Series 5-76 (1976) (Fig. 2) was formerly located in the Nassau County Museum of Fine Art in Roslyn, New York. It resembles two rafts of oak and fieldstone. Their harmoniously tuned curvilinear rhythms create a complex tension that draws the viewer's attention both to its impressively unique character and to the surrounding landscape, particularly the contours of the trees, the movement of the wind, and the reflections on the water. Michael Singer organized this work so that its "moment of magic" appears in the late afternoon when this magic would be enhanced by "the shimmering reflections in the dark water" (Forgey, 1978, p. 67). The title of the project refers to the bowed entry portals of Japanese Shinto shrines. They are called *torii*, which means "where the birds reside." They lead people in a very welcoming way into the shrine. It symbolizes Singer's desire to create open and centerless compositions that inspire the viewer to gain a greater understanding of the close relationship between art, nature, and humankind while learning to respect nature, which also is a central value in Shintoism. He may have been alluding to the oldest existing wooden *torii*, which is *yōbu torii* at Kubō Hachiman Shrine in Yamanashi Prefecture, which was built in 1535. Michael Singer visited Japan twice in the 1980s. He said that he would never forget having had the possibility of visiting "many of the special shrines and temples all over the country….especially Shinto."[3] His poetic project, First Gate Ritual Series 5-76, also contains allusions to the Peruvian Uro Indians, who lived on floating islands made of reeds, which they continue to do today. Their traditional houses are small and skillfully braided with reeds. The Uro Indians favored the use of materials, such as reeds, which they found in the immediate vicinity to create an artificial island that functioned like a boat floating on the water and sailing at a slow pace (Fig. 3). The floating island was merged such that it appeared to be an artistic whole. It is not surprising that these constructions by the Uro Indians have been dubbed "the seventh hidden wonder of South America" (Foer, 2011).

3 Unpublished letter to E. M. Bukdahl from Michael Singer, 31 May 2020.

Figure 1 Michael Singer. *Lily Pond. Ritual Series. 7/75*. 1975. Courtesy of Michael Singer Studio

Figure 2 Michael Singer. *First Gate Ritual Series 5-.76*. 1976. Courtesy of Michael Singer Studio

Figure 3 *The Uros floating islands as seen from the air, about 5km from the coast of Puno, Peru.* Image courtesy: Wikipedia. Org/wiki.

Since the 1980s, Michael Singer expanded his artistic concept through the creation of sculptures such as Cloud Hands Ritual Series, 80/81 (1980–1981) (Fig. 4), which represents a complex world in which all the elements are situated in a harmony of formal elements and materials—wood and stone—that are separate in nature. They have an independent presence. However, after many close studies of nature's structure, meditations on the role of materials in local culture, and artistic experiments, Michael Singer has succeeded in creating a richly faceted and simultaneously harmonious relationship between horizontal and vertical beams on one side and stones on the other. According to Øystein Hjort, "through balanced interplay the potential conflict between the two is resolved; they are independent of each other yet uphold—visually and structurally—each other" (Hjort, 2011, p. 96). Michael Singer described the harmonious interaction between the beams and the stones as follows: "The rocks develop a presence apart from their structural function. The ambiguity between that wood and stone lessens. The wood clearly supports certain stones." Concerning the symbolic value of the forms in the sculpture, he added, "I sense these stones as symbols containing references to mountain, river, clouds, natural elements" (Waldman, 1984, p. 21). Interwoven in the expressive and symbolic power of the forms in Michael Singer's sculpture is an inspiration by the Japanese ideal of beauty, *wabi-sabi*, which is characterized by simplicity, harmony, connection of body and mind, and the love of nature. *Wabi-sabi* is an ancient Japanese aesthetic philosophy rooted in Zen Buddhism, which emerged in the 14th and 15th centuries. Its central idea is that being surrounded by natural, changing, unique objects, and artworks helps connect us to our real world and to escape potentially stressful distractions. Michael Singer's sculpture resembles a Zen garden, such as Ryōan-ji (Fig. 5) in Kyoto, which is world in microcosmic form, unfolding and casting our lives in a broader perspective and introducing immersion as a central part of the way we are stimulated to experience beauty. Ryōan-ji was built in the Heian period (794–1185) when Buddhism came to Japan with Taoism. These were highly influential at that time, particularly the Buddhist concept of the link between beauty, meditation, and nature, which was also prevalent in the Zen version of Buddhism. In Ryōan-ji, which is also called "a dry garden" or "a Zen garden," the symbolism in the microcosmos is similar to that encountered in the sculptures of Michael

Singer. In this symbolism, small stones represent water, stone formations, foliage, or distant mountains and rocks represent waterfalls. In these gardens, the visitor can sit quietly while being immersed in looking at the garden and experiencing that art—in this case, the garden—can be a peaceful journey. However, Michael Singer has used Japanese Buddhist symbolism to express his own symbolic forms: "I appreciate Japanese culture and use my knowledge of it to reinforce the feelings I have in my own culture" (Hjort, 2011, p. 103). He also was inspired on a personal level by the Buddhist concept of art's ability to develop in the viewer an awareness of a harmonious relationship with nature by showing the interrelationships between humans and their surroundings. Buddha occupied natural surroundings, particularly forests that were close to lakes and flowers. Thus, in his teaching, he often described various types of people as different kinds of lotus flowers (Kabilsingh, 2010, p. 36). It is a poetic way of describing the link between humans and nature; therefore, it could have inspired Singer's artistic visualization of this connection. In Cloud Hands Ritual Series, 80/81 (1980–1981), Singer created a harmonious symbolic unit that was rooted in his own culture, particularly the remote rural environment of Vermont. This sculpture elicits the emotions and thoughts of viewers, which are marked by their own experiences.

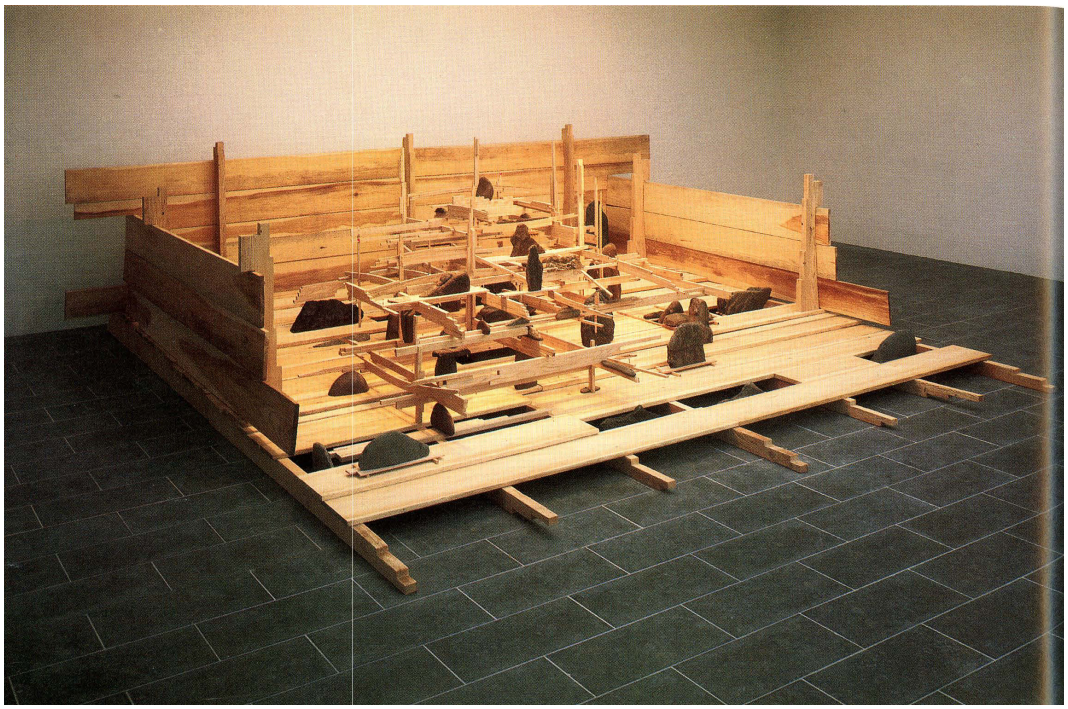


Figure 4 Michael Singer. *Cloud Hands Ritual Series. 80/81* (1980-81). Pine, ash and stone. 5.11m x 1.45m. Louisiana. Museum of Modern Art, Humlebæk, Denmark. Image courtesy: Louisiana Museum of Modern art

Figure 5 Ryōan-ji. *Zen garden*. Heian period. 794-1185. Kyoto, Japan.
Image courtesy: Wikipedia org/wiki.

Since 1981, Michael Singer has created many sculptures that are marked by an internal relationship. In these works, he developed the form that characterizes *Cloud Hands Ritual Series, 80/81*. This includes Ritual Series Map of Memory (2001–2010) (Fig. 6), which cannot be viewed from one angle but requires a multiplicity of viewpoints to be made intelligible. It therefore symbolizes our open world. The bodily experience and the way our gaze wanders across, around, and over the sculpture requires time, which potentially increases the perceptions, experiences, and insights to be gained in our encounter with it. The wood and stones tell and retell the story of Michael Singer's homeland in Vermont. However, its system of interrelationships, its many openings, and its complexity are a visualization of our surrounding world and of our folded space. The walls of the sculpture do not keep viewers out but invite them to visually enter the sculpture. Michael Singer commented that it is "like a Shinto shrine that has its fences and building moved from one sacred site to its identical neighboring site. The layers of fences invite you to imagine what lies beyond and behind."[4] This is a reference to Shinto architecture in ancient Japanese art and architecture. It also contains a parallel to the cornerstone of Richard Shusterman's somaesthetics, which he defined as "the critical, ameliorative study of one's experience and use of one's body as a locus of sensory-aesthetic appreciation and creative self-fashioning" (Shusterman, 2000, p. 144). Michael Singer found echoes of the concept of bodily experience and the close connection between body and mind in ancient Japanese culture, which occupies a central position in somaesthetics (Gongkai, 2015, p. 52, pp. 81–82).

4 Unpublished letter to E. M. Bukdahl, from Michael Singer, 13 March 2011.

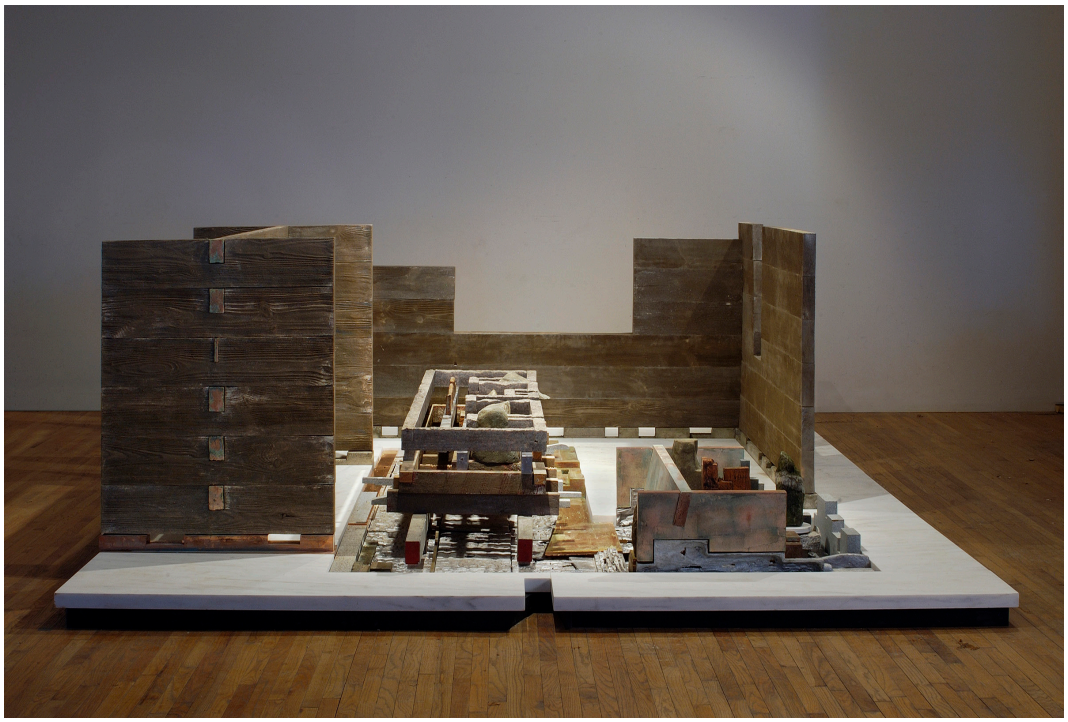


Figure 6 Michael Singer. *Ritual Series Map of Memory* (2001-2010). Pine, cast concrete, bronze, copper, aluminum, lead and stone. 3,56 x 4.57 x 1.52 m. Collection of the artist. Photo Credit: David Stansbury. Courtesy of Michael Singer Studio

In encountering the sculptures and nature projects created by Michael Singer, it becomes clear that the language of form can communicate experiences and knowledge, which written and spoken words are unable to express adequately. The written word never coincides with artistic expression. Therefore, as the French philosopher Michael Serres said, sculptures "precede languages" and sculptors "lay their hands on what is not a sign, on the stable mass…. That guarantees that a thing exists that is lodged in space, that withstands time…. Radically foreign to our scheming" (Serres, 2015, p. 23, p. 52).[5]

Through his projects in nature and his sculptures, Michael Singer opens our eyes to the intricacy and beauty of the natural world. He also creates a new vision of nature and visualizes a harmonious artistic totality that echoes American Indian and Japanese art and culture through his artistic process. This could be described as a concept of beauty based on working in and with nature as well as the dream that the human and natural worlds could be woven together. He fulfills Henri Matisse's demand for artists to work with inspiration by nature: "An artist must possess nature. He must identify himself with her rhythm, by efforts that will prepare the mastery which will later enable him to express himself in his own language" (Chipp, 1968, p. 140).

5 Originally published in French as *Statues: Le second livre des fondations.* Editions Julliard, Paris 1987, p. 49 and p. 100.

3. Michael Singer: New Interactions Between Art, Nature, Urban Space, and Humanity

While teaching at various art and architectural schools, Michael Singer realized that it was not sufficient to create new artistic interpretations of frequently forgotten aspects of nature and concepts of beauty to inspire viewers to both protect endangered nature and experience its moving beauty. It was also important to regenerate the nature we had destroyed and to create small and large art, landscapes, planning, and architectural projects, in which the artistic goal was not decoration but the integration of the entire planning and construction process. He was well aware that technological problems often overshadowed the aesthetic issues that the new ecological art, projects, and buildings had raised. He thus expanded his concept of art or his concept of "aesthetic beauty" to create an organic relationship between art, architectural design, and sustainability. He stressed that his "design philosophy is intended to help our ecosystem" and "should encourage change in a positive way that can promote health and growth" (Engoren, 2010, p. 30). He connected his artistic practice to other disciplines in the fields of architecture, design, and technology. His gardens, houses, and infrastructure are, like his sculptures, the result of his intense study of the relationship between art, design, the natural environment, and the connection of these to the human world. He has always stressed that there is a close relationship between his sculptures and large projects, which have all strived to "create meaning for a place," provide it with an aesthetic quality, and, if necessary, regenerate the environment (Bukdahl, 2011, p. 32).

To apply this concept, he established an interdisciplinary institution, the Michael Singer Studio, which is a multifaceted art, design, and planning space that focused on understanding each project's environmental system and interactions. He stressed, "the projects we are working on are collaborative, integrated design processes, where professionals respectfully challenge each other. It's much richer to be challenged, and so much better for the project" (Krinke, 2005, p. 94).

He applies his concept of the close relationship between art, architecture, and sustainability in a particularly poetic way in his integrated gardens. The form of his integrated sculptural gardens must be seen from many viewpoints by observing nature's rhythm in response to diverse environmental conditions. The variations in the rhythms and in the formation of spaces within his gardens are endless. In the combination of the colors and fragrance of flowers, flowing water, and many green plants and trees, an intense atmosphere is created, which draws us into an enchanted sphere and stimulates us to experience it with all our senses and our body.

Michael Singer's combined artistic, architectural, and ecological goals in an integrated garden are realized convincingly on a large scale in the exterior and interior garden projects on which he and his Dutch, German, and American colleagues collaborated for the Alterra Institute for Environmental Research, IBN. DLO Wageningen in the Netherlands (1999). This is the Dutch Research Institute for the Environment, and it is an integral part of the partnership for European Environment Research. The Institute focuses on interdisciplinary collaborations for sustainable development in balanced ecological systems. Such projects demonstrate that the Michael Singer Studio has succeeded in redesigning an area so that it becomes marked by its aesthetic qualities, while purifying its surroundings. He has created impressive sculptural interactions with the core environmental systems of buildings. He developed a series of sculptural spaces within two core atriums of the building complex. He worked closely with the project's architectural team, Behnisch Architekten and Copjin landscape architects as well as scientists and researchers who will ultimately work in the building. Singer's atriums express the ecological principles that

characterize the work of the Institute. The realization of a sustainable practice strategy for the project was the starting point for Singer and his team. According to Singer, it became "a key to how we looked at the building and landscape being interconnected, and meaning of place flowed from there" (Krinke, 2005, p. 94). In the design, his principal aim was "to unify the outdoor and indoor architecture" by means of aesthetic interconnections with special pathways and gardens (Steiner, 2001, p. 72) as well as allowing the building's air, temperature control, and water systems to work with the outdoor and indoor landscape. By applying these concepts, he and his team created a unified and dynamic space, in which the entrances to the atriums visibly connect the indoor gardens with the surroundings. This connection is particularly evident in Viewpoint Looking Back Through the First Atrium (Fig. 7). Here, we encounter an impressive parallel to the Islamic architecture in The Court of the Myrtles (ca. 1370) (Fig. 8) in the Alhambra, where the architect created a delicate link between indoor and outdoor spaces. The entrance to the Alterra Institute is made of glass where we encounter the connection between inner and outer spaces (Fig. 9).

Figure 7 *Viewpoint looking back through the first atrium*. Alterra Institute for Environmental Research, Wageningen, the Netherlands, 1999. Photo Credit: Edwin Walwisch and Michael Singer. Courtesy of Michael Singer Studio

Figure 8 *The Court of the Myrtles* (about 1370). Alhambra, Spain. Image courtesy Wikipedia. Org/wiki.

Figure 9 The entrance to Alterra Institute. Photo Credit: David Stansbury.
Photo Credit: David Stansbury. Courtesy of Michael Singer Studio

Michael Singer also wanted to imbue the new buildings with many of the nuances and variations in the textures of older buildings. He thus selected "patinated wood and metals for the meeting shelter and trellises, worn-looking pavers, fountain-like water channels, and pools [which] all make reference to former use and mystery" (Steiner, 2001, p. 72). An example is the worn but beautifully decorated pavers, which are marked by abrasions, evoking historical layers (Fig. 10).

Figure 10 Worn-looking, but beautifully decorated pavers. Alterra Gardens. 1999.
Photo Credit: Edwin Walwisch and Michael Singer. Courtesy of Michael Singer Studio

The two gardens were nicknamed "twin green lungs and kidneys" because the plants and the watering system produce an optimal inner climate control without the need for air-conditioning as well as a water filtration system. Each garden has a uniquely aesthetic character as well as distinct dynamic air and water systems. According to Singer, "My concept was for each atrium space and its garden to have its own ambience" (Steiner, 2001, p. 72). In the Atria Gardens, the process begins with stormwater, filtered through an exterior retention pond and constructed wetland, which is then conveyed into the atria. The artwork draws water from outside the building, which is unique.

In the first atrium, which is adjacent to the library, the water moves through a series of pools and weirs containing a range of aquatic and emergent vegetation and fish that continue the filtration process. This garden has luxuriant undergrowth with indigenous flora, which imbues the location with intense colors and aromas (Fig. 11). The water in the large pool with underwater chambers flows audibly and creates rhythmic sounds. When one leaves the "pool" located at the front of the library and continues one's journey of discovery toward the large glass wall at the end of the first large atrium, one encounters fascinating walkways, winding staircases, and "trellis structures." Between these fertile green areas, a poetic "shallow water

pool" emerges, which inspires the wanderer to sit down and meditate or just enjoy the romantic surroundings and the many small and surprising artistically crafted details (Fig. 12). The small pond is reminiscent of Islamic gardens such as The Garden Bagh-I-Wafa outside Kabul (Fig. 13), where the source of life is represented by a spring in the middle. The dense and shady greenery prevents the water from evaporating. Even in this early stage, there were attempts to reconcile artistic and ecological goals (Petersen, 1995, p. 8 and p. 11).

Figure 11 The first atrium. Alterra Gardens 1999.
Photo Credit: Edwin Walwisch and Michael Singer. Courtesy of Michael Singer Studio

Figure 12 The pond in the first atrium. Alterra Gardens 1999.
Photo Credit: Edwin Walwisch and Michael Singer. Courtesy of Michael Singer Studio

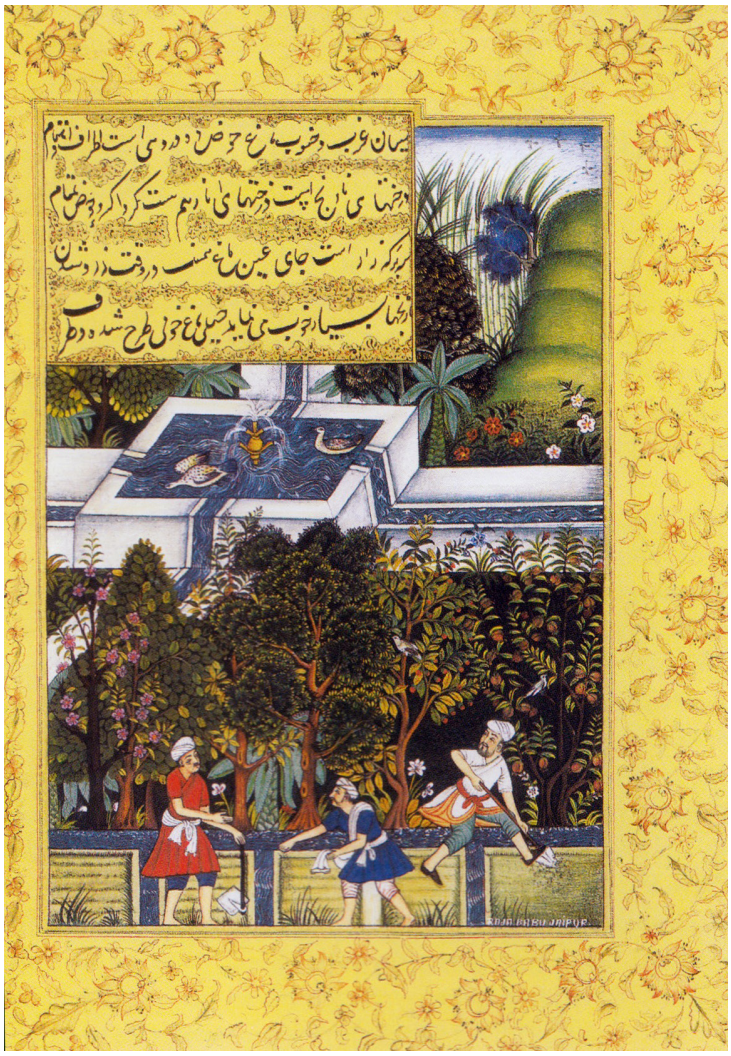


Figure 13 The garden Bagh-i-Wafa outside Kabul. 1504. Miniature. Manuscript from the Babumama (c. 1590). Photo Credit and image courtesy: Architect Steen Estvad Petersen.

Regarding "the more public [second] atrium" Singer wrote, "it has a more arid, sparer plant palette. The large shallow suspended pool in this garden has an audible flow of water that drops to the storage cistern below" (Steiner, 2001, p. 72). This water is recycled in the building's irrigation system and is reused in the toilets.

In the atria, the water features help to clean the building's greywater and stormwater systems. Singer added, "the gardens reference the integration of systems. They also really function to accomplish this integration."[6]

Below their surfaces, the pools in the atria have a variety of sculpted layers and forms that provide shelter for fish and support vegetation requiring deep water. These sculpted layers are small evocative artworks and demonstrate one of the many connections between art and architecture (Fig. 14). The multitude of green plants and flowers in the two atria reduces air pollution and imparts a wonderful fragrance, which is particularly evident in some parts of the first atrium (Fig. 15).

6 The information about the water system in the two atria was sourced from Steiner (2001, pp. 72-73) and from my own unpublished private correspondence with the Michael Singer Studio.

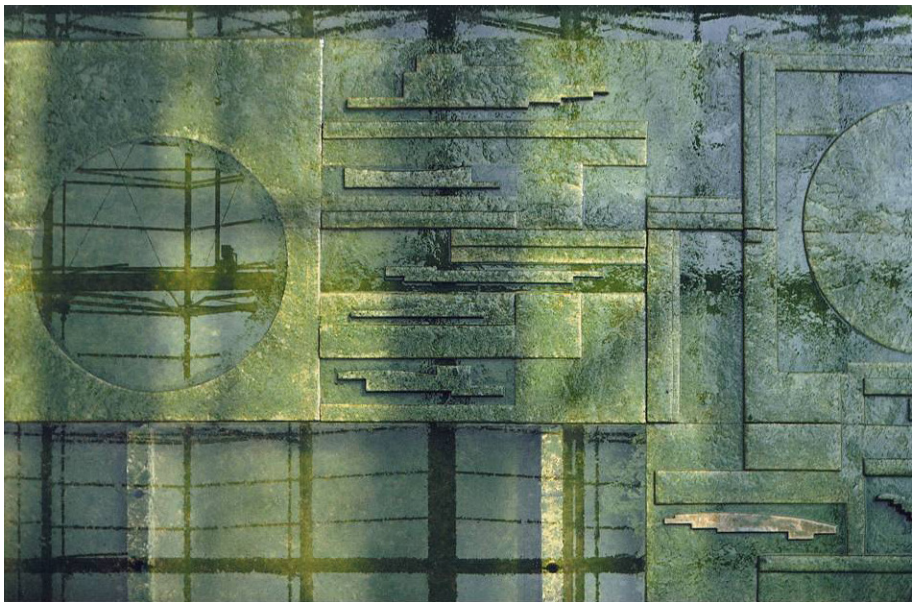


Figure 14 The sculptural patterns in one of the ponds. Alterra Gardens 1999.
Photo Credit: Edwin Walwisch and Michael Singer. Courtesy of Michael Singer Studio

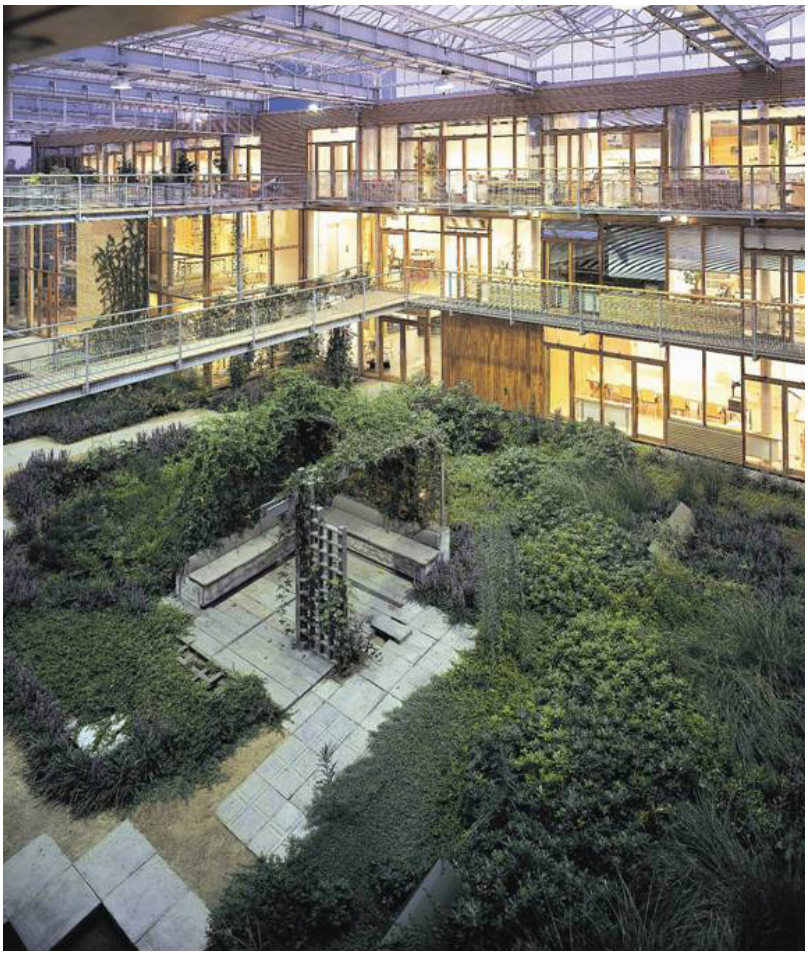


Figure 15 Green plants in the first atria. Alterra Gardens 1999.
Photo Credit: Edwin Walwisch and Michael Singer. Courtesy of Michael Singer Studio

Jonathan Fogelson and his colleagues at the Michael Singer described the connections between the two atria and the relationships between the ecological and artistic goals of the project:

> *The two atria spaces form the enclosed courtyards of the E-shaped building and are the principal foundation for the building's innovative energy strategy. You can best understand the connection between the two atria and their place in the whole project when you look at the plan of it. It is a composite drawing with the base architecture sketched in black and white provided by The Behnisch Architekten and with Michael Singer's overlay in green and blue areas. The atria infuse the entire complex with natural light and allow most offices to have garden access and views. The atria help to moderate temperatures between the interior and exterior of the building. They are used for solar heat gain in the winter, reducing heating requirements within adjacent offices and rooms. In combination with sensor-activated shading devices, increased ventilation and its interior vegetation (for shade and evaporative cooling) the atria allow for the building to function comfortably in the summer with no air-conditioning except in the library and in the kitchen. The sculptural water pools were carefully integrated to combine with this innovative energy strategy, assisting with humidity levels.* (Fig.16)[7]

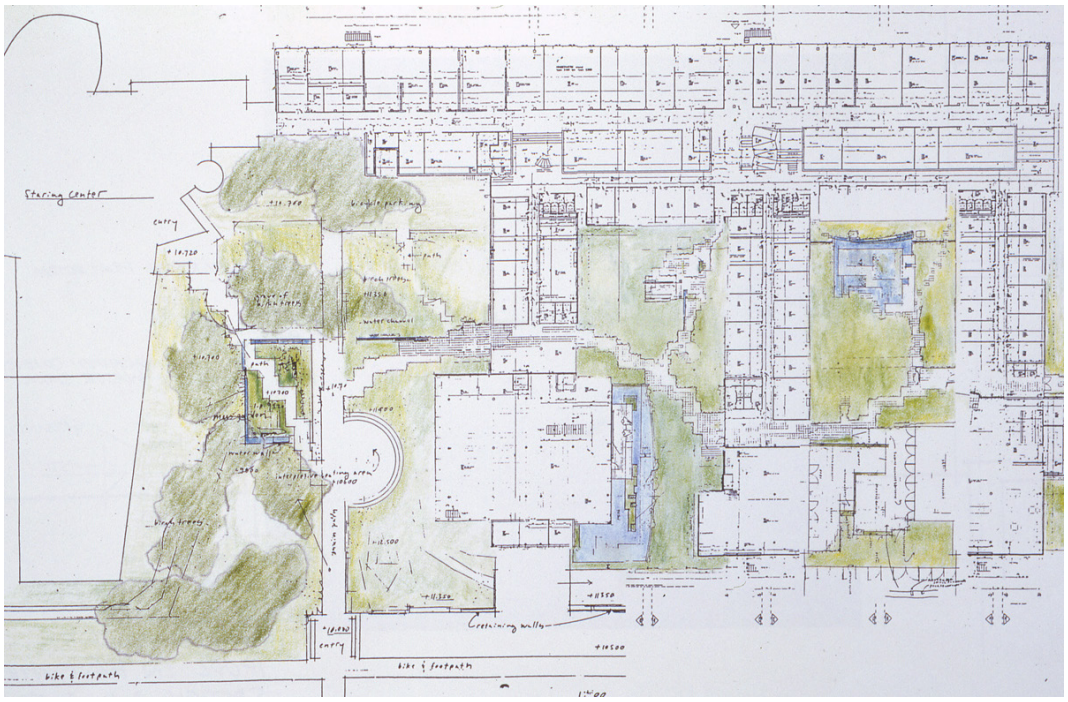


Figure 16 Michael Singer and Behnisch Architekten: *Composite drawing of the Alterra Gardens*.

Scientists also use the gardens for their research. The gardens can also be used for contemplation and quiet conferences or study. Singer remarked, "why should contemplative spaces be outside of our everyday experience?" (Krinke, 2005, p. 85). Several ecologically oriented researchers have responded to the intense visual experience provided by the gardens,

7 Unpublished letter of 30 October 2013 from Jonathan Fogelson written in collaboration with Michael Singer and the Michael Singer Studio.

emphasizing the healthy indoor climate and the beautiful connection between the exterior and interior spaces (Fig. 17) (Steiner, 2001, p. 52 and p. 73).

Figure 17 Connections between the offices and the gardens in Alterra Institute for Environmental Research. Photo Credit: Edwin Walwisch and Michael Singer. Courtesy of Michael Singer Studio

The garden in the EcoTarium (New England Science Center) (1996–2000) is another example of Michael Singer's combination of artistic and climate-improving objectives, which include responsibility for the wellbeing of the environment and the creation of a place characterized by aesthetic qualities. The Emerging Garden, which appears to invade the space and the Four Season Water Wall, which uses nature's artistic and creative forces, are the focus of the central courtyard (Fig. 18). The summer season's water wall flows gently down the patterned grid (Fig. 19), but in winter, according to Singer, "the garden and the water wall are transformed by the forming and melting of ice" (Fig. 20). The freezing and melting ice wall changes its shape and appearance throughout each day" (Bukdahl, 2011, p. 69). Nature assumes the role of technology and creates a very impressive "ice sculpture" (Fig. 21). The architect Ken Radtkey, who worked closely with Singer on the EcoTarium, emphasized that this project is an excellent example of how "Michael Singer brings his own perspective and an artist's sensitivity to place-making, the environment and culture" (Pearson, 2002, p. 3).

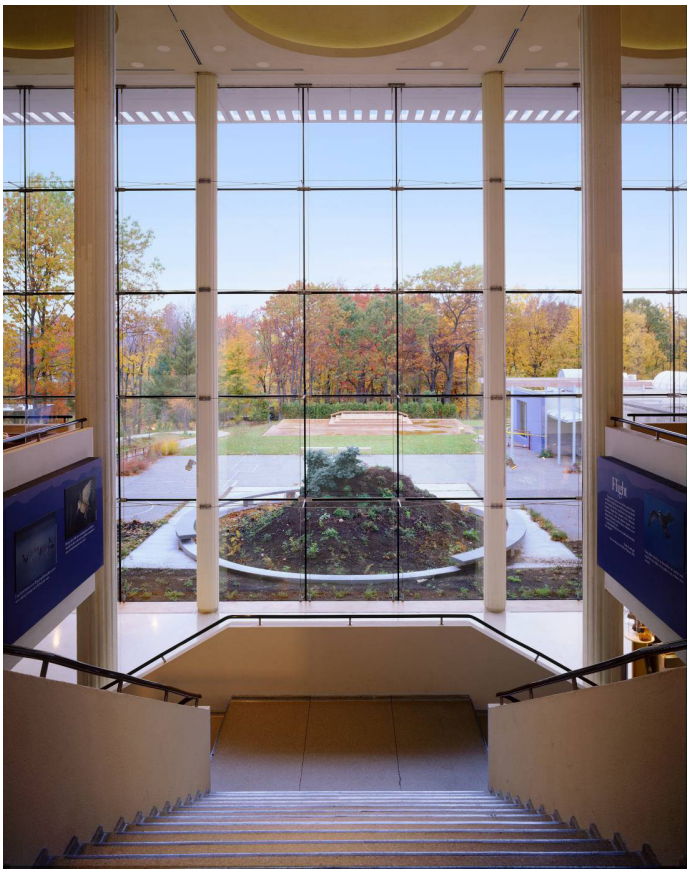


Figure 18 Emerging Garden, *EcoTarium*, New England Science Center U.S.A., 1996-2000. Photo Credit: David Stansbury. Courtesy of Michael Singer Studio

Figure 19 *Summer Season Water Wall*. 1996. EcoTarium. Photo Credit: David Stansbury.

Figure 20 *Water and Ice Wall*. 1996. *EcoTarium*. Photo Credit: David Stansbury. Courtesy of Michael Singer Studio

Figure 21 *Water and Ice Wall*. 1996. *EcoTarium*. Detail. Photo Credit: David Stansbury. Courtesy of Michael Singer Studio

The Michael Singer Studio has created new water infrastructures on both large and small scales. In "each project, artwork performs key functions such as improving water quality, storing water, and reducing water demand or regenerating eco systems" (Fox, 2018, p. 43). One of these projects is the large-scale Waterfront in West Palm Beach (2004–2010), which was based on a new and close relationship between art, architectural design, and sustainability. This project includes three new docks that allow for docking and a water-taxi to encourage visitors to visit downtown (Fig. 22). The large central dock includes shaded seating areas, and it functions as a venue for public events. The central dock is designed with in-water planters that contain native mangroves, grasses, and a visible oyster reef that set into the dock, which is perhaps the first of its kind in the nation. The boat dock and promenade function as a living system that filters water and provides small pockets of habitat within a man-made estuarine structure (Fig. 23). The regenerated and transformed West Palm Beach Waterfront is a new city park and event space. It contains not only The Living Docks but also The Waterfront Pavilion, which is a large exhibition and event space. In the project there is also an eight-kilometer long waterfront esplanade. Behind this emerge seven especially designed poetic sculptural water elements, which the Michael Singer Studio calls "discreet spaces including intimate seating areas selectively placed with small outdoor event 'rooms'" (Bukdahl, 2011, p. 89). Many of these contain sculpted fountains, each of which creates a distinctive sound. They are often surrounded by colorful flowers that emit different scents. The sounds of the water, combined with the color and fragrance of the flowers, create an atmosphere that activates the imagination and the five senses of those who walk or sit in these small romantic spaces (Fig. 24). Everywhere in the different sections of the Waterfront in West Palm Beach, flowers, trees, and sculptures cover the purification systems, transforming the entire waterfront into a dynamic, artistic place. Michael Singer and his team succeeded in transforming a typical 1960s autocentric and anonymous waterfront into an urban paradise. In the last part of this project, The South Ecological Regeneration Project, he and his colleagues added three large artificial islands with saltwater filtering plants to regenerate the polluted waters and thousands of oysters to purify the ocean, creating a new aesthetic space with an artistic profile (Fig. 25).[8] During the first ten years of its existence, the seawater became observably cleaner, the fish population increased considerably, and the biodiversity and ecosystem in the area improved astonishingly quickly. At sunrise, the waterfront and the three green islands appear as romantic scenery, appealing to the emotional states of viewers (Fig. 26).

8 For additional information on the West Palm Beach Waterfront, please visit www,wpbwaterfrontpark.com and Bukdahl (2011, pp. 74–75).

Figure 22 West Palm Beach Waterfront Commons. Aerial View. 2004-2010.
Image Courtesy of Catalfumo Construction.

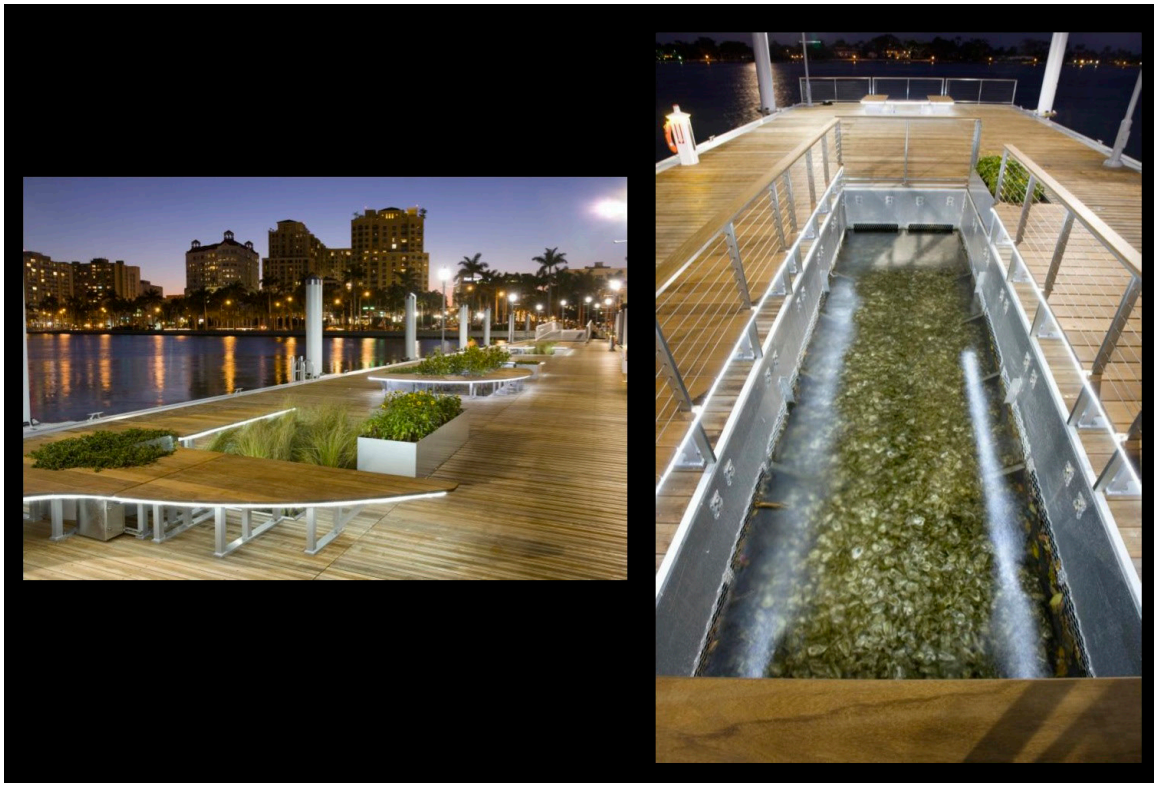


Figure 23 The central dock in West Palm Beach Waterfront Commons with seating areas oyster bed. 2004-2010.
Photo Credit: Tom Hurst. Courtesy of Michael Singer Studio

Figure 24 *Water Garden with sculptural elements and Fountains.*
Photo Credit: Michael Singer. Courtesy of Michael Singer Studio

Figure 25 *The Waterfront and the South Cove Regeneration Project*. 2012. West Palm Beach, Florida
Image Courtesy of PBC ERM.

Figure 26 The South Cove with the Three Islands at Sunrise.
Photo Credit: John Marshall. Courtesy of Michael Singer Studio

What is the difference between this project and projects such as Robert Smithson *Spiral Jetty*, a remarkable coil of rock that gave the anonymous desert landscape new artistic qualities and revealed new layers of its geological and historical past? Singer regenerated a dreary, polluted waterfront and the surrounding water. The result was the creation of a poetic contemporary urban regeneration project. According to Singer, "When seeing the progression of the islands we designed for the West Palm Beach Waterfront South Cove Regeneration project, I was amazed how my work reflects a 21st-century environmental renewal of Smithson's *Spiral Jetty*."

The Michael Singer Studio also created smaller projects in places that were devoid of aesthetic qualities, such as parking structures, where the surroundings were heavily polluted. They designed a project that transformed the new parking structure for the casino in the town of Coconut Creek in Florida, which is owned by the Native American Seminoles tribe.[9] The surroundings were nondescript, and the two lakes adjacent to the parking structure were polluted (Fig. 27). Michael Singer and his colleagues aptly called the project a new contribution to his interpretation of public art and to eco art. The project combines art and green technology in an artistically and scientifically convincing manner. The fundamental characteristic of Michael Singer Studio's concept of eco art is that it focuses on a variety of regenerative systems and that the indigenous flora and fauna are regenerated at the same time as new vegetation grows. It also repairs and renews the environment through sculptural and other artistic strategies by what the Michael Singer Studio calls "sculpting renewal through public art." Finally, the project also generates energy (Fig. 28.1). The integrated central system in The Sculptural Biofiltration Wall purifies the water. The collection and purification of water are the most important functions of this wall. Polluted water from the ponds is channeled through the solar-operated pump system and then poured into biofiltration aquatic planters. From there, it is pumped vertically into the

9 The Seminoles are an American tribe in Florida.

biofiltration chambers. Finally, it returns as clean water to the lakes, which are gradually purified. The aquatic biofiltration gardens contain a range of potted aquatic plants that further purify the water (Fig. 28.2). With this regeneration and cleaning system, the Michael Singer Studio created a new and impressive relationship between art, architectural design, the urban environment, and sustainability. All the pipes and other objects that are required by the cleansing system are hidden by sculptural forms of various sizes, colors, and textures created by Michael Singer (Fig. 29). The finished sculptural wall is a complex pattern of high and low reliefs and sculptural forms (Fig. 30). The varied depth effects in the reliefs create an intense play of light. Copper inserts are embedded in the various sculptural elements. The copper and concrete surfaces will patinate over time, thus creating intense light and color effects (Fig. 31). The vines that have started to grow on the custom screening provide an interplay of dark greens, creating an effective contrast to the light-filled reliefs. The walls thus appear as a living green sculpted wall where both light and the shifting seasons create transformations. This poetic "green carpet" and the different sculptural forms cover the filtration equipment and the entire wall, resembling a multifaceted living work of art (Fig. 32). The solar canopies on the roof are finely processed. They provide enough energy to supply a couple of average Florida homes (Fig. 33). Visitors to the site are surrounded by butterflies and fragrant flowers, which create a special atmosphere. At the base of the "sculptural wall" is a small sculpted bench and a small "lily pond" where green plants cover the machines in the water, which is the first step in the purification system (Fig. 34). This sculpture garden has aesthetic qualities that create a space for meditation and the opportunity to enjoy undisturbed time in a world dominated by rationality and noise. It alludes to poetic Chinese gardens, such as *Yu Yuan (Yu Garden), Shanghai Shi* (Fig. 35), which creates a connection between humans and nature as well as providing space for quietness and contemplation. At night, The Sculptural Biofiltration Wall is a particularly poetic scene in which the rays of the setting sun create a golden atmosphere (Fig. 36).

Figure 27 Analysis of the water cleansing System. 2011. Drawing The Seminole Coconut Creek Casino, Florida. Courtesy of Michael Singer Studio

THE SEMINOLE COCONUT CREEK CASINO

SCULPTURAL BIOFILTRATION WALL

A LIVING WORK OF ART

The Sculptural Biofiltration Wall by artist Michael Singer is conceived as a living system designed to regenerate the surrounding environment by improving water quality, enhancing habitat viability and informing and inspiring the public about ecological systems. Intended as an exemplary EcoArt project for South Florida, this work of public art functions to cleanse, restore and ultimately regenerate the environment through the following integrated systems:

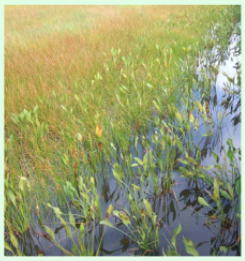
CLEANSING WATER

This Sculptural Biofiltration Wall filters approximately **150,000 gallons of water a day**, improving the water quality of the retention ponds.

The sculpture filters on-site retention pond water which is used for irrigating all of the vegetation on site, including the parking structure green walls and may be used for future plaza water elements, reducing the use of potable water.

Harvested rainwater supplements the water system with up to 10,000 gallons of water storage capacity. The rainwater is harvested and filtered within the four storage tanks along the east wall of the parking structure.

REGENERATING THE ENVIRONMENT



The sculpture fosters biological systems including plants, fish, and beneficial bacteria that naturally cleanse water. Improving water quality in the retention ponds helps improve the habitat viability and biodiversity of the ponds and the surrounding landscapes.

The Sculptural Biofiltration Wall supports a range of vegetation to attract avian wildlife, especially hummingbirds, and of course, butterflies - Coconut Creek being the “The Butterfly Capital of the World”.

SCULPTING RENEWAL THROUGH PUBLIC ART

This EcoArt project merges public art, science and engineering to regenerate damaged ecosystems. While most public art is object based and often static, this Sculptural Biofiltration Wall fosters a living system that functions *within* the environment to filter water and restore habitat.

GENERATING ENERGY

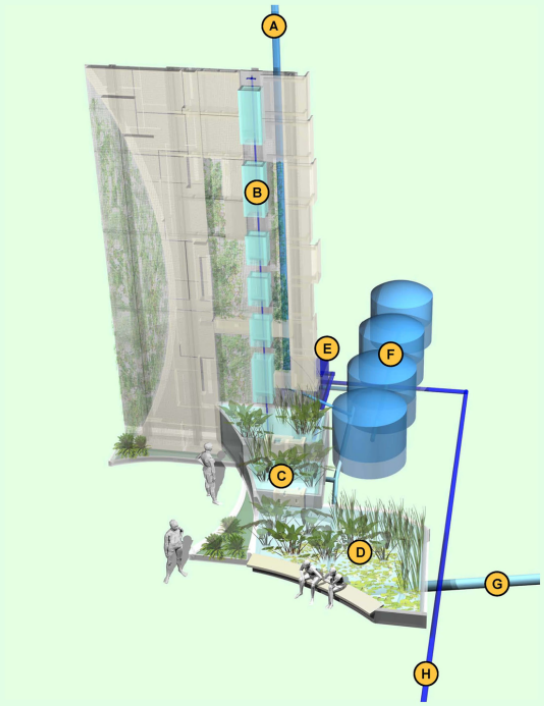
Solar Canopy system (and image credit) by Advanced Roofing

The 23kW parking roof deck solar photovoltaic canopy arrays provide enough power to supply 2 to 3 average Florida homes. This renewable energy source provides many times the energy needed to power the pumps, filters and lighting for the Sculptural Biofiltration Wall. The remaining electricity helps to power lighting and elevators within the parking structure or is fed to the grid. The solar canopies are also collecting the harvested rainwater.

Figure 28a *The Sculptural Biofiltration Wall. A Living Work of Art.* Overview.

THE SEMINOLE COCONUT CREEK CASINO

SCULPTURAL BIOFILTRATION WALL



HOW IT WORKS

A Rainwater harvesting from solar rooftop canopies

B Sculptural biofiltration chambers

C Biofiltration aquatic gardens

D Biofiltration aquatic gardens and lily pond

E Pump room and filtration equipment powered by solar photovoltaic array on roof

F Four 2,500 gallon rainwater harvesting tanks

G Cleansed water returns to the retention ponds via stormwater drains

H Retention pond water in-take from pond to the south east

The primary water system functions continuously to cleanse up to 100 gallons per minute from the existing interconnected water retention ponds on site (connections marked H and G above). The secondary system collects rainwater from the rooftop solar canopies and utilizes this relatively clean water to help flush the system (A and F above).

The biological water treatment through the Sculptural Biofiltration Wall occurs through the sculptural biofiltration chambers and aquatic gardens (B, C and D above) which foster the growth of aerobic beneficial bacteria for the cleansing of water. These systems filter water by breaking down organic matter, providing aeration and absorbing nutrients. The biological filtration system is supplemented by a UV filter and mechanical filters associated with the pump equipment (E above).

Project Credits

Public Artist: Michael Singer

Michael Singer Studio Team: Jason Bregman, Jonathan Fogelson and Alan Chapman. Sam Thomas, Emily Pinyard, Calen Colby, Adam Greenlaw and Brian Beaulieu at Colby Co Engineering. Shawn Walters and Victor Vallejo at FAP. Dana Kent at AAS and Patrick Faehnle at ASR.

SELECTED PLANT LIST

Jacquemontia pentanthos Blue Cluster Vine. Native. Small purple flowers. Provides nectar for butterflies.

Lonicera sempervirens Coral Honeysuckle Vine. Native. Pink conical flowers. Provides nectar for birds, butterflies and hummingbirds.

Passiflora suberosa Corkystem Passion Vine. Native. Small passionflowers. Host species for many butterflies including the Florida State Butterfly Zebra Heliconian.

Zamia Pumila Coontie. Native small shrub. Roots were used traditionally by the Seminoles as a source of flour for bread. Larval food for endangered Atala butterfly.

Mimosa strigillosa Mimosa/ Powderpuff. Native groundcover. Host plant for small yellow *Eurema lisa* butterflies. Sensitive plant to touch (try touching it and see it react).

Typha latifolia Cattail/ Bulrush. Native aquatic. A known and important bioremediation plant for filtering water. Was a food source for Native peoples of the Americas.

Sagittaria lancifolia Wapato/ Indian Potato / Duck Potato. Native aquatic. A known and important bioremediation plant for filtering water. Was a food source for Native peoples of the Americas.

Canna flaccida Golden Canna. Native aquatic. Has been studied for effectiveness in removing nutrients from nutrient rich stormwater.

Nymphaea Odorata American White Lily. Native aquatic. White fragrant blooms.

Nymphaea Mexicana Yellow Water Lily. Native aquatic. Small yellow blooms.

There is also one species of non-native night blooming lily in the lily pond.

Figure 28b *The Sculptural Biofiltration Wall. A Living Work of Art.* Overview.

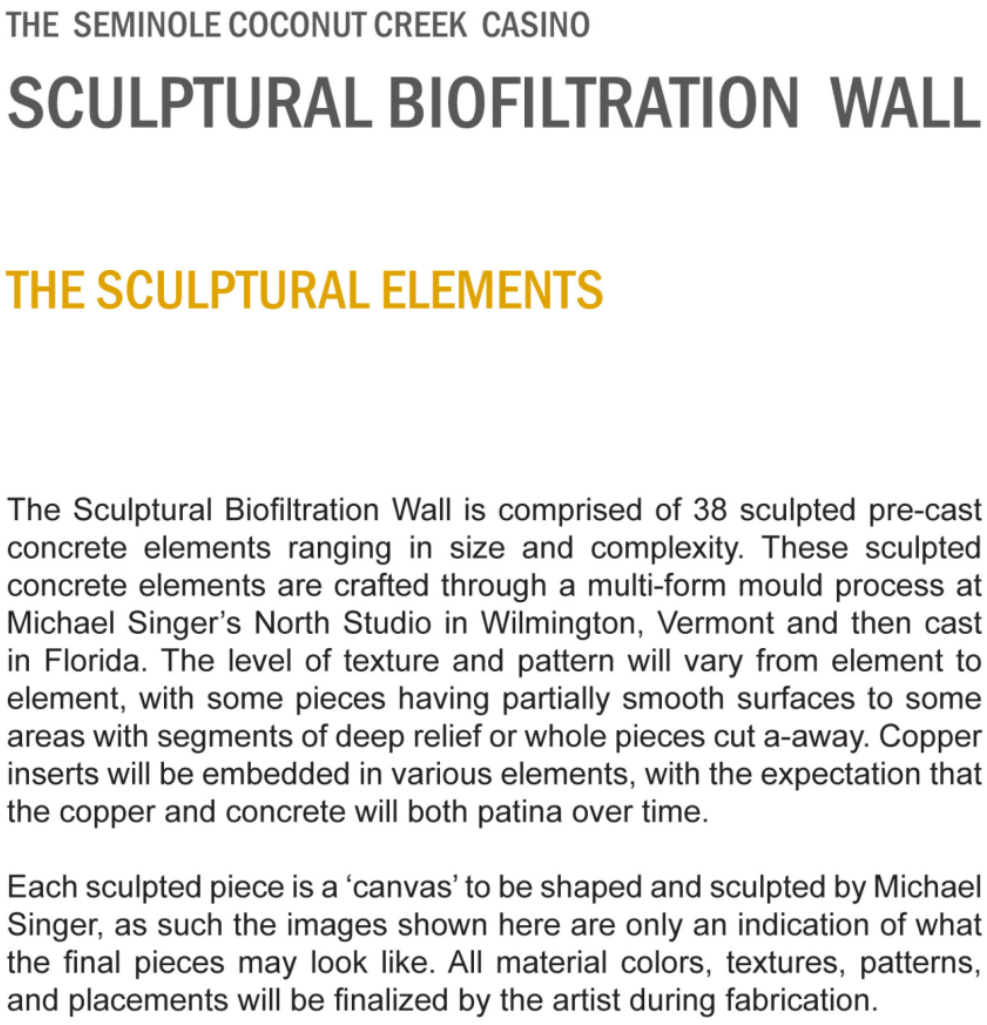


Figure 29a *The Sculptural Biofiltration Wall.* 2011. Sculptural precast concrete elements. Drawing.

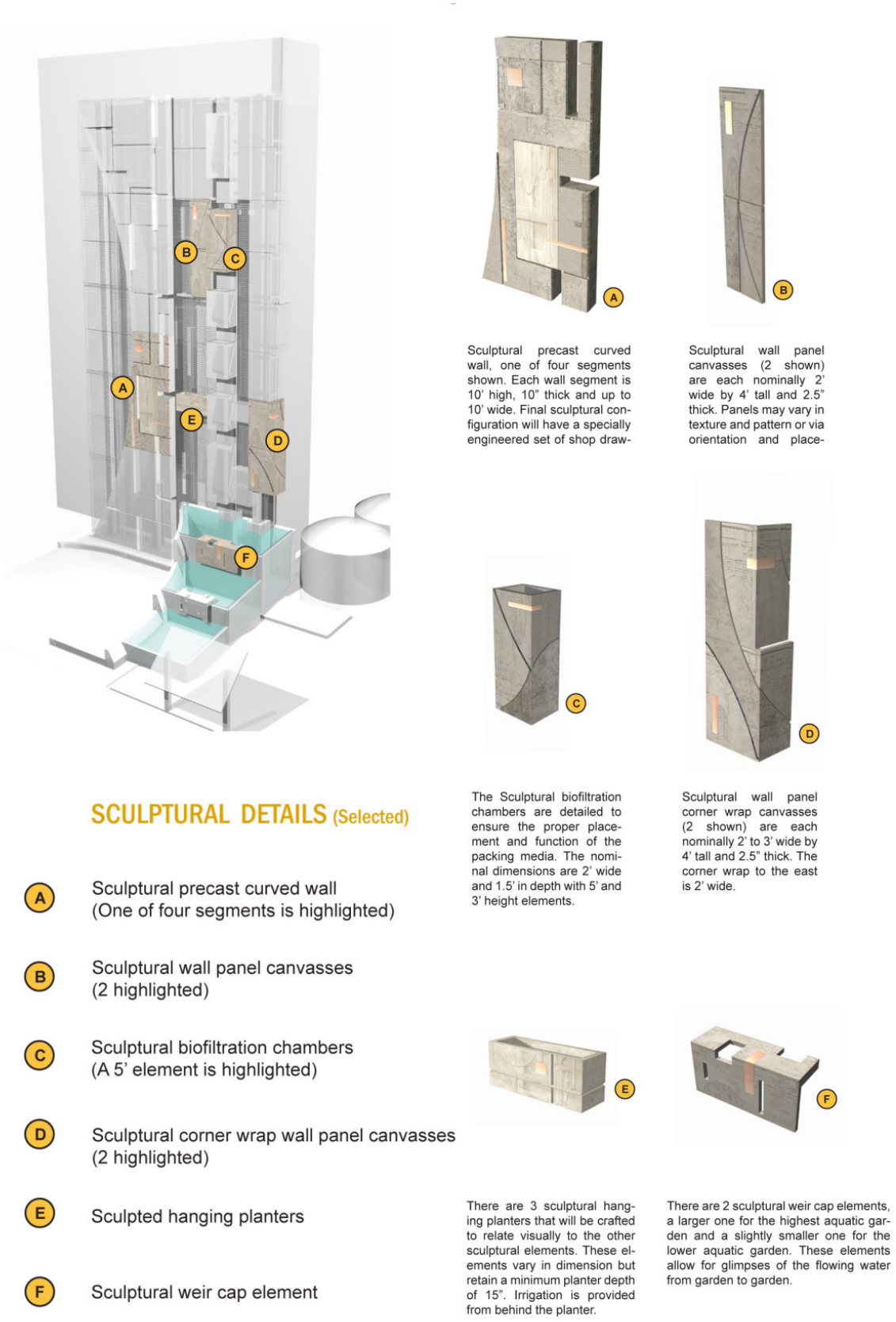


Figure 29b *The Sculptural Biofiltration Wall.* 2011. Sculptural precast concrete elements. Drawing.

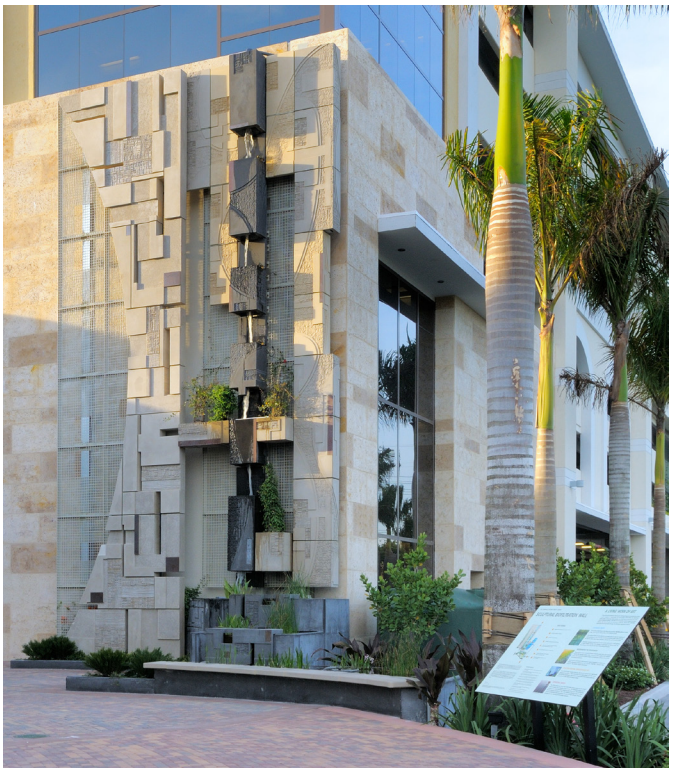


Figure 30 *The Sculptural Biofiltration Wall*. 2012. The whole finished complex of the relief and the surroundings. Photo Credit: David Stansbury. Courtesy of Michael Singer Studio

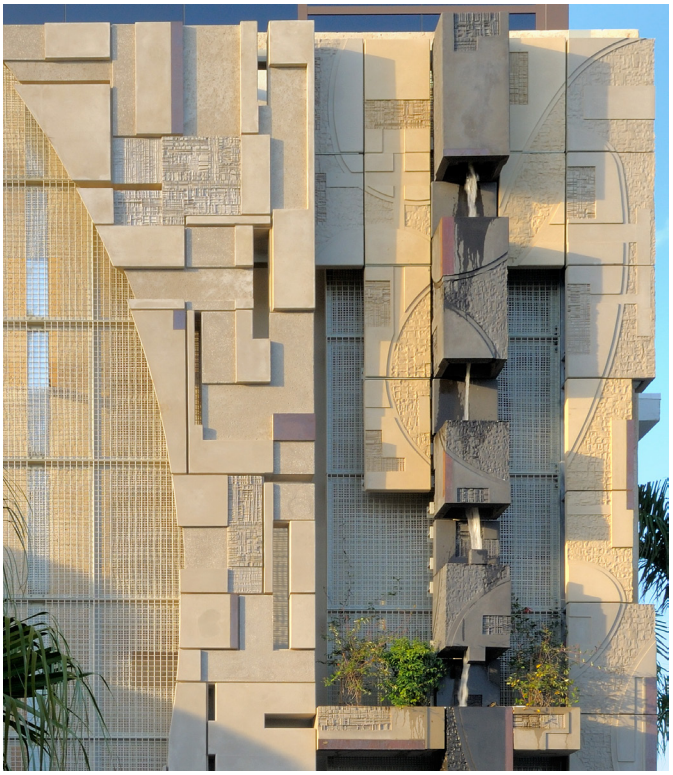


Figure 31 *The Sculptural Biofiltration Wall*. 2012. The different patterns in the reliefs. Detail. Photo Credit: David Stansbury. Courtesy of Michael Singer Studio

Figure 32 *The Sculptural Biofiltration Wall*. 2012. "The green carpet" created by *ficus repens*. Photo credit: David Stansbury. Courtesy of Michael Singer Studio

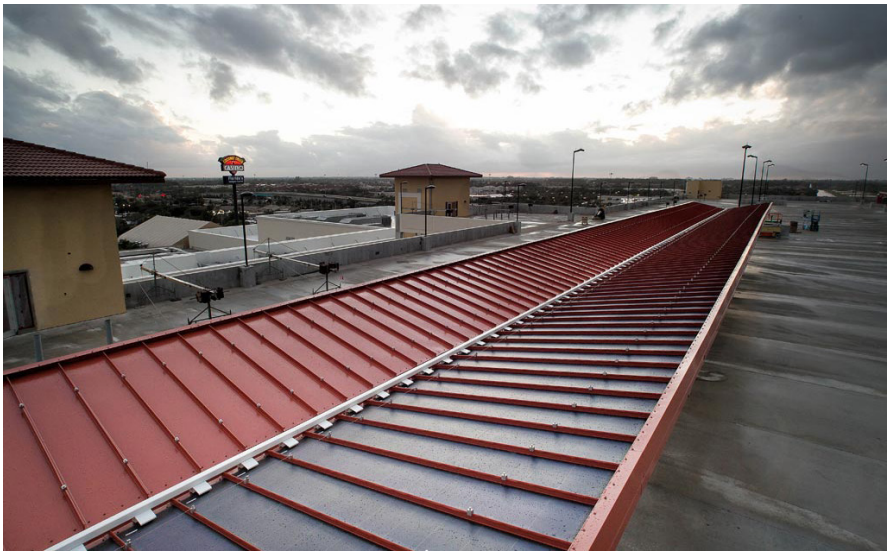


Figure 33 *The Sculptural Biofiltration Wall*, 2012. The solar canopies on the roof. Image Courtesy of Advanced Roofing.

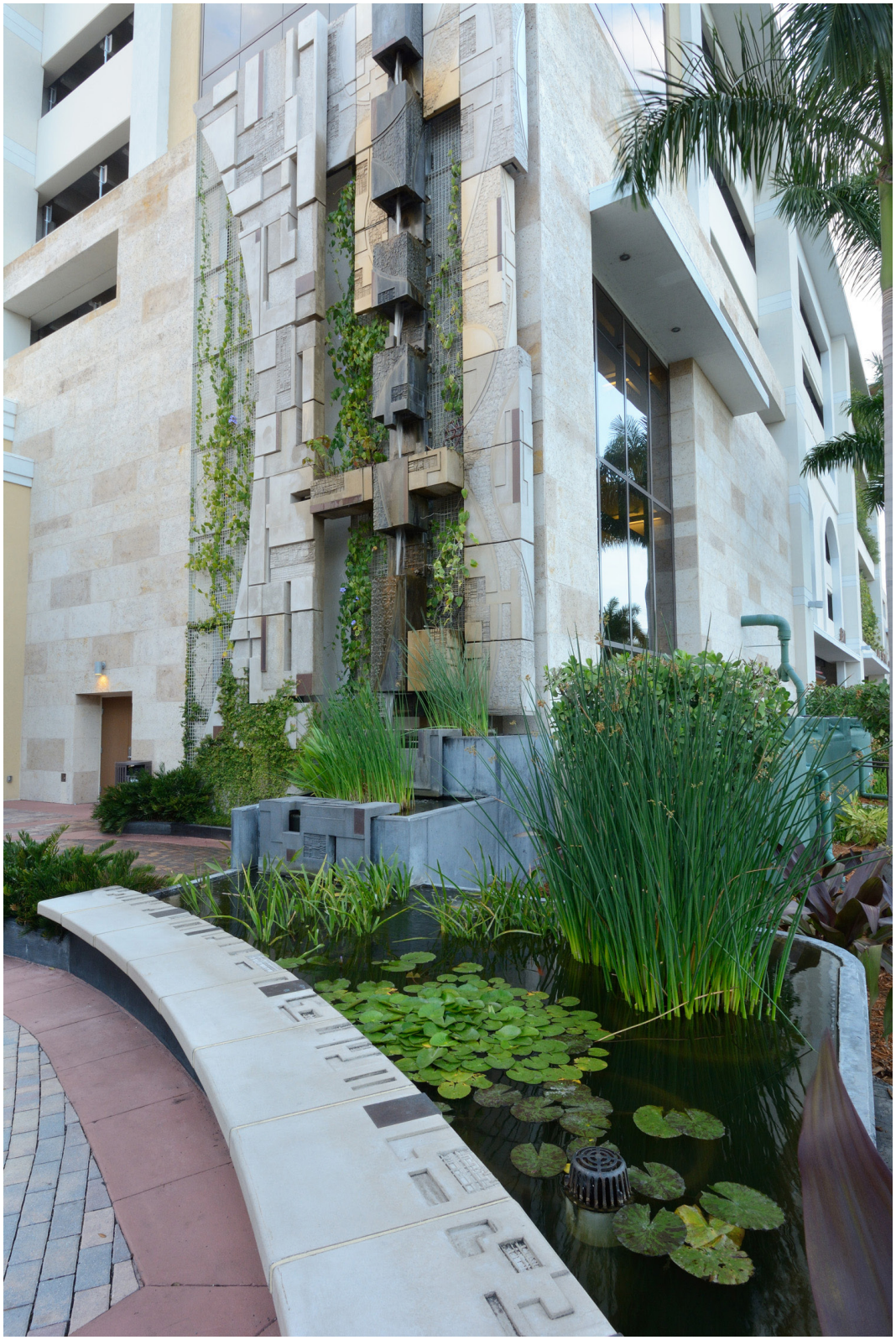


Figure 34 *Sculptural Biofiltration Wall*. 2012. *Lily Pond*. Photo Credit: David Stansbury. Courtesy of Michael Singer Studio

Figure 35 *Yu Yuan (Yu Garden). Shanghai Shi* .1709. China. Image courtesy. *En.m. Wikipedia org.*

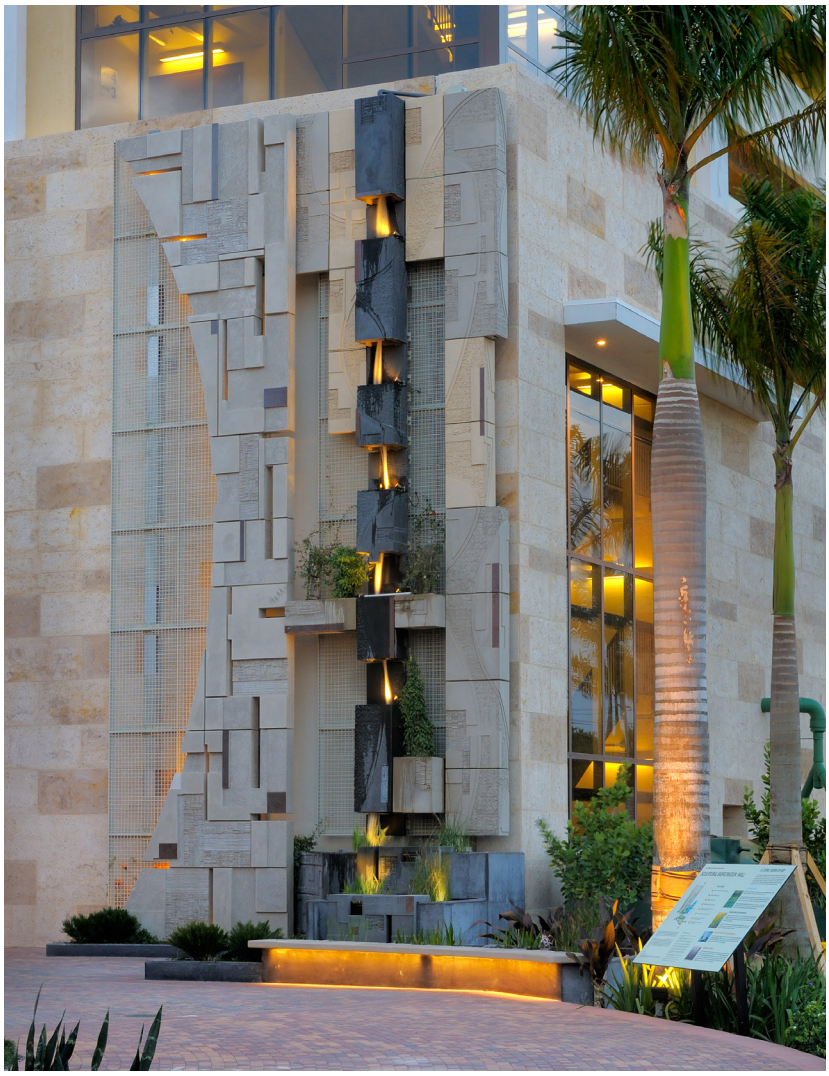


Figure 36 *The Sculptural Biofiltration Wall*. 2012. View at night.
Photo Credit: David Stansbury. Courtesy of Michael Singer Studio

4. Parallels to Somaesthetics and "the Conception of Atmospheres" in the Projects of Michael Singer and the Michael Singer Studio

The viewer is often drawn into the experiential spaces in the projects of the Michael Singer Studio, providing rich opportunities for a bodily experience. Rebecca Krinke noted that Singer "engages the body in unconventional ways and in unconventional places to wake us up to the experience of having/being a body of the moment" (Krinke, 2005, p. 85)..Her statement about Michael Singer's work echoes a focus in Richard Shusterman's somaesthetics, which is "the living, feeling, sentient, intelligently perceiving and performing body" (Shusterman, 2011, p. 280). He has emphasized that an artwork cannot be complete until the viewer has experienced and interpreted its particular qualities. It is important that there is a manifold and intense interplay between the artwork and the viewer (Shusterman, 2002, p. 31). Michael Singer has always believed that his gardens and his major infrastructure projects are completed only when visitors have walked through them and experienced their different aspects:

> *Actually, I am interested in how people move through a space and how architecture choreographs our movement through space, as well as the power architecture has in bringing meaning to a site.* (Grande, 1998, p. 13)

There are many examples of Michael Singer and his partners' buildings, gardens, waterfronts, houses, and infrastructures, which become organic parts of the environment and create an interplay between indoors and outdoors. Their indoor and outdoor projects were created so that the people who live and work in them or walk around them could discover the many fresh nuances and perspectives they contain and experience the colors and fragrances of the flowers and the sounds that continuously change character, depending on the effects of lighting, the weather, and the seasons. The olfactory, acoustic, and visual aspects of the projects have been important in the Michael Singer Studio.[10] In describing the large garden he created for Concourse C. Denver International Airport (1994) (Fig. 37), Michael Singer remarked that he "took what would have been a usually sterile airport zone, made it smell, made it wet, and made it grow; and gave life that you don't get in places like an airport" (Krinke, 2005, p. 85). In this very large garden, Michael Singer brought nature into the gray sterile airport setting by creating a vast indoor garden, in which climbing plants creep up the walls and across the sculpted concrete surface. The garden is a living ecosystem and an artwork. Michael Singer pointed out the important elements in the "atmospheric turn" or "architectural atmospheres." This concept is currently widely discussed and visible in architectural practice and theory.

10 See below, pp. 9–10.

Figure 37 *Garden in Concourse C. Denver International Airport.* 1994.
Photo Credit: David Stansbury. Courtesy of Michael Singer Studio

However, Professor of Political Sociology Christian Borch asked, "What do 'atmospheres' refer to and, more precisely – how do they move us"? His answer was the following:

> *According to the (Swiss architect Peter) Zumthor two things are important. One relates to how we perceive or experience spaces (...) "(w)e perceive atmosphere through our emotional sensibility." Zumthor emphasized that the second feature is that encounters with buildings are very much bodily. We innately sense buildings, feel their material-haptic qualities, hear their sounds, see their lights, sense their temperature and smell, etc.* (Borch, 2014, p. 7)

Genot Böhme, a founder of the "concept of atmospheres," added, "aesthetics of atmosphere must also mediate between the aesthetics of reception and the aesthetics of the product or of production." Therefore, "atmospheres are in fact manifestations of the co-presence of subject and object" (Böhme, 2014, p. 43). Finally, an important part of "the conception of atmospheres" is that "architectural atmospheres are not just about bodily engagement with the building itself." They also "refer to how the building relates to its environment, or rather how it '*becomes part* of its surroundings'" (Borch, 2014, p. 8). Unlike other representatives of the concept of atmospheres, Singer has interpreted this relationship in a unique way. The reason is that the visual-artistic interpretation of parts of the works serves as an essential and new element to strengthen and intensify this relationship. The projects are also generally structured such that they affect the entire body of the viewer. The entire sensory experience is activated.

Conclusion: The originality and essence of Michael Singer's own works and the projects of the Michael Singer Studio

The unique character of Singer's installations and sculptures is that it expresses human experiences in nature, which verbal language is unable to communicate. His personal visual language was developed through his deep explorations of personal and cultural experiences, which, in today's "only of our moment" Western societies, have been relegated to the sidelines. The originality of many of his small and large projects is due to the very close relationship between art, architectural design, and sustainability and their intense ability to develop our awareness of harmonious nature and reveal the relationship between humankind and its surroundings. He has continued to make new works that convey these dynamic relationships and to practice his holistic and creative approach to art, architecture, and infrastructure. He and his colleagues at the Michael Singer Studio have created design solutions that fulfill both aesthetic and ecological purposes. His unconventional and inventive viewpoint, creative thinking, and evocative projects at all scales motivate us to evaluate our environments and our connections in a new way. Aspects of ancient Japanese, Arabic, and Chinese aesthetics linked with the concept of the full involvement of artists throughout the planning and construction process of projects are elements of the aesthetics, or "concept of beauty," that Singer and his Studio have realized. Their large and small works reflect a new visualization of both Richard Shusterman's somaesthetics, with its cornerstone of the mind-body relation, and a new parallel to the atmospheric approach as seen in the works of Peter Zumthor and Christian Borch as well as in the writings of Gernot Böhme on this subject. In the search for the often-concealed past, The Michael Singer Studio is shaping the future in a unique way.

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