

Shaping the Change: the Evolution of Landscape Representation and the Relationship between Man and Nature

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Abstract

The representation of landscape has evolved in parallel with the relationship between humans and nature. Initially, nature was seen as a static material world. This romantic and picturesque vision changed with Darwin's Theory of Natural Selection, which integrated humans into the ecosystem. The introduction of the term 'ecology' by Haeckel in 1866 further emphasized the bond between humans and nature, highlighting species interdependence and ecological balance.

This conceptual evolution was reflected in landscape architecture, moving from aesthetic drawings to complex diagrams that depict the dynamics of natural systems. Contemporary designers use everything from quick sketches to detailed diagrams that illustrate natural processes and their interactions with the built environment.

Over time, landscape drawings have transfigured landscape architecture, blending technical information with profound artistic and historical sensitivity. Architects and artists like Ian McHarg, Lawrence Halprin, Christo and Jeanne-Claude, Diana Balmori, Robert Smithson, Bernard Lassus, James Corner, and Kongjian Yu have used drawing to explore and communicate new ideas about nature and landscapes. The proposed text will analyze this evolution and how contemporary drawings reflect an integration of scientific, aesthetic, and cultural approaches in landscape representation.

Keywords: evolution of landscape design, landscape drawing, contemporary landscape architecture, ecology.

Introduction: the evolution of the relationship between humans and nature

The perception of nature has undergone a constant evolution over time: initially, it was understood as the material world itself [Williams 1988]; later, a picturesque and romantic vision of a static and immutable nature was developed, from which society was supposed to learn for its construction. This view, prevailing until the mid-20th century and resulting in a clear separation between humans and nature, was only overcome with Darwin's Theory of Natural Selection [Eiseley 1959].

It was Ernst Haeckel, whose contribution was significant to the development and establishment of Darwinian theory, who coined the term 'ecology' in 1866, once again integrating humans as part of nature and laying the groundwork for the science that would develop from the 1940s to the 1960s. He also consolidated the assumption that nature is a collection of interrelated species, each inhabiting a biotope [Balmori 2010] in stable equilibrium. Only after several years emerged a new idea of a 'changing' nature, leaving room for external factors. Its implications for environmental sustainability began to be evaluated, while there was a growing tendency to dissociate it from aesthetics, which scientists saw as something to avoid, a human whim that distorts the natural [Balmori 2010]. However, the pursuit of beauty is considered an important aspect of sustainability, as stated in the manifesto of the New European Bauhaus [Scalisi, Ness 2020].



Here, the role of the landscape becomes essential: "landscape design is the art that engages with all aspects of a sustainable world: elemental forces, materials, humans, and other living beings" [Balmori 2010, p. 8]. It seeks to make the experience of sustainability pleasant and desirable, using principles, technologies, and forms with aesthetic values [Dal Falco, Veneziano, Carlomagno 2022].

Today, nature is perceived as multifaceted, "changed over time due to our actions, thoughts, and art'' [Balmori 2010, p. [1], and capable of establishing intimate relationships between humans and other living systems to vigorously regenerate our cities [Xing, Jones, Donnison 2017] and move toward a more efficient, inclusive, and sustainable model of growth and management of non-renewable resources [Faivre et al. 2017]. The vegetation of our urban landscapes, as Gausa affirms [Gausa 2022], are complex, dynamic, and varied relational spaces, an active and receptive surface that constitutes a truly potential structure for the cities of the future, and no longer merely a 'category' or a 'theme': "Architecture and landscape, landscape and architecture, confirm new hybrid contracts with nature through two categories far distanced before but now in synergy" [Gausa 2022, p. 16]. This leads to a more programmatic definition of the landscape and its main role in the urban scene, as the concept of nature becomes increasingly hybrid, fluid, synthetic, and/or biological, and the city increasingly turns into an environmental system [D'Arienzo, Younes 2018].

The parallel evolution of landscape representation

The evolution of landscape representation is a fascinating journey through time, reflecting the development of artistic techniques, the perception of nature, and the representation of the environment in art. From Roman frescoes to modern digital representation techniques, landscape representation has undergone various transformations, showcasing cultural, technological, and aesthetic changes. From ancient Rome to the Renaissance, mural paintings and frescoes incorporated elements of nature to decorate the interiors of villas, aiming to create continuity between spaces and enhance the feeling of spaciousness. Famous examples include *trompe-l'oeil* techniques that created the illusion of gardens and natural landscapes on walls, like the beautiful example in the Villa Fannius Synistor in Boscoreale [Department of Greek and Roman Art 2004].

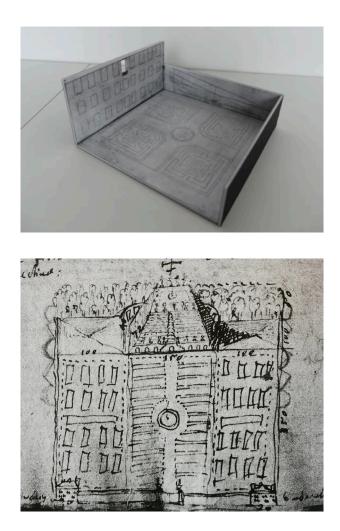


Fig. 1. Salomon de Caus, fold-out design for a trompe-l'oeil, , 1612. <https:// www.philipsteadman.com/blog/the-arch-of-constantine-in-a-french-garden/> (accessed 22 December 2024)

Fig. 2. John Evelyn, Elysium Britannicum first encyclopedia of horticulture, 1659. The drawing shows the plan of a garden with a fountain in perspective. <https://thegardenstrust.blog/2018/09/15/john-evelynselysium-britannicum/> (accessed 28 August 2024) During the Renaissance, the rediscovery and perfection of perspective radically changed the way landscapes were represented. Artists like Paolo Veronese used perspective techniques to create frescoes that not only adorned the interiors of villas but also showed fictitious views of the outside, blending reality and imagination. These representations were not only aesthetically valuable but also a display of their owners' power; frescoes often depicted not only the villa's landscape but also its surroundings, providing a panoramic view of the environment. This marked the beginning of humans projecting their views and landscapes: landscape paintings turned into a kind of 'picture' of the projected landscape.

Fig. 3 Christo y Jeanne-Claude, drawing of The Gates project with Central Park surroundings, 1980. © <https://christojeanneclaude.net> (accessed 28 August 2024).



In the 17th century, artists like Claude Lorrain (1600-1682), Nicolas Poussin (1594-1665), and Salvator Rosa (1615-1673) established landscape painting as an independent genre, influencing the development of English landscape design. While garden designers like André Le Nôtre (1613-1700) focused on the physical creation of landscapes during the reign of Louis XIV, artists like Paolo Veronese (1528-1588) and Giusto Utens (1558-1609) captured these spaces in their paintings, often adding aesthetic and symbolic dimensions. Their representations became more intricate, combining plants and perspectives in a single drawing to capture the polyhedral complexity of landscape.

This separation between landscape and its representation reached its peak in the 19th century when watercolour painting became a prominent technique for landscape representation. This medium allowed artists to capture the subtlety and luminosity of natural scenes with a freshness and spontaneity unreached by other methods. Watercolour became an essential tool for architects and landscape designers, enabling them to explore and communicate their design ideas effectively. Landscape painting set the rules that landscape designers would later adopt, turning representations into real landscapes. Notable examples include the work of Hubert Robert (1733-1808) and William Kent (1685-1748), former painters who became landscape designers, reestablishing a close collaboration between both fields.

With the development of the concept of the 'picturesque' in the 18th and 19th centuries, a new sensitivity towards nature and its representation emerged. The picturesque movement sought to capture natural beauty in its most rustic and least anthropic state, influencing both landscape paintings and garden design. This approach prioritized the creation of landscapes that resembled living paintings, where each view was carefully composed like a work of art.

Over time, landscape representations began to integrate technical and artistic elements more complexly. In the 19th century, figures like Thomas Hornor (1785-1844) advocated for the combination of exact plans with perspective views to create more complete and realistic representations of landscapes. This technique allowed artists to overcome the limitations of two-dimensional plans and offered a more dynamic and comprehensible view of space.

In the contemporary era, digital technologies have revolutionized landscape representation. Computer-aided



Fig. 4. Lawrence Halprin, study sketches on the movement of water, I 967. © <https://lawrencehalprin.com/about> (accessed 28 August 2024).

design (CAD) tools and 3D visualization allow designers to create detailed and accurate models that integrate both technical and artistic dimensions. These representations not only show what a finished landscape will look like but can also simulate its development over time, considering factors like plant growth and seasonal changes. With the emergence of ecology, landscape representation has evolved into a layering of systems that configure complex processes. The aim is no longer to achieve a final image but to represent the inherent dynamism of nature and its capacity for evolution.

In contemporary landscape representation, there is a conscious effort to integrate the broader environmental context into designs. This implies a more holistic approach, where small details and design interventions are shown within a larger panorama, transcending the limitations of the traditional frame and seeking a more integrated, three-dimensional, and dynamic representation of the landscape.

A complex approach: the contemporary masters

It is within this ecological and dynamic conception of landscape that this article aims to emphasize the effort required by its creators to find new ways of representing complexity. This text does not seek to offer a linear or unequivocal reading, but rather a non-chronological selection of some authors who have ventured at different moments in history to innovate and make new proposals, with different levels of risk, with the drawings and representations of their projects and interventions.

As we have seen, watercolour was for a long time the dominant technique for representing landscapes due to its ability to convey effects that are almost impossible to achieve with other techniques; this method can also be found in the work of modern landscape designers like Gertrude Jekyll. The information starts being composed using various methods and representation techniques, combining plants, sections, elevations and collages, the so-called integrated drawings. This complex composition appears simultaneously or even before the widespread use of watercolour. One of the first examples we can find where different views and plans of a garden are composed is the design for a trompe-l'oeil by Salomon de Caus in 1612 (fig. 1); something similar happens with an illustration in the Elysium Britannicum manuscript by John Evelyn around 1659 (fig. 2) or an anonymous drawing that combines an elevation, a plan, and a perspective, merging all in an ambitious visual game for the Château de Dampierre-en-Yvelines (France), designed by André Le Nôtre and Jules Hardouin-Mansart between 1675 and 1683. We can find again these compositions in Bernard Lassus' proposal for Le Jardin des Tuileries (1990) or Dieter Kienast's garden M in Erlenbach (Switzerland) in 1989, for example.

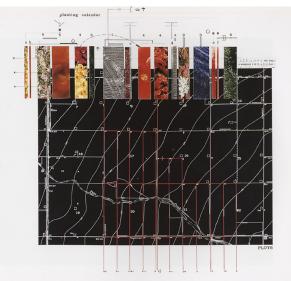
Adding written texts or notes to drawings and sketches is another way for filling graphic representations of projects with information, adding an intangible but essential layer to understand certain mechanisms and processes being pursued. Although today it may seem like a simple method, it is another way of creating integrated drawings. We find wonderful and varied examples such as Richard Haag's for The Big Moves Gas Works Park (1971), Patricia Johanson's for Ellis Creek Water Recycling Facility (2007), or Lawrence Halprin's numerous sketches throughout his career.

With the Land Art artist Robert Smithson, a change occurred in the object to be portrayed. In his text A tour of the Monuments of Passaic, New Jersey [Flam 1996] published in 1967, he documented a walk through a landscape completely anthropized by industrialization, mixing text, photographs, and maps: abandoned factories, pipes and drains carrying water away from the cities, with no concern for where they ended up, bridges, and other structures. These are everyday landscapes far away from the concept of a 'beautiful' and 'maintained' landscape. In 1970, he created Spiral letty in the Great Salt Lake, Utah, where through a large-scale sculpture made from local rocks, he sought to explore entropy and the passage of time, highlighting the constant transformation of the natural landscape. Smithson viewed his artistic interventions as a way to recontextualize nature, emphasizing its inherent beauty and fragility.

Robert Smithson's drawings are a crucial part of his artistic practice, playing a significant role in the conceptualization and realization of his *Land Art* works and other art pieces. They were often preliminary studies that allowed him to visualize and plan his works or helped Smithson resolve spatial, structural, and aesthetic problems before the physical execution of the work.

His proposal for *Floating Island to Travel Around Manhattan Island* (1970) is reduced to a sketch with some notes, and it was with just this little information that it was realized in 2005 by Balmori Associates under the commission of Minetta Brook and the Whitney Museum of American Art. In a few strokes and notes, he summarized not only the intention and dynamism of the project but also the relationship established between the natural and the artificial, a recurring theme in Smithson's work, between so many other concerns, abstract concepts that were essential to his artistic approach and interaction with the environment. These allow the viewer to understand how Smithson conceived his works in relation to the landscape in which they would be installed, reflecting his site-specific approach.

In summary, Robert Smithson's drawings are essential for understanding his work and creative process. They



ields are plotted with great precision. The seeding, sprouting, and blooming times of the various crops involved find expression in



Fig. 5. James Corner, cartography with superimposed images from the book Taking measures across the american landscape, 1996. © https://www.fieldoperations.net/home.html (accessed 28 August 2024).

Fig. 6. James Corner, Fresh Kills project, Staten Island, NY, 2004. Diagram showing the different layers of the park. © https://www.fieldoperations.net/ home.html> (accessed 28 August 2024).



Fig. 7. Mathur and Da Cuhna, a series of sections analysing the morphology of the Mumbai estuary as the basis for a water management plan, 2009. © https://www.mathurdacunha.com (accessed 28 August 2024).

serve not only as tools for planning and visualizing his ambitious *Land Art* projects but also as artistic expressions in their own right, exploring and communicating the philosophical and scientific ideas that were key to his practice.

Close to the *Land Art* movement, in its more monumental form though, we find Christo and Jeanne-Claude. The couple, known for their 'wrappings' and large interventions in landscapes, such as *Running Fence* (1976) and *Surrounded Islands* (1983), created a new perception of the environment by wrapping architectural structures or modifying natural landscapes with fabrics. Just as Smithson invited the public to reflect on the interaction between the natural and the constructed, especially in his explorations of the concept of non-places and industrial landscapes, Christo and Jeanne-Claude also focused on the temporality of their works, as most of their installations were temporary, existing only for a short period before being dismantled. This approach highlights the ephemeral nature of art and the importance of the process, not just the final product.

The drawings of Christo and Jeanne-Claude are an integral part of their artistic practice (fig. 3), serving not only as tools for planning and funding but also as independent works of art that encapsulate the vision, technique, and process behind their monumental installations. These meticulously crafted drawings often combine various media such as pencil, ink, charcoal, watercolour, and collage, capturing the essence and monumentality of their projects. They have achieved great value in the art market, enabling Christo and Jeanne-Claude to sell them, along with other studies, collages, and models, to raise funds. In this way, the drawings were not only artworks by themselves but also crucial for financing the realization of their large installations.

We have already discussed the beautiful sketches full of annotations by Lawrence Halprin [Metta, Di Donato 2015], a prominent figure in the design of public spaces and urban landscapes, who used drawing not only as a planning tool but also to explore and express ideas about movement, social interaction, and ecology. Halprin's drawings are core to understand his innovative approach to landscape architecture and urban planning.



Fig. 8. Balmori Associates, analysis of existing and proposed Atlantic Forest vegetation in the project VIOL Corporate Towers in Sao Paulo (Brazil), 2017. Courtesy of Balmori Associates.

One of the most characteristic aspects of Halprin's drawings is his focus on movement through the space (fig. 4). Inspired by his wife, the choreographer Anna Halprin, Lawrence Halprin developed what he called 'scores' which are drawn sequences representing how people would move and experience space. These drawings capture the dynamism and fluidity of the spaces, reflecting his interest in the choreography of human movement within landscapes. Halprin also integrated natural and ecological processes into his drawings, such as water flow, vegetation, and seasonal changes, in an abstract way, distancing himself from romantic and referential representations. His sketches and diagrams frequently showed how these elements would integrate into the design, underscoring his commitment to sustainability and the harmonization of the built environment with nature.

In brief, Lawrence Halprin's drawings are a key manifestation of his interdisciplinary and participatory approach to landscape architecture. Through them, he explored concepts of movement, social interaction, and natural processes, creating spaces that are both functional and deeply connected to the environment and the communities that inhabit them. These drawings are not just design tools, but also artistic expressions that capture the essence of his vision for urban landscapes. Equally beautiful are the drawings of Bernard Lassus [Conan 2004; Venturi Ferriolo 2006], a French architect and artist known for his work in the field of art and landscape architecture. In the context of Crazannes, a town in the region of Nouvelle-Aquitaine, France, Lassus created a series of drawings and designs for a project that sought to integrate art into the natural landscape and urban environment. These drawings are characterized by their focus on the relationship between art and landscape. In his works, he combines elements of nature with architectural concepts to create a visually impactful and harmonious experience. His designs often include geometric shapes and patterns that integrate with the environment, reflecting a deep understanding of the landscape and an innovative vision of how art can interact with space.

The publication in 1969 of Ian McHarg's book *Design with Nature* [McHarg 1969] marked a shift towards ecology and its new forms, laying the foundations for ecological planning, an innovative approach that introduced the idea of integrating ecological processes into urban planning. McHarg advocated for using natural systems as the basis for planning and design, emphasizing the importance of understanding the environment to create sustainable and resilient landscapes.

A few years later, something similar happened with James Corner's 1996 book *Taking Measures Across the American* Landscape, published with photographer Alex S. MacLean [Corner, MacLean 1996], where he conducted a deep exploration of the American landscape, capturing its vastness and diversity. Through a combination of texts and photographs (fig. 5), the book reveals the complexity and unique characteristics of the landscapes of the United States, from urban to rural and natural areas.

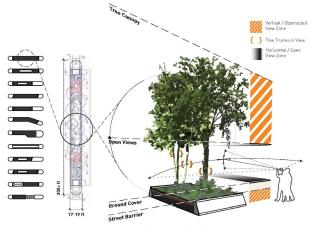
This volume represents an innovation in landscape representation, as Corner manages to translate the experience of the landscape into images and texts that capture both its physical form and its underlying processes. The book is notable for its use of cartography, maps, and diagrams, which offer new ways of seeing and understanding the landscape beyond the visual, integrating ecological and cultural aspects. Furthermore, it highlights the intersection between ecology and culture in shaping the landscape. Corner shows how ecological processes, and human interventions intertwine to shape the landscapes we see today. This holistic approach is crucial in contemporary landscape architecture, which seeks to integrate natural and human systems in a sustainable way, influencing how current landscape architects understand, represent, and design in relation to the environment.

Taking Measures Across the American Landscape was also crucial in the development of Landscape Urbanism, a discipline that Corner helped define: a framework that addresses the intersection of landscape, urbanism, and ecology (fig. 6). The book demonstrates how detailed observation and representation of the landscape can inform urban planning and design projects that respect and harness natural processes.

Both Corner and McHarg share a concern for ecological processes and their influence on landscape architecture. While McHarg's work focused more on environmental planning and conservation, Corner expanded these ideas in the context of contemporary urban design, exploring how landscape architecture can be a way to address complex urban and ecological issues. Both have made significant contributions to the field, with McHarg laying the foundations for ecological design and Corner advancing these ideas in the realm of landscape urbanism, influencing how cities are designed and experienced today.

Following in the footsteps of these authors, who seek to redefine our ability to understand and represent the territory as the layering of systems it is, and above all, the search for answers to broader questions about our Fig. 9. Balmori Associates, diagram of the Broadway Malls project (NY, USA) showing how a green corridor that crosses the island of Manhattan is actually a succession of urban habitats, 2017. Courtesy of Balmori Associates.





Circulation (View Openings and Viewable Zones)



Fig. 10. Balmori Associates, digital rendering and diagram of the visual openings created in the medians of New York avenues in the Broadway Malls project (NY, USA), 2017. Courtesy of Balmori Associates.

Fig. 11. Balmori Associates, digital rendering of the environment created in the medians of New York avenues in the Broadway Malls project (NY, USA) 2017. Courtesy of Balmori Associates. environment, we must highlight the work of Anuradha Mathur and Dilip da Cunha. In 2009, analysing the Mumbai estuary, they shifted from a traditional plan view to an infinite succession of sections, inviting a new way of looking at the territory and attempting to answer self-imposed questions such as 'What is a river?' or 'What is a city?' By analyzing abstract concepts, we can seek systemic solutions to problems like flooding (fig. 7). Diana Balmori, an influential landscape architect and urban planner known for her interdisciplinary approach and innovative vision of integrating landscapes into the urban environment, inherited some of the more complex characteristics presented so far [Balmori 2010; Balmori 2014]. Throughout her career, Balmori advocated for an approach that viewed landscape as an essential tool for addressing environmental problems and improving the quality of life in cities (fig. 8). Heavily influenced by the work of Alexander Von Humboldt, whose illustrations displayed data on the interaction between plants and animals in relation to altitude on a mountain, Balmori always sought ways to represent a landscape through the symbols of the underlying data, that is, the integration of scientific data and artistic representation (figs. 9, 10, 11). Just as Halprin did, Balmori persistently sought to represent the movement within her projects and their surroundings, a significant innovation in landscape representation, emphasizing the importance of capturing natural dynamics in all interventions. Her projects demonstrate how complex data can be visualized in clear and understandable ways, and her influence continues to inspire new ways of conceiving and representing the landscape. She managed various techniques, from mapping and digital modelling, which served to visualize how her designs would impact the natural and built environment, to dynamic visualizations that could show how her projects would change and evolve over time, adapting to environmental and urban fluctuations. Her interdisciplinary approach consistently integrated elements of art, science, and technology in her representations, creating visualizations that were both functional and aesthetically appealing.

Diana Balmori's innovative and visionary approach to landscape representation has left a lasting legacy in the field of landscape architecture and urbanism. Her projects and principles continue to influence how urban spaces are conceived and designed, underscoring the importance of integrating the landscape into urban infrastructure in a sustainable and adaptable manner.

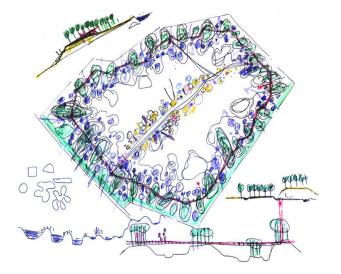


Fig. 12. Kongjian Yu/Turenscape, boceto de esponja verde para el proyecto de Qunli Stornwater Park, China, 2009. © https://www.turenscape.com (consultado el 28 de agosto de 2024).

Other recent successors who combine exemplarily the processes in the representation of their projects are the french landscape architect Michel Desvigne [Fromonot 2020] and the chinese designer Kongijan Yu [Padoa Schioppa 2019], founder of Turenscape. Desvigne advocates for simplicity in design, avoiding unnecessary decorative elements, which is reflected in his drawings: his projects and drawings often feature clean lines and a reduced palette of materials, highlighting the natural forms of the landscape. His goal is to capture the essence rather than reproduce it literally, using abstraction to illustrate the essence of a place, its ecological dynamics, with vegetation as his primary design material. His approach is both poetic and pragmatic, with a clear respect for nature and a long-term vision of the landscape, always seeking to portray the evolution of his projects over time. All of these characteristics are combined in some of his most well-known drawings, such as the diagrams for the Thomson Factory in Guyancourt (France) or the project for Greenwich Peninsula (1997-2000).

Ecological infrastructures and chinese landscape traditions come together in the work of Kongjian Yu, which is characterized by a deep connection with ecology, culture, and community, working with nature and proposing the restoration of ecosystems that are, in some way, degraded. This combination of technology is perfectly reflected in the drawings of his proposals, as demonstrated by the sketch for the Qunli Stormwater Park in Harbin City (China, 2009) (fig. 12), which illustrates the concept of the park as a large green sponge capable of storing and purifying rainwater.

Conclusions

The analysis of the evolution in the representation of the landscape and the relationship between humans and nature reveals a significant change in how the natural environment has been perceived and represented over time. From the earliest pictorial representations in Roman frescoes to the sophisticated contemporary digital techniques, we have seen how the landscape has mirrored the cultural, aesthetic, and technological values of each era.

Initially seen as a separate and static entity, nature has evolved into a dynamic, multifaceted vision deeply interconnected with human actions. This shift has influenced how artists and designers have represented landscapes, reflecting an increasingly complex and ecological relationship. Throughout history, representation techniques have evolved, from the use of perspective during the Renaissance to the incorporation of digital technologies in the contemporary era. This technical evolution has allowed for greater precision and a more faithful and dynamic representation of reality, integrating elements such as seasonal changes and plant growth. Moreover, the incorporation of ecological and sustainable concepts into landscape design has led to a more integrated representation: landscapes are no longer seen as mere static images, but as dynamic systems in constant evolution, where sustainability and beauty coexist and reinforce one another.

Thus, landscape representation has evolved from being a mere decorative illustration to becoming an essential tool for understanding and planning our interactions with the natural environment. It reflects the growing awareness of the interdependence between humans and nature and emphasizes the importance of representing the landscape not only as a physical space but as a living, dynamic system in constant change. Collaboration between different disciplines has enriched landscape representation. Contemporary examples include the works of artists like Robert Smithson and Lawrence Halprin, who combined artistic techniques with ecological principles to create deeply reflective and environment-connected representations.

Through this overview of some of the drawings that have contributed to the evolution of landscape representation, we attempt to outline the continuous exploration and adaptation of artistic techniques and concepts to capture the essence of the natural environment that this field has developed. From Roman frescoes to modern digital tools, each stage in this evolution has brought new ways of seeing and representing the world around us. This journey not only shows technical advances but, more importantly, the changes in the cultural and aesthetic perception of landscapes, revealing a deep connection between humans (also as artistic subjects) and nature throughout history.

From ecology and sustainability to human interaction and aesthetics, each of these professionals has contributed to redefining how we understand and design our natural and urban environments. Through their innovations, landscape design has emerged as a vital discipline that connects art, science, and community in the creation of spaces that meet contemporary and future needs.

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