Balmori Associates: Landscape Representation

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Introduction

The discipline of landscape architecture is undergoing a reinvention, becoming central to shaping public spaces through comprehensive approaches that address equity, social inclusion, the climate crisis and biodiversity and standing as a powerful design tool, fostering dialogue on the evolving relationship between humans and nature.
Within this renewal of the field, nowhere has the representation been more scrutinized than in landscape architecture, becoming main topic of the ongoing debate. While 3D modeling and rendering software have revolutionized design fields and unlike static forms of architecture, landscapes are constantly changing. They evolve with the seasons, years, and the elements, making it challenging to represent them in static frames, as was often done in the 18th-century picturesque tradition. Historian Malcolm Andrews critiques the tendency to 'fix' ideal landscapes in time, akin to pictorial trophies. Today's hyper-realistic renderings, similarly, freeze landscapes at one moment in time, limiting our understanding of their dynamic nature.
For phased projects, designers often create sequential drawings showing landscapes at different stages of growth, often necessary for construction or ecological restoration, which are valuable for showing flexibility in the use of space, adapting to various community needs over time. Capturing time in landscape drawings is crucial, as the survival and evolution of a landscape depend on its changing conditions, such as plants adapting to light as trees grow.

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This fluidity raises questions about when a landscape is 'complete' but actually a landscape may never truly be complete: it is always evolving, with only traces of its ongoing processes to be seen. Similarly, questions arise about the beginning of a landscape: the history and context of the site itself, shaped over millennia, are vital to the strength of a landscape design.
Therefore, landscape representation is most effective when it acknowledges that it is merely capturing a moment within a much larger timescale. Drawing serves as the language of ideas in landscape architecture, allowing designers to research, test, and communicate their intentions. These ideas may be expressed through sketches, plans, sections, or perspectives, and may be created using analog or digital techniques; but most probably, analog and digital processes are often intertwined throughout a project.
The design evolves in a non-linear way, with representation playing an integral role in its development. Rendering software like *Lumion* allows for the creation of polished perspective images at any design stage, but these images can sometimes make a design appear more resolved than it actually is. By altering these images, designers can better reflect the evolving nature of the landscape.
Process images are essential, as they express the unfolding of ideas, and the creation of forms connected to the living systems of a site. As conditions change, these drawings offer insights into how the landscape could be adapted in the future. Landscape preservation is more complex than architectural preservation and once a designed landscape is no longer maintained or visited, it disappears. Embracing process images is key in preserving the legacy of landscape design.
Balmori Associates, established by the visionary Diana Balmori, has been pivotal in redefining representational practices within the field. The firm's approach integrates landscape as a dynamic, living system, emphasizing the interconnectedness of ecological, social, and aesthetic concerns. Representation, for Balmori Associates, is not merely a tool for visualization and documentation, but an essential method for investigating the complex relationships between natural systems, urban spaces, and human experience. The late Diana Balmori, a trailblazer in the field, was renowned for her profound understanding of the interplay between natural systems and urban environments. Her legacy is characterized by a commitment to ecological sensitivity, aesthetic excellence, and interdisciplinary collaboration.

Balmori Associates is marked by a relentless pursuit of innovation and a deep-seated belief in the transformative power of landscape architecture. Our firm champions the idea that landscapes are dynamic, living systems that must be designed with an awareness of their temporal and spatial dimensions. Their work emphasizes the importance of creating spaces that are not only beautiful and functional but also ecologically resilient and sustainable.
The firm's innovative techniques in digital and analog representation have not only enhanced the visual communication of their projects but also deepened the understanding of the landscapes they design. By focusing on the interfaces and interactions within landscapes, rather than merely the objects within them, Balmori Associates fosters a more holistic and immersive approach to design.
Representation in design holds paramount importance as it transcends being a mere endpoint in the creative process. It acts as a vital bridge between conceptual ideas and their tangible realization, enabling designers to visualize, test, communicate and refine their concepts iteratively. Effective representation fosters clear communication among stakeholders, ensuring that the intended spatial qualities, ecological dynamics, and aesthetic values are accurately conveyed and understood.
This paper delves into how Balmori Associates continues to innovate in the realm of landscape representation under the leadership of Noemie Lafaurie-Debany and Javier González-Campaña. Their experimental approach, driven by interdisciplinary research and a strong ecological focus, offers fresh perspectives on the evolving role of representation in landscape architecture. The firm's BAL/LAB initiative exemplifies these efforts, exploring new technologies, techniques, and ideas that push the boundaries of traditional landscape design and representation practices. This research contributes to a broader understanding of how representation can enhance spatial awareness and engagement within designed environments, positioning Balmori Associates at the forefront of contemporary landscape architecture.

Representation in landscape architecture, a BAL/LAB

Since 2006, Balmori Associates has been split into two distinct segments. The first is a traditional landscape practice focusing on landscape as a constructed space, while the second, BAL/LAB, is a collection of research and

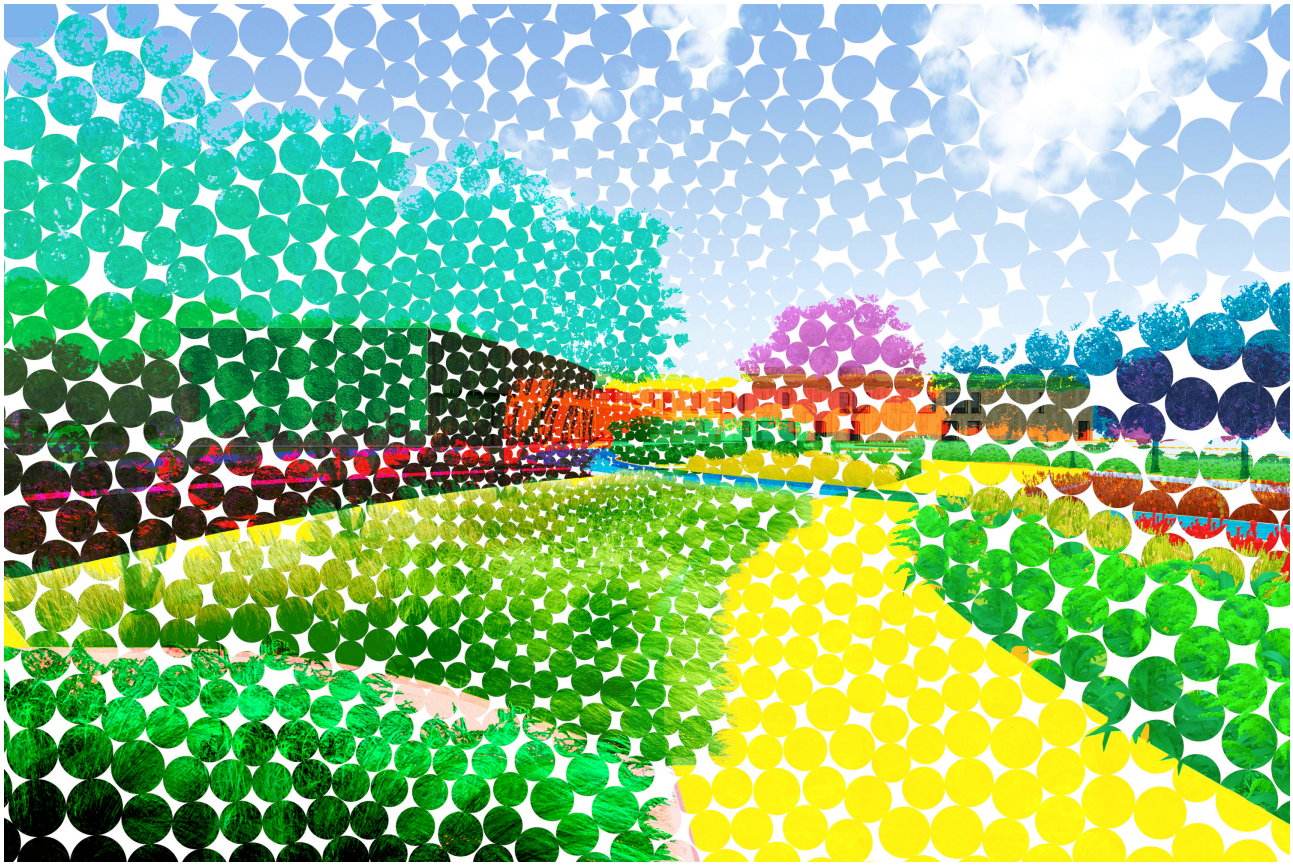

Fig. 1. Botanical Reserach Institute of Texas (BRIT) Fort Worth: the absence of contours around the objects allows space to flow thru the dot matrix, while the color intensity evokes the Texas sun.

experimental projects. BAL/LAB encompasses a range of endeavors including interdisciplinary collaborations, exploration of new technologies, self-initiated projects, temporary installations, floating landscapes, and zero-waste city concepts. A significant area of focus within BAL/LAB is the challenge of representing landscapes. Noemie Lafaurie Debany played a critical role in shaping BAL/LAB from its inception and continues to direct its innovative projects today, driving the labs' focus on forward-thinking and sustainability.

Representation within landscape architecture has become a contentious and heavily debated topic. The advent of 3D modeling and rendering software has transformed the field of design, and nowhere is this transformation more pronounced than in landscape architecture, which is undergoing a process of reinvention. With the rapid pace of urbanization and an evolving relationship with nature, landscape architecture has emerged as a powerful medium for articulating broader global dialogues. Innovative forms of representation –whether digital, analog, or hybrid– serve as

the most vivid indicators of emerging ideas and approaches. Modeling tools began to be widely used in landscape architecture around the late 1990s and early 2000s. This period saw significant advancements in computer technology and the development of software specifically designed for landscape and urban design. Tools such as AutoCAD, initially developed for broader architectural and engineering applications, became more sophisticated and tailored for landscape use to develop 2D plans. Additionally, the introduction of Geographic Information Systems (GIS) and 3D modeling software like SketchUp and Rhinoceros provided landscape architects with powerful tools to visualize, simulate, and analyze their designs in more dynamic and detailed ways.
At BAL/LAB, and throughout project design, we engage in drawing experiments aimed at rendering spaces. Our research focuses on enhancing the understanding of the landscapes we design, with the intention of making viewers more aware of the spaces created rather than the objects within those spaces. To this end, we strive to blur the edges between objects and emphasize their interfaces. One method we developed employs a dot matrix inspired by the halftone and Ben Day processes, reminiscent of Roy Lichtenstein's work (fig. 1). Another method focuses on patterns rather than contours, akin to the paintings of twentieth-century French artist Pierre Bonnard (fig. 3). In our drawings, we aim to represent the spatial qualities, character, and atmosphere of our designs. Yet, other experimentations explored techniques from theater design, manipulating elements such as perspective and layering to create a sense of depth in two-dimensional renderings. This approach transforms a flat image into a more immersive experience, allowing viewers to feel a greater connection to the space (fig. 2).

Fundamental principles

A core principle of our work is to establish a new relationship with each element of nature: soil, water, air, plants, and animals. Our goal is to change our interactions with these elements, treating them as integral parts of ourselves. This principle is reflected in our drawings, where soil and plant roots are given the same importance as the visible canopy of trees. We depict potential human interaction with the space using silhouettes –transparent black or white figures– instead of realistic

Fig. 2. Private Garden, Greenwich, CT, USA: experimentation with perspective and layering adds depth and seeks to create a more immersive experience.

photos. This approach minimizes bias, allowing viewers to imagine themselves in the landscape and focus on the space rather than fashion trends. Some perspectives and projects become dated by the depicted people and their attire. We also experiment with representing activities using hand-drawn figures to emphasize the flexible use of space and the temporary nature of activities.

Process of design and representation

Drawing is the language of ideas. It is the means by which designers generate and test concepts, and communicate design intentions to the team, the public, and clients. Ideas may materialize in plan or section views, perspectives, sketches with pencils on trace paper, transformations in Rhinoceros or other 3D software, collages, or physical models.
In our practice, analog and digital processes are intertwined throughout the project design (fig. 4). The evolution of design is not linear; it does not start with rough, intention-driven lines progressing to detailed, precise computer-generated ones. Instead, a diverse range of representation techniques is integral and fully integrated into the design process. Perspectives or computer-generated renders are produced in-house throughout the design's development. Some practices hire renderers at the end of the design process, often resulting in hyper-realistic images detached from the project's concept. The development of rendering software like Lumion allows

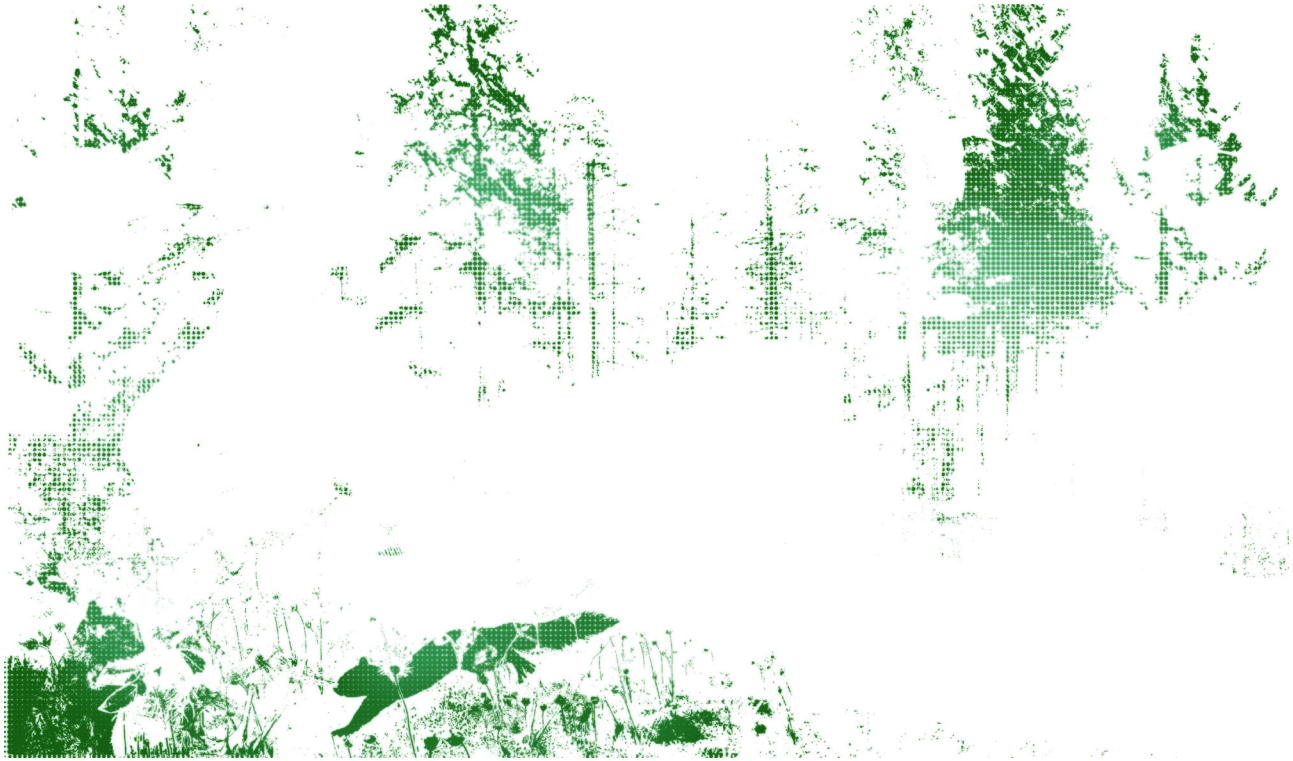

Fig. 3. Wild & US competition entry for St. Patrick Island in Calgary: patterns and colors shape the space instead of singular objects. The drawing carries the project's approach by prioritizing wildlife over human activities.

perspective images to be easily produced at any design stage. We use Lumion and then further alter the images created with the software (fig. 5). Recently, we have collaborated with a visualization company that integrates the design team early in the process, testing ideas and rendering alternatives.

During the COVID-19 pandemic, our studio relied primarily on digital tools for communication and design. Conference room meetings were replaced by *Microsoft Teams*, pin-up boards by Miro's 'online whiteboard', and live design reviews happened on-screen, becoming ephemeral. This shift highlighted a significant transformation in our design process: the reduction in traditional sketching on trace paper in favor of a more digitally integrated approach. With the transition to digital platforms, the process of generating and refining drawings became far more collaborative and dynamic.

Previously, much of our design work involved sketching by hand on trace paper, a method that allowed for individual exploration but often limited real-time feedback and collective input. The introduction of digital tools, however, enabled all hands to engage simultaneously in generating and modifying designs. This collaborative environment allowed team members to contribute ideas, make instant adjustments, and visualize changes in real-time, regardless of their physical location.

Digital platforms facilitated a more interactive and iterative design process. For instance, Miro's 'online whiteboard' provided a virtual space where team members could brainstorm, sketch, and annotate collectively, mimicking the collaborative nature of physical pin-up boards but with enhanced flexibility and equitable access for all to interact in our very horizontal studio structure. Similarly, real-time screen sharing during design reviews allowed for immediate feedback and revisions, creating a more fluid exchange of ideas. This digital approach not only streamlined the design workflow but also fostered a sense of collective ownership and engagement in the creative process.

Fig. 4. Madrid Nuevo Norte Landscape Masterplan, Madrid: the line drawing outlines the space's structure, while splashes of colors highlight the vegetation emphasizing the interface between landscape and architecture.

Fig. 5. Allegheny River Trail Park, Pittsburgh: after generating an initial image with Lumion, textures, plants, and contour lines are added to enhance the sense of space.

While preparing Balmori Associates' records for Yale University's Sterling Memorial Library, we prioritized archiving process images, not just final deliverables. Over 30 years of idea production since Diana Balmori founded the firm, the balance between analog and digital shifted from a majority of paper and physical models in the early years to mostly digital. Capturing and recording ideas and processes, not just final deliverables, is challenging, especially when they reside in software-specific file versions. In this context, redlining or sketches over printed material have been crucial for offering a more universally accessible outlook on the design process.

Artificial Intelligence in landscape representation

Artificial Intelligence (AI) has begun to play a significant role in landscape representation, encompassing the analysis, interpretation, and generation of visual representations of landscapes. Applications of AI span the fields of design, environmental monitoring, agriculture, virtual reality, gaming, and artistic endeavors. AI techniques include image recognition, where algorithms identify and classify different landscape elements such as trees, buildings, water bodies, and terrain types; generative models like GANs (Generative Adversarial Networks) which create realistic images of landscapes from scratch or based on input data; and remote sensing, where AI analyzes satellite and aerial imagery for landscape monitoring and assessment. Additionally, AI is used in simulation and modeling to predict changes in landscapes over time.
While AI offers significant benefits in landscape representation, such as improved efficiency through automated analysis of large datasets and increased accuracy with advanced algorithms, there remains a notable gap in its ability to foster innovation and generate new, imaginative landscape designs.

Representing time in landscapes

Landscapes are inherently dynamic, changing with the seasons, years, and even the daily play of shadows, tides, and clouds. Diana Balmori articulated this in her Landscape Manifesto [Balmori 2010] noting that "this lack of fixity is landscape asset". Yet, with the exception of

before/after images or phased projects, where drawings represent the landscape at various stages –year 0, year 3, year 5, year 10 etc.– most landscape renderings capture a single moment in time. Landscape renderings typically depict one hour of the day, one season, and a specific point in the growth cycle. Many of our drawing experiments have revolved around the representation of time in landscapes (fig. 6).
In the summer of 2021, Balmori Associates opened a garden installation at the Metis Garden Festival titled *Choose Your Own Adventure*. This project rethought our connection to nature following the COVID-19 pandemic lockdown, emphasizing natural phenomena such as gusty winds, wet bark, musky shade, dry air, sweet smells, hot stone, and crunchy gravel. The project evoked the ever-changing quality of the landscape and aimed to create a space that could only be experienced and not adequately represented or photographed. The garden challenged still-frame images reminiscent of the eighteenth-century picturesque. Malcolm Andrews described tourists seeking ideal landscapes as "'fixing' them as pictorial trophies to sell or hang in frames on their drawing room walls" [Andrews 1989, p. 67] –analogous to twenty-first-century Instagram. Yet, a landscape never occurs the same way twice, and its lack of fixity and hyper-sensorial experiences are emphasized through the garden's simple matrix. The representation of the garden in the competition submission remained deliberately diagrammatic: East/West planting bands intersected North/South hard material bands. The garden invited visitors to choose their own adventure through smell, touch, sound, taste, and sight.
Representing a constantly changing landscape is challenging. We have tested animation but often find ourselves limited by the specific techniques required to produce an animation that conveys our ideas. We have created sections and diagrams to address phased landscapes and plant growth over time and represented the same view across different seasons or divided into four seasonal views.

Peripheral vision and landscape

In Drawing and Reinventing Landscape [Balmori 2014] Diana Balmori stated that "landscape architecture is an art of peripheral vision. Peripheral vision is essential for understanding and appreciating landscape; central vision alone cannot capture it." To explore this concept, vision scientist Denis Pelli and Balmori Associates staff conducted an experiment to measure how restricting the observer's field of view affects their experience of a landscape's beauty. Viewing devices used included a tube and a truncated cone (with both ends cut off). The results indicated that restricting peripheral vision reduced viewing pleasure.
In 2011, under the leadership of Noemie Lafaurie Debany, Balmori Associates implemented the viewing cone concept as a series of planes with a circular opening, gradually rising from the ground at the Metis Garden Festival. As one progresses through the frames toward the St. Lawrence River, focusing on the floating islands, the field of view opens, the horizon widens, and infinite space offers itself to the viewer. This project exemplified Debany's innovative approach and vision in landscape design.
After testing peripheral vision's role by experiencing an existing landscape and designing an installation to demonstrate its importance, we pursued representing landscapes with peripheral vision. Initial tests applying a homogeneous filter to the image periphery failed. However, deforming objects within the image proved more successful.
The frame is crucial in the perceptual experience of landscapes, and the viewport in 3D modeling software plays a similar role in representation. By creating an outline, the frame defines a field and creates a view [Mitchell 2007].

Conclusion

The approach to landscape representation at Balmori Associates is fundamentally intertwined with the landscape design and the crafting of spaces, forming an integrated and holistic practice. This interrelation is not merely a methodological choice but a crucial aspect of the firm's philosophy. By intertwining representation and design, Balmori Associates ensures that the conceptual and aesthetic intentions are consistently articulated from the initial idea through to the final execution.
The BAL/LAB initiatives illustrate this integration, where experimental and interdisciplinary research directly informs practical design solutions. The innovative representation techniques developed within BAL/LAB –such as dot matrix patterns inspired by halftone processes, or patterns reminiscent of Pierre Bonnard's paintings– are not mere artistic exercises. Instead, they are carefully crafted methods aimed

Fig. 6. Madrid Nuevo Norte Landscape Masterplan, Madrid: this section depicts winter and summer, with deciduous trees casting shade on façades in summer. It reveals root systems, often overlooked but crucial to landscape.

at enhancing spatial understanding and awareness. These techniques strive to depict the fluid interfaces and interactions within a landscape, thereby guiding both the design process and the perception of the completed space.
Moreover, the firm's emphasis on representing the temporal dynamics of landscapes reflects a deep understanding of the inherent qualities of natural environments. By depicting landscapes at various stages of growth and through different seasons, Balmori Associates acknowledges and embraces the transient nature of their designs. This temporal representation aligns with the firm's broader ecological and sustainable design principles, emphasizing the importance of time in the maturation and evolution of landscapes. Such representation ensures that both designers and stakeholders remain cognizant of the long-term ecological processes and aesthetic transformations, thus fostering a more profound appreciation of the landscape's lifecycle.
Furthermore, the firm's exploration of peripheral vision and its impact on landscape experience underscores the importance of perceptual completeness in design. By empirically investigating how peripheral vision contributes to the appreciation of landscapes, Balmori Associates bridges the gap between sensory perception and design representation. This research informs both the creation of immersive, experiential spaces and the development of representation techniques that more accurately convey the intended spatial experience. Such endeavors ensure that the crafted spaces resonate with viewers, eliciting the intended emotional and aesthetic responses.

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