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Visualizing Climate Action: Representation Strategies in Landscape Architecture

By Nadia Amoroso*

*This research article examines the evolving role of visual communication in climate-resilient urban and landscape design. This paper addresses the research question: How do contemporary landscape architecture practices utilize visual representation to foster climate action, and what emergent framework of strategies can be derived from their work? The methodological approach is a comparative visual analysis and narrative synthesis, extracting from the publication *Representing Landscapes: Visualizing Climate Action* and in-depth interviews with principals from leading global design studios. The analysis highlights how visual strategies, from illustrative graphics and data mapping to AI-assisted renderings and immersive simulations, can advance public understanding, stakeholder engagement, and project implementation for climate adaptation. The primary contribution of this paper is a synthesized framework of visual communication strategies that emphasizes clarity, emotion, dynamism, and inclusivity. By critically highlighting the work of leading firms and academic studios, this paper outlines strategies for employing visual representation to foster collective climate literacy and build resilient futures, moving beyond mere depiction to inspire collective action.*

Keywords: visual representation, graphic communication, landscape architecture, accessible communication devices, design communication

Introduction

Visual representation provides an essential role in the practice and pedagogy of landscape architecture. In the context of escalating climate change impacts, visual tools become more than aesthetic supplements, they serve as catalysts for climate action. This research explores how visualization strategies, when applied with clarity, empathy, and innovation, can help articulate climate risks, communicate design responses, and activate collective action. For the purposes of this article, "climate-resilient" design refers to landscapes and urban systems planned and built to anticipate, absorb, and recover from the effects of climate change.

The basis for this paper lies in the compilation and analysis of works from *Representing Landscapes: Visualizing Climate Action* that contain key interviews from award winning studios. It brings together contributions from over 30 academics and practitioners across North America, Europe, Africa, and Asia. This article synthesizes these diverse voices and visuals into a cohesive framework of actionable design communication strategies tailored for climate resilience. The aim is to move beyond summarizing existing work to critically assess these strategies and propose an integrated approach for practitioners and academics.

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Literature Review

Visual Culture in Landscape Architecture

The role of representation in landscape architecture is historically significant. Seminal figures like James Corner argued for a shift from representation as mere depiction to a generative act capable of constructing new landscape imaginaries. His essay "The Agency of Mapping" (1999) emphasized mapping not just as a recording tool but as a performative act that influences how landscapes are conceptualized and built. This "visual turn" embraced collage, photomontage, and hybrid diagrams to mediate between ecological processes and design intent.

Contemporary discourse acknowledges that representation is not neutral; it frames how problems are understood and which solutions are imagined. Visuals that integrate emotional resonance with empirical clarity are especially powerful in communicating climate adaptation strategies. Recent scholarship extends this by emphasizing the importance of inclusive and hopeful imagery, cautioning against "sensationalism"—overly dramatic visuals that may induce fear or despair rather than inspire action. M'Closkey and VanDerSys (2017) critique the over-reliance on photorealism, calling for more diagrammatic representations that convey the dynamic, non-linear qualities of living landscapes. This paper builds on these foundations by analyzing how contemporary practitioners are applying and evolving these theories to meet the specific challenges of the climate crisis.

Academic discourse increasingly questions representation ethics, particularly regarding what and whom visuals include or exclude. Questions of authorship, audience, and narrative control have become central, as landscape architects strive to create more inclusive, co-designed, and participatory modes of communication.

Representation and Climate Communication

The Intergovernmental Panel on Climate Change (IPCC) stresses the importance of effective communication in addressing climate crises. Visual representation can humanize data, personalize risk, and imagine alternative futures. However, it also carries risks, including "oversimplification," which can misrepresent scientific uncertainty or distort complex ecological processes. Landscape architecture thus occupies a dual position as both science communicator and narrative creator. As Mendenhall from Sasaki suggests, techniques like "chunks and comics" become powerful modes of storytelling, making complex systems consumable and relatable. Firms such as Felixx, SCAPE Studio, STOSS, and De Urbanisten exemplify how graphics can bridge the empirical and the emotive, articulating climate data while fostering community hope and ecological imagination.

Methodology

This research employed a mixed-method approach grounded in comparative visual analysis and narrative synthesis. The methodological framework involved a three-stage process:

Data Compilation

The process began with a global scan of over 50 award-winning landscape architecture practices and 20 academic programs, with a focus on environmental design and climate-related innovation. From this, 16 professional firms and 13 academic contributors were selected based on geographic diversity and range of representational techniques, forming the basis of the *Representing Landscapes: Visualizing Climate Action* collection. Primary data included over 200 curated images, textual contributions from participants, and student projects.

Interview Analysis

Interviews and written notes (contributions) were conducted with principals from SCAPE Studio, STOSS, Felixx, Sasaki, and OLIN. The interviews were designed to uncover the intent behind their visual strategies and their perceived effectiveness in engaging different audiences. The interview transcripts were subjected to a thematic analysis to identify recurring concepts related to design intent, audience engagement, and the role of emotion.

Narrative Synthesis

A detailed content analysis was conducted across all visual and textual data to extract dominant themes, styles, and communicative goals. This synthesis creates the basis of the results, providing a clear framework that connects disparate techniques to broader strategic objectives.

Case selection was purposive and aimed at diversity, representing leading-edge practices from North America, Europe, Africa, and Asia. Methodological transparency and limitations regarding generalizability are acknowledged, but qualitative synthesis offers rich, actionable insights.

Results

The integration of visual storytelling into climate design practice reveals multiple trends and tensions. The analysis reveals several key strategies that leading practitioners use to visualize climate action. These strategies are organized into a framework centered on Clarity, Emotion, Dynamism, Inclusivity, and Synthesis.

Clarity, Simplicity, and Accessibility

A central theme is that impactful visual communication must be accessible to people of all backgrounds and abilities.

- Simple diagrams and ‘light-hearted’ visualizations can effectively demonstrate intricate natural processes.
- Firms like SCAPE Studio actively design for accessibility, testing materials for various visual impairments and paying close attention to font sizes and contrast to ensure legibility [1].
- This approach ensures that images can be understood regardless of age or education, which is crucial for involving as many people as possible in decision-making processes.

Evoking Emotion and Optimism

While dramatic visuals can capture attention, many professionals argue they may induce fear rather than inspire action.

- Images that evoke emotion are advocated as potent tools for change, where data alone may not suffice [2].
- Felixx Landscape Architects leverages emotions by using bright-pastel colors and playful scenes, aiming to spark creativity and optimism [3].
- The goal is to foster hope and engagement by avoiding doomsday imagery and instead highlighting the beauty and potential of a site.

Depicting Dynamics, Change, and Time

Representing landscapes as dynamic, evolving systems is crucial for communicating resilience.

- Time-based sequences are essential for showing transformations, such as a flood-prone area becoming a resilient wetland over several years.
- Techniques range from simple animations (GIFs) to before-and-after visualizations, which are powerful tools for demonstrating the impact of climate action.
- STOSS, for example, uses animation in its visual communication strategies to effectively demonstrate processes like storm surge and sea-level rise, making these invisible forces tangible to the public [4] (See Figure 1).

Figure 1. Depiction of Water-Level Rise. This Animation Still from STOSS Illustrates how the Firm Represents Dynamic Processes to Inform the Public About Climate Impacts Like Storm Surge (Project Details and Date not Specified in Source)



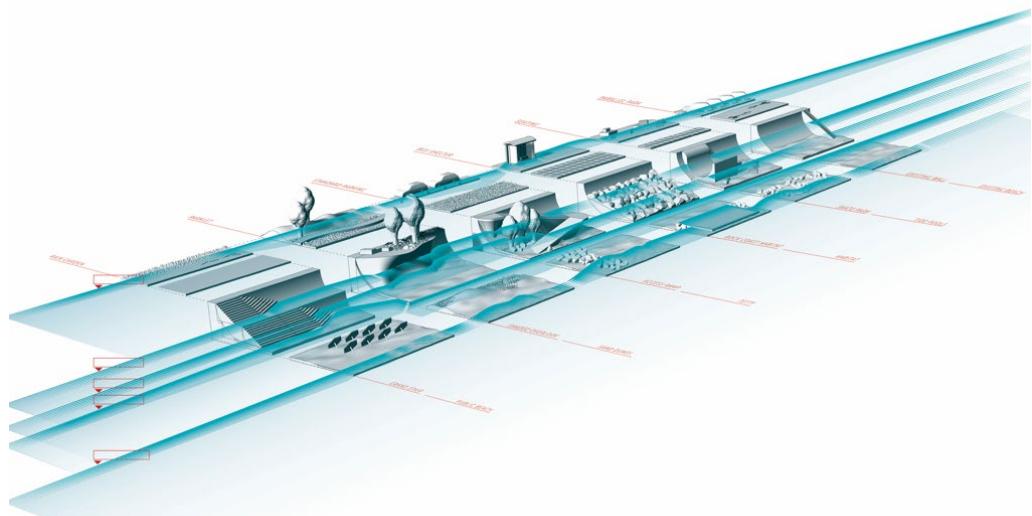
Source: STOSS.

Incorporating Nature and Non-Human Species

Climate resilience must also address the biodiversity crisis, making the inclusion of non-human species vital.

- Exaggerated or 'close-up' views of wildlife can call attention to their needs. SCAPE Studio is a leader in this strategy, frequently featuring oversized birds and butterflies in their work [1] (See Figure 2).
- Techniques like "fish-eye views" and "bird-eye views" can convey how a design supports the specific needs of different species.
- De Urbanisten magnifies creatures like herons and dragonflies in the foreground of urban settings to help people connect with nature and see the city as a functioning ecosystem [5].

Figure 2. Enlarged Non-Human Species, Close-Up Butterfly (Project Details and Date Not Specified in Source)



Source: SCAPE Studio.

Figure 3. Enlarged Non-Human Species, Close-Up Butterfly



Source: SCAPE Studio.

Figure 4. Example of “Landscape-Chunk” and Use of Comics

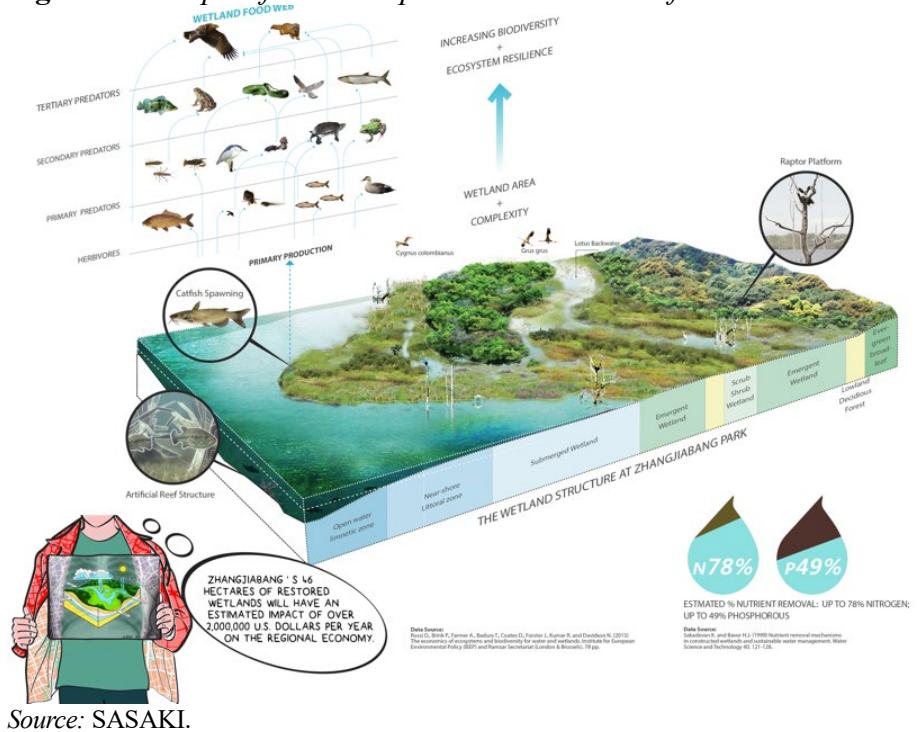
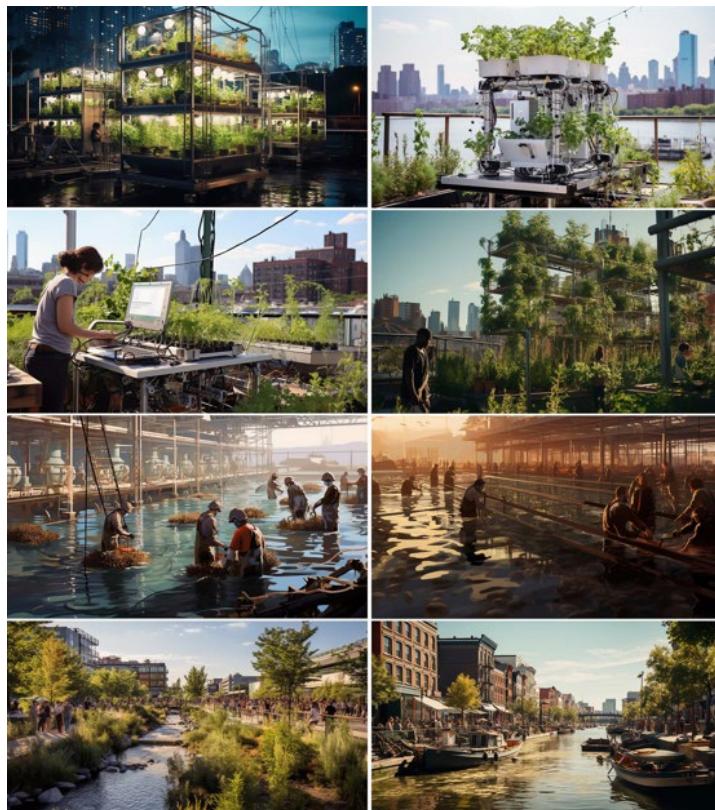


Figure 5. AI Visualizations of Contained Harlem in Water, Similar to Venice, with Robotic Assistance



Source: Zihao Zhang and Shurui Zhang, City College New York.

Synthesizing Data, Science, and Art

Effective visualizations bridge the gap between scientific data and artistic representation, synthesizing complex information so communities can understand climate risks.

- Landscape architects combine empirical-statistical skills with visual-artistic training to blend factual data with emotional appeal for a wide audience.
- This duality is critical, as both data and emotion are needed to spark attachment to natural places and drive change.
- STOSS speaks about designing with and depicting "the invisible"—the forces of change that may only be evident for brief moments but have significant long-term impacts [4].

Leveraging Specific Graphic Techniques & Technology

Practitioners employ a diverse toolkit that blends traditional methods with new technologies.

- **Diagrams and Sections:** "Landscape chunks", which are small, abstract 3D vignettes developed by Sasaki, are effective for breaking down complexity. Deep sections and section perspectives are used to communicate technical performance, including below-ground elements and anticipated flood elevations. [6]
- **Narrative and Storytelling:** Visualizations increasingly function as speculative storytellers. **Comic strips**, used by firms like Sasaki and academics like Chip Sullivan, are an accessible tool to distill scientific concepts, tell personal stories, and engage the public in a narrative format [6].
- **Technology (AI, VR, and Modeling):** The use of AI image generators is a contested but growing practice for envisioning climate action scenarios. VR and AR are used to create immersive experiences, such as embodying a non-human perspective. Sophisticated hydrologic and hydraulic models are used to calculate flood risk and inform design, which is then translated into accessible public-facing visuals [7].

Discussion

The analysis of these visual strategies reveals a critical shift in landscape architecture: representation must do more than explain; it must persuade, include, and inspire action. This is evidenced by the deliberate use of optimistic aesthetics by firms like Felixx to foster creative agency and the development of accessible tools like Sasaki's "landscape chunks" to engage broader communities. Designers are increasingly acting as 'graphic translators,' crafting visuals that synthesize

environmental data with cultural meaning. This approach adapts historical calls for representation as a "generative act" to the specific urgencies of the climate crisis.

However, this evolution is not without risks. The emphasis on simplicity can lead to the oversimplification of complex science, and a reliance on AI-generated scenes might disconnect design from real contexts. Designers act as 'graphic translators' (OLIN, 2024), crafting visuals that synthesize environmental data with cultural meaning. The use of optimistic aesthetics, as practiced by Felixx, challenges the dominant narrative of climate disaster and instead fosters creative agency (Dool et al., 2024). Yet, risks remain: oversimplification may distort science, and reliance on AI-generated scenes might disconnect design from real contexts. Thus, ethical visual practice demands reflexivity and adaptability. Kotchakorn Voraakhom emphasizes simplicity, clarity, emotional connection over shock, and showcasing the beauty and potential of a site. She uses 'before-and-after' illustrations to demonstrate the potential adverse effects of traditional solutions (like dams) and advocate for alternatives [2]. Sasaki employs creative graphical techniques like "landscape chunks" (small axonometric diagrams) to enhance understanding of site systems above and below ground. Uses comic strips to explain complex environmental conditions and engage the public. Utilizes technology like web-based platforms (Climate.Park.Change) and comic strip visuals for community engagement [6]. OLIN Studio serve as 'graphic translators, speculative storytellers, and illustrators' [8].

Visualizations merge research with design responses and community activism. They communicate complex risks and vulnerabilities while advocating for adaptive and preventive actions. It is important to balance abstraction with realism. Layered maps, diagrams, and digital sketches can synthesize complex information, while time-based sequences capture change over time. Visuals should be produced explicitly for climate activism. Felixx's work demonstrates a unique graphic style that has often bright, pastel-colored, playful, and cartoon-like. This style aims to evoke a "happy feeling" while addressing serious challenges. Their approach leverages emotion to drive action, with a strong focus on Nature-Based Solutions (NBS), blending empirical data with artistic representation [3].

Visualizations must be flexible to accommodate uncertainty and show maturation over time. They aim to demonstrate how everyone can contribute to solutions and portray a harmonious coexistence between humans and nature. STOSS begins by depicting how sites have changed historically, linking these dynamics to natural cycles (tidal, seasonal) and showing climate change effects as intensified extensions of these cycles. Visualizations should clearly depict current and impending climate impacts to inform and encourage public sharing of experiences [4].

Design can be leveraged to amplify dynamics, using techniques such as sectional variation to allow people to perceive changing landscapes. Interactive elements (e.g., light rods) can highlight environmental conditions such as rainfall. A combination of 2D/3D software, physical models, and simple animations (GIFs) should be used. Collaboration with engineers employing sophisticated modeling software is essential. Communication should be customized for public audiences using photograph-based or illustrative images, annotated aerial photos, and

animated section perspectives. Students should be encouraged to embrace change, design with dynamics in mind, depict the invisible, and leverage their agency.

De Urbanisten advocates for climate-adaptive and nature-sensitive design, centering strategy around the water system. Graphic novels and comic books can be used to explain concepts (such as the Water Square) in an accessible way [5]. Technical solutions should be translated into urban planning through design integration. Polythematic and synthesis maps can depict interconnected systems, while artistic, less realistic styles invite viewers to envision future possibilities. Concepts like “the city as a sponge” can be introduced visually, and ‘idealistic visions’ of meaningful futures can show cities functioning as ecosystems.

Nature and wildlife can be magnified to reconnect people with the natural world. Visualizations should aim to evoke wonder, love, and playfulness, balancing ecosystem services with deeper human connection. Visuals can demonstrate both the spatial experience and the beauty of climate adaptation [5].

O2 Planning + Design (based in Canada) emphasizes communication and engagement to gain public acceptance for climate action initiatives. They use visual toolkits such as terrain analysis and virtual reality to convey the necessity of proposed designs. The decision-making process is illustrated by incorporating analysis, public input, and design solutions into connected visual narratives. Simple diagrams are employed to show impacts and alternatives, while photomontages and site-specific renderings highlight effects on affected properties [7].

Some other points to consider in the visual communication for climate action designs include:

- Potential misrepresentation and unintended messaging when using maps in public and political spheres.
- Balancing abstraction and realism to ensure clarity and relevance.
- Avoiding static views of nature perpetuated by some AI tools.
- Ensuring accessibility for people with different abilities and impairments.
- The risk of images inducing fear rather than inspiring action if overly dramatic.
- The need for visualizations to adapt to a changing world that may not always be a happy environment.

Conclusions

This study reinforces that effective visual communication is indispensable for climate-responsive design. Landscape architects are uniquely positioned as translators, turning complex data into accessible, emotive, and actionable narratives.

Key takeaways include:

- Visual simplicity and emotional clarity drive public engagement.
- Depicting temporality and ecological process grounds resilience in change.
- Inclusion of non-human perspectives emphasizes biodiversity.
- AI and immersive tools must be used critically and ethically.

- Visuals that inspire hope, rather than fear, are more likely to mobilize climate action.

The paper provides a summary of effective visual communication that is essential for pushing for climate action in landscape architecture. The strategies focus on clarity, simplicity, and emotional appeal, aiming to engage diverse audiences and foster understanding and support for climate-resilient designs. Depicting the dynamic nature of landscapes and projecting change over time through techniques such as animations and sequences is crucial. Integrating nature, biodiversity, and even non-human perspectives into visualizations is essential, as it highlights the ecological goals of landscape projects. By balancing factual data with artistic expression and employing a wide range of graphical tools, from traditional drawings to advanced technologies such as AI and VR, landscape architects can transform complex scientific and design concepts into accessible and persuasive narratives. These narratives can inspire action and help foster a more resilient future.

Experimenting with playful, colorful, and cartoon-like styles can further create a welcoming and engaging environment for viewers. It is also important to avoid fear-based messaging and instead focus on solutions, optimism, and the beauty of nature's potential, as this approach is key to mobilizing meaningful change.

From foundational drawing techniques to immersive, data-driven storytelling, visual representation remains a critical, generative, and often political tool in both the design process and public discourse. As climate challenges intensify, the role of visuals in advocating for resilience, equity, and sustainability will only become more relevant. For practitioners, these insights encourage deliberate expansion of visual toolkits to align representation techniques with specific project goals. For educators, it affirms the importance of teaching visual literacy as an essential, ethical dimension of climate action. Ultimately, visuals that inspire hope, agency, and positive futures will be the most effective tools for mobilizing society toward climate resilience.

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