Digital Representations for Natural Heritage: valorisation strategies in the De+Humans Project

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Abstract

The New European Bauhaus incorporates a multidisciplinary vision in its strategies to promote values of beauty, inclusion, and sustainability. The "Designing with more-than-humans" project applies this vision to the Cratere degli Astroni Natural Reserve, leveraging digital narratives that combine real and artificial imagery to raise awareness about the human-nature relationship and territorial identity. Through a transdisciplinary approach, the team analyzed local identity elements, exploring physical and perceptual relationships. Digital representation, integrating macro and micro perspectives, illuminates the interplay between these elements through a video-graphic product that overlays aerial footage, textual content, and AI-generated images, offering unprecedented perspectives to enhance the value of natural heritage.

Introduction

In 2021, the European Commission launched the "New European Bauhaus" (NEB), a policy and funding initiative aimed at promoting sustainable solutions to transform contemporary environments and lifestyles within the framework of green transition policies and potential actions.

The multidisciplinary vision proposed by the NEB seeks to achieve numerous ambitious goals, rethinking current trends and habits to identify new strategies for a less environmentally impactful future. NEB initiatives encourage the creation of projects that are ecological, inclusive, and beautiful, serving as inspiration for a positive transformation centered on both environmental and social sustainability.

The NEB positions itself as a creative and transdisciplinary movement, bridging science, technology, art, and culture. It fosters projects and experiments that operate across diverse disciplines while upholding values of sustainability, aesthetics, and inclusion. Recent research aligns with this shared design approach, particularly within architecture, design, and communication, emphasizing participation, transdisciplinarity, and the integration of global and local dimensions. This latter point is central to the "De+Humans" project, which arises from the observation of natural heritage and the need to narrate it to foster awareness.

The reflections presented in this research are rooted in site-specific themes related to the Cratere degli Astroni Natural Reserve (Naples). The project's goal is to develop digital narratives to raise public awareness about environmental balance, linking this understanding to the territorial identity of the area. It also explores contemporary technological innovations and experiments with new visual languages.

Inspirations behind the "De+Humans" Project

The XXX project, funded through the Vanvitelli University grant for young researchers and completed in 2023, stems from these premises. It combines theoretical and practical dimensions, aiming to experiment with digital representation processes and create outputs at the intersection of design and nature. The goal is to raise awareness about multi-species coexistence and the protection of ecosystems. Inspired by philosophical studies, particularly the thought of Arne Næss, the project explores the ongoing reshaping of the post-anthropocentric paradigm, reflecting on its implications and experimenting with representative technologies and aesthetic practices.

Arne Næss, a contemporary Norwegian philosopher, provided the intellectual foundation for the project. His concept of "deep ecology" goes beyond superficial ecological concerns like pollution and resource depletion, advocating for an ontology rooted in Gestalt psychology. According to this perspective, reality is not a collection of discrete entities but an interconnected web where every element is intrinsically related. Næss replaces the conventional image of humanity within the environment with a complex vision of reality, where organisms are nodes in the biospheric network, forming a constellation of multiple interwoven interactions (Porro, 2023).

Deep ecology, often associated with Næss, is not a radical view of human-nature interaction but a philosophical approach to ecological issues, grounded in deep inquiry into the nature of things and their representation. Within the De+Humans project, the discipline of representation played a central role, employing storytelling and the construction of images and imaginaries to "make visible" – in Paul Klee's (2004) words – the diffuse, intricate, yet generally invisible relationships that define our reality.

This perspective challenges the anthropocentric viewpoint embedded in daily life, inviting reconsideration of humanity's position not as a distinct element in the environment but as an integral part of it, shaped in unison with all organisms in their interdependence. This shift, though seemingly simple, fundamentally transforms how society perceives and positions itself within the natural world. Harold Glasser, in the most significant compilation of Næss's works, describes his philosophy as "a non-dualistic, non-anthropocentric philosophy of life that emphasizes the interdependence and ultimate unity of all living beings while maintaining their individuality. It celebrates the richness and diversity-both cultural and biological-of the Earth" (SWAN I, p. XVIII). More relevant to representation, however, is Næss's own assertion that the world requires both a microscope and the open, understanding gaze of a phenomenologist to grasp the micro-world surrounding us and the vast expanses seen from above.

Næss's non-anthropocentric, relational, and respectful philosophy seeks to balance these two perspectives: the microscopic view, attuned to the minutiae of life like lichens and stones, and the macroscopic view, embracing vast spaces with no intent to judge but with a joyful appreciation of both totality and individuality-a path toward what Næss calls "Self-Realization" (Nasi, 2023).

In the XXX project, this constant interplay between differing scales of reality translated into the creation of visual artifacts exploring nature. The duality of micro and macro perspectives synthesizes the intrinsic tensions of the environment, emphasizing the dialectical relationship between visible and invisible, between representation and abstraction.

Methodology and Workflow Structure

With the goal of creating engaging and empathetic awareness-raising initiatives for a broad audience, the project staged perceptual experiences and digital representations through drone footage, photographs with various focal lengths, and AI-generated images. These elements combined to build a novel narrative deeply rooted in the Phlegraean context of the Astroni Reserve. The Astroni Reserve is a protected natural area, a majestic volcanic crater preserved between the municipalities of Naples and Pozzuoli. It belongs to the Regional Park of the Phlegraean Fields and is managed by WWF. The reserve represents a stunning "volcanic creation" with a diameter of 2 km. Its highest point, the Torre Nocera spur, rises over 250 meters above sea level, while its lowest point, near one of the reserve's three water basins, is just 9 meters above sea level (fig. 01). The extensive area and significant altitude variations foster a rich and diverse ecosystem of flora and fauna, featuring an unusual inversion of vegetation. Specifically, Mediterranean scrub thrives in the upper parts of the crater, while vegetation typically associated with mountain environments, such as chestnut trees, is found at sea level (fig. 02).

This site carries a magical imaginary, likely amplified by the opportunity to immerse oneself in an untouched environment free of human presence (aside from a few scattered remnants such as retaining walls, a wooden staircase, and the ancient Bourbonian dairy farm). Despite its biodiversity, certain recurring elements-primarily vegetative-stand out as "identifiers" of the reserve's unique character.

The multidisciplinary team involved in the project proposed diverse approaches while collectively focusing on these identity markers of the landscape. The analysis followed a shared methodology applied to the various organisms inhabiting the area. The study concentrated on six kingdoms: animals, plants, fungi, bacteria, minerals, and digital. These categories were studied, analyzed, and

represented collaboratively, beginning with species identification and branching into discipline-specific outcomes that remained deeply interconnected.

Through reflections on these kingdoms (excluding the anthropic one), the project explored human-nature interaction, specifically the physical and perceptual relationships between individual elements and human dimensions. This included discussions on the theme of "disproportion," understood as the deliberate omission of dimensional references to favor a formal and morphological analysis of analogies between parts and wholes-between elements observed at a minute scale and the landscape as viewed from a broad perspective.

Observing the natural forms within the reserve prompted considerations of the continual shifts in scale inherent to the landscape. Consequently, the methodology experimented with digital representations based on the dualism of macro and micro perspectives. The term "macro" refers to large-scale views offering a comprehensive perspective, often captured through drone footage. In contrast, "micro" denotes close-up views achievable only through specialized advanced equipment. The latter images, unattainable with conventional analog tools, were created using AI platforms that enabled the generation of evocative and immersive visuals. These images, while not striving for scientific accuracy, transcend physical limitations of vision, inviting a closer connection (both visually and conceptually) to the natural heritage. Thus, the interplay of macro and micro perspectives synthesizes the intrinsic tensions within the landscape, highlighting the dialectical relationship between visible and invisible, and between representation and abstraction.

Graphic Experiments Between Layering and AI

This paper presents some of the outcomes of the project, focusing on the discipline of representation as a tool for analyzing, transmitting, experiencing, and disseminating both tangible and intangible values. The research activities culminated in an interactive exhibition held at XXX in December 2023. During this event, several prototypes and artifacts were displayed, reflecting the group's shared vision and aimed at creating a multisensory experience and fostering empathetic engagement among visitors. A key feature of the exhibition was the projection of a video based on visual storytelling practices, designed to narrate the extraordinary context of the Astroni Reserve. The video combined unique viewpoints with surreal, close-up AI-generated imagery, prompting reflections on the structure and role of individual elements that define the territory's identity within its ecosystem.

Using real photographs taken in the Reserve, the project developed images of invisible subjects (such as bacteria) and virtual animations where fungi, plants, and minerals were brought to life, creating a dynamic interplay with aerial footage. These cognitive-visual processes encouraged viewers to explore new perspectives on natural heritage-sometimes incredibly distant, other times surrealistically close-allowing individuals to reassign meaning and create value through their unique experiences.

The techniques used, which defined the production and editing phases, included drone footage acquisition, the creation of graphic grids and AI images, and the layering and hybridization of elements through the technique of layering.

During numerous field visits, which provided moments of profound connection with the natural heritage, hundreds of photographs were taken. These experiments with various viewpoints focused on individual units of the forest that seemed to vanish and reappear within the dense vegetation (Fig. 03). The pivotal moment in constructing the narrative of the Astroni Reserve was the drone footage,

captured from various points in the reserve. This revealed landscapes not perceivable from the ground and produced materials that became fundamental communication and visual tools.

To convey the elements of this visual ecosystem, altering the vantage point proved especially compelling. High-altitude images supported reflections on the micro/macro theme and the abstract, visionary dimension of a zenithal perspective. For instance, the presence of water, initially central due to aquatic plants and various animal species, gained a new meaning through its analogy with mirrors. This analogy created coplanar representations of opposing viewpoints, enabling a hypothetical observer to simultaneously see above and below the "projection center" (Fig. 04). This heterotopic condition recalls Michel Foucault's "other spaces," where he describes the extraordinary object of the mirror as "ultimately, a utopia, for it is a placeless place. In the mirror, I see myself where I am not, in an unreal space that virtually opens up behind the surface-a shadow that returns my own visibility, allowing me to see myself where I am absent: the utopia of the mirror" (Foucault, 2011, p. 24).

With the pre-defined goal of experimenting with new technological innovations, engaging with the phenomenon of artificial intelligence labs and their role in visualization and constructing imaginary scenarios became inevitable. AI operates in an exploratory manner, conceiving images without necessarily adhering to a scientifically accurate representation of tangible reality. Instead, it produces representations that serve as vehicles for imaginative spatial concepts.

To approach this work methodically and avoid being overwhelmed by AI's endless expressive possibilities, the prolific production of images followed the logic of the kingdoms' categories, resulting in a rich and evocative repertoire (Figs. 05–06). Critical reflections on the role of drawing and the control of the process between image and text remain complex, particularly regarding visual culture and the emerging aesthetics it entails. However, these reflections foster an awareness of the methods and effects of this paradigm shift, where the idea of design and creative process is reimagined in favor of a perspective that moves beyond anthropocentrism to embrace a new point of view.

This conceptual orientation is central to project De+Humans, which aims to propose a fresh perspective wherein human perception becomes a small fragment of an infinite universe. AI-generated images enabled the creation of digital representations of subjects such as bacteria, algae, and dragonfly wings-elements that often elude our full vision but exist as clear mental images for many. AI served as a medium for giving form to these ideas, illustrating the relationships between elements rather than isolating them. Once again, the value of things resides in their interconnections, consistent with the notion that nature encompasses all existing entities as an interconnected whole, embodying the totality of phenomena and forces it manifests (Sposito, 2017).

These contents were combined through layered overlays, or informational levels, that enriched the representation by defining relationships and references between parts. Beginning with drone footage captured at varying altitudes (above and below the tree canopy, with the camera oriented in different directions), the first layer of information consisted of geometric grids that evolved throughout the video. These grids served as a framework for brief text elements and AI images (Figs. 07–08).

These graphic elaborations demonstrated how even a minor annotation on an image could shift the hierarchy of represented elements, constructing a vastly different perception of reality. This induced a perceptual process in which successive layers added to the base photograph could nearly

disconnect it from our direct perception, selectively including or excluding parts of what we see (Dotto, 2020).

The final outputs represent the result of critical interpretation, where the dynamic nature of video editing guided the alternating focus, highlighting one subject after another in a continuous, intricate sequence that keeps the viewer engaged.

Conclusions

The creation of a digital video-graphic product with profound emotional impact-enhanced by the significant role of sound-encourages reflection on humanity's place within the larger whole, challenging anthropocentric perspectives in favor of a renewed interaction with nature. This narrative aims to reinterpret ecological issues by placing the biosphere and its interconnections at the forefront. It also emphasizes that humans, as inherently symbiotic beings, can find ecological awareness rooted in their very essence (Morton, 2018).

The desired outcome of these visual storytelling strategies is to spark a process of education and awareness that encourages an integrated observation of nature-connecting body and gaze-while recognizing humanity's inevitable dependence on the interconnected balance of all living beings. This approach highlights how discussions of ecological challenges, even when employing digital and AI tools, can retain a deeply human dimension.

Notes

[1] Beauty, sustainability, and inclusiveness are the three key principles identified by the NEB https://new-european-bauhaus.europa.eu/index_en

[2] The acronym SWAN refers to the ten-volume collection of Arne Naess's works, The Selected Works of Arne Naess, first made available by Springer in 2005.

[3] Based on a concept by xxx, xxx and xxx.

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Images

Fig. 01
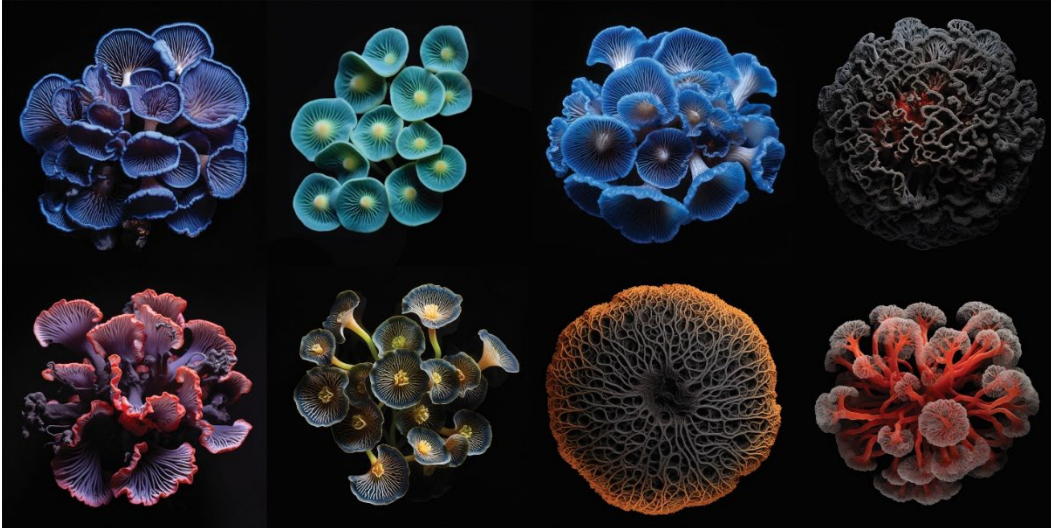

Fig. 02

Fig. 03

Fig. 04

Fig. 05

Fig. 06

Fig. 07

Fig. 08

Captions

Fig. 01 – Cratere degli Astroni Nature Reserve - Aerial photograph captured by drone, taken by the author (November 2023).

Fig. 02 – Using the layering technique, textual content about the species present in the Reserve is superimposed on aerial images.

Fig. 03 – Photographs of one of the site's iconic elements, captured from different perspectives and with varying focal lengths, altering its perception.

Fig. 04 – The lakes within the reserve appear from above as mirrors, encapsulating images of the sky and the earth in a single frame.

Fig. 05 – AI experiments, created using MidJourney, representing the fungal kingdom.

Fig. 06 – AI-generated animations created dynamic sequences that transform and hybridize the forms of elements, merging them into one another.

Fig. 07 – Editing of video sequences illustrating the overlap of real images, textual content, and AI-generated impressions.

Fig. 08 – Editing of video sequences illustrating the overlap of real images, textual content, and AI-generated impressions.