BIODIGITAL VER·SACRUM

JOURNAL OF BIODIGITAL ARCHITECTURE & DESIGN

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Universitat Internacional de Catalunya

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Alberto T. Estévez

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Today, **Spring Equinox 2025,** and celebrating the 25th anniversary of the "Genetic Architectures Research Group & Office" and the "Master in Biodigital Architecture", founded in 2000 at ESARQ-UIC Barcelona School of Architecture (Universitat Internacional de Catalunya), we declare the **"Biodigital Ver Sacrum"**, with the creation of the **"Journal of Biodigital Architecture & Design"**, with an annual call for the **"Biodigital Architect Honorary Award"**, with an annual call for a competition to teach a **"Biodigital Architecture Master's Workshop"**, with an annual call for a **"Biodigital Architecture Competition"**, and we also announce the **6th International Conference for Biodigital Architecture & Genetics** (June 3-5, 2026, iBAG-UIC Barcelona), which will coincide this time with *2026 Gaudí's Centenary Year* and *2026 Barcelona Architecture World Capital.*

The "Biodigital Ver Sacrum" understands that the human needs of our times must integrate both the **17 United Nations Sustainable Development Goals** (pursuing an integral ecology, to balance social and environmental sustainability) and the three core values of the New European Bauhaus, **sustainability, inclusion, and beauty**. The historical artistic avant-gardes have already shown us that art can also represent the dark side of humanity: lies, evil, and ugliness. The lesson has been learned. So, now following our *Zeitgeist*, it is time once again to recognize and build truth, goodness, and beauty, as the authentic human needs to be met today, each of us contributing our respective grain of sand to this planet and its history with our lives and work.

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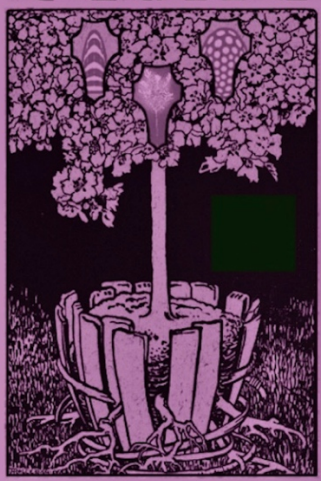

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Biodigital Ver Sacrum

Alberto T. Estévez

Today, Spring Equinox 2025, and celebrating the 25th anniversary of the "Genetic Architectures Research Group & Office" and the "Master in Biodigital Architecture", founded in 2000 at ESARQ-UIC Barcelona School of Architecture (Universitat Internacional de Catalunya), we declare the "Biodigital Ver Sacrum", with the creation of the "Biodigital Ver Sacrum: Journal of Biodigital Architecture & Design", with an annual call for the "Biodigital Architect Honorary Award", with an annual call for a competition to teach a "Biodigital Architecture Master's Workshop", with an annual call for a "Biodigital Architecture Competition", and we also announce the 6th International Conference for Biodigital Architecture & Genetics (June 3-5, 2026, iBAG-UIC Barcelona), which will coincide this time with 2026 Gaudí's Centenary Year and 2026 Barcelona Architecture World Capital.

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(The cover of this first issue of the journal "Biodigital Ver Sacrum" pays homage to the secessionists who broke with the classicist and historicist academy of over a century ago, seeking adaptation to their time and freedom. Just as then, an academy dominates the scene today, this time the modern academy, with its prejudices, norms, and pseudo-dogmas: the current academy, the one that has managed to replace the previous one throughout the 20th century. Therefore, the articles in this journal are presented in the language, syntax, and referential format chosen by the author: each person is responsible for their own decisions and knowledge, for their personal understanding of art, architecture, and design.)

Posters of the three exhibitions: “Exotic Chairs”, “La del Pañuelo”, “The Heart of Architecture”.

Above, “Exotic Chairs” exhibition, 3D printed using color-shifting, iridescent, chameleon PLA filament (left), and inspiration from bone tissue on its micro level with trabecular and cortical structural motifs (right). Below, “The Heart of Architecture” exhibition (right, Heart Shelter-Bricks).

Above left, bone-shaped biocontainer for bioluminescent liquid culture: Micro-CT 3D reconstructs of bovine femur through AI-guided 3D mesh modification in different software. Below, author with digital designed and 3D printed elements of “La del Pañuelo” exhibition.

Genonosis: Post-natural aesthetics and regenerative systems in contemporary bioart

Mario Savini
(University of Camerino, Italy)

Introduction

This contribution originates as an expansion and continuation of the article *Art as a Tool Against Climate Change* (Savini, 2022), in which I analyzed a series of artistic projects focused on environmental protection, aimed at proposing aesthetic and practical solutions to the global ecological crisis. **Joseph Beuys** (*7000 Oaks*, 1982), the collective **Cultural Terrorist Agency** (*SuperWeed Kit* 1.0, 1999), **Alberto T. Estévez** (*Genetic Barcelona Project*, 2003), **Olafur Eliasson** (*Little Sun*, 2012), **Aviva Rahmani** (*The Blued Trees Symphony*, 2015), **Hege Tapio** (*Humanfuel*, 2016), and **Federico Massa, aka Iena Cruz** (*Hunting Pollution*, 2018) seem to trace a shared trajectory: art as a concrete and transformative action towards the environment to generate new forms of care, coexistence, and regeneration.

This essay focuses on artistic practices employing biological materials, living organisms and biotechnological solutions in direct dialogue with life sciences, and bioengineering.

Attention is given to works that go beyond representing nature, transforming it through aesthetic and scientific devices capable of modifying soil, water, and atmosphere. The article examines three emblematic cases of operative bioart: *Covering Earth* (2025) by **Orkan Telhan**, a project using microbial textiles to regenerate contaminated soils; *Korallysis* (2018-2024) by **Gilberto Esparza**, a bioactive installation promoting coral growth through ceramic structures powered by marine energy; *ExoGarden* (2023-2024) by **Anna Vershinina**, an experimental modular ecosystem integrating cultivation, composting, and symbiotic cohabitation among humans, plants, and microorganisms. Despite the diversity of languages and technologies employed, these works converge toward a shared horizon where art becomes a therapeutic gesture, a living graft on the landscape capable of activating environmental transformations. Thus emerges a post-natural and biodigital aesthetic where living matter, ecological forces, and human

participation intertwine in radical forms of co-creation between art, science, and nature. Within this context, I propose the term *Genonosis* to define a novel theoretical trajectory: a generative system of the living through which art initiates processes of ecological mutation via bio-aesthetic interventions. Derived from the Greek *génesis* (birth, generation) and *koinosis* (community, system), the neologism indicates a modality in which artistic creation merges with biological mechanisms, becoming a device that generates habitats, repairs ecologies and, shapes new relational ecosystems. Situated within a biocentric framework, this approach stands as a radical alternative to the anthropocentric perspective: in the *Genonosis* paradigm, the non-human living — microorganisms, plants, bioactive materials, environmental systems — assumes an active and co-creative role. This path aligns with post humanist thought, redefining the role of the human as an integral part of the ecological and relational networks that govern living systems. The artwork is no longer the product of isolated human ingenuity, but a dynamic node connected to symbiotic and interspecies networks. This framework fits within a post-natural relational aesthetic, in which the distinction between nature and culture, biological and artificial, is overcome through practices that encourage interaction among heterogeneous elements in hybrid and designed forms. Art, in this vision, is a generative agent immersed in life processes, in dialogue with living environments, microorganisms and invisible energies, capable of activating systemic and shared transformations.

***Genonosis*: a new aesthetic-operational paradigm**

At the heart of artistic practices engaging with biology, technology, and emerging ecology, *Genonosis* emerges as an operational concept to interpret forms of art that unfold within biological mechanisms. The term denotes a model of systemic co-creation in which art initiates relationships among the living, matter, and environment, generating new functional and participatory ecologies.

What distinguishes the *Genonosis* paradigm is its generative dimension: the artwork is a dynamic system that intervenes on habitats, urban metabolism, biological substrates, or environmental networks. The artistic intervention thus expands into a transformative practice involving living materials, non-human intelligences, bioactive technologies and reactive architectures.

Here, a true post-natural shift occurs: no longer an aesthetics of representation, but a poetics of living doing. In this perspective, the artist assumes the role of a symbiotic mediator, as they graft processes, enable mutations, and construct dialogues. The artwork itself becomes a regenerative agent capable of modifying compromised environments, reinforcing ecological structures, or sustaining vulnerable life forms. Art no longer presents itself as an autonomous object but as a distributed intervention that blends into vital dynamics, modifying soils, interacting with microorganisms, activating measurable and shared ecological regenerations. *Genonosis* assumes the value of a critical and projective category for reading a new genealogy of contemporary bioart: a practice that departs from formal autonomy to become a shared organism, permeated by symbiotic relationships.

Orkan Telhan, *Covering Earth* (2025): microbial blankets for soil care

In the project *Covering Earth* (2025), **Orkan Telhan** implements an artistic and biological device that radically addresses the ecological crisis of soil by proposing a new relationship between microbiology, design, and care practices. The work consists of a series of bioactive textiles created with microorganisms capable of regenerating soils contaminated by heavy metals, industrial pollution, and agricultural degradation. The artistic gesture materializes as a living cover designed to be applied directly onto the ground: a sort of ecological “second skin” that acts deeply, transforming the physical and symbolic substrate of the earth. Made of woven jute and organic felt, these “living blankets” are engineered with internal cavities that host selected microbial consortia, capable of activating gradually and cooperatively, releasing vital substances directly into the soil. *Covering Earth* thus transcends the logic of environmental installation to become a bioactive intervention where art becomes the technology of the living, developing autonomous ecological cycles. The project returns attention, time, and responsibility to places damaged by extraction and overexploitation. Unlike the productivist logic of fertilizers, Telhan designs spaces that require healing, calling for slow and conscious regeneration, both biological and ethical. The installation reveals the often invisible damage imprinted on the soil and highlights the need to restore what has been taken away. This work fully fits within the *Genonosis* paradigm: the artwork is not an artifact to be contemplated but a regenerative agent, an interface between invisible

organisms and compromised territory. The “blankets” thus become relational devices connecting human communities and the life cycles of the earth, expressing a new design sensitivity based on ecological symmetry, microbiological symbiosis, and interspecies regeneration. Through Covering Earth, Telhan proposes an art that operates as a temporary architecture of the living to activate connections between material culture, ecology, and biotechnology. As the artist himself reminds us,

> “*Covering Earth* is an intervention that is part aesthetic, part design, part scientific – but for me, its most important message is that these soils are abused, damaged, and in need of care. We are not trying to fix them so they can return to serving human needs. Even if they recover, they should be left alone. As designers, it’s often difficult for us to work outside the framework of human interests. But the aesthetic act here is to gesture toward an alternative reality – one in which soil, seeds, microbes, minerals, and ecologies are not resources, but part of a complex being that includes us. In other words, art is not operationalizing biology. The process of biological care is the art itself.” (This text refers to a personal conversation held with Orkan Telhan on May 27, 2025, via email.)

This statement strongly clarifies the deeper meaning of the project: not a device merely functional for recovery, but an ethical and transformative gesture aimed at restoring dignity to the environment as a co-existing subject.

Gilberto Esparza, *Korallysis* (2018–2024): bioelectrochemical devices for coral regeneration

With *Korallysis* (2018–2024), **Gilberto Esparza** develops a bioactive system that combines electrochemical mechanisms and coral growth within a symbiotic architecture. The work consists of modular ceramic structures designed to interact with the marine environment: hybrid organisms that harness ocean currents to generate electricity and activate an electrolysis process. This phenomenon allows minerals present in the water – primarily magnesium and calcium carbonate – to deposit on the ceramic supports, creating an optimal substrate for the settlement and accelerated development of new coral colonies. Conceived in 2018 and first activated in 2023 at the Playa Mora coral reef (Tenacatita, Jalisco), *Korallysis* is

designed to accompany and strengthen the natural biomineralization process by intervening in life cycles through a low-impact, adaptive and non-invasive technology. Each ceramic module becomes a micro-architecture of biological support, capable of transforming from a technical scaffold into a living colony and evolving to become a donor of biodiversity for compromised marine areas. The design logic is based on a co-evolution between artificial and natural: the mechanical components do not simulate life but activate favourable environmental conditions, facilitating the appearance and proliferation of microorganisms, calcareous algae, invertebrates, and complex marine species. The project is accompanied by continuous scientific monitoring documenting the stages of ecological succession: from initial colonization by bacteria and algae to the formation of mature colonies able to contribute to the propagation of new habitats.

Formally, *Korallysis* adopts an essential and modular language inspired by natural geometries and the principles of biomimetic design. The structures do not impose a spectacular or narrative aesthetic but operate as silent devices integrated into the marine landscape to activate measurable transformations over time. Through this project, Esparza proposes a post-natural aesthetics based on the active hybridization between living matter and technology where art takes the form of a slow, generative and symbiotic action. *Korallysis* does not represent the fragility of marine ecosystems: it intervenes in their vital processes, supports them, accompanies them and amplifies them. In line with this perspective, the artist conceives his intervention as a gesture of active responsibility and collective dialogue, capable of making problems visible and imagining shared strategies to address them. As Esparza states,

> “My work through art is to talk about certain problems that concern me, whether they are environmental or social. What I do is not only point out but reflect on the problems. I like to look for solutions as well, what I do is imagine how I could contribute in some way through art to be able to do my part in these concerns. Most of all, with art I seek to trigger a reflection that makes the problems visible and involves people who live within the area where these problems are. Through art I like to take these messages further and invite more people to reflect on these issues and open a dialogue so that between all of us and our diverse knowledge we can contribute to solutions and strategies to be able to confront these

problems." (The text refers to a conversation personally held with Gilberto Esparza on June 6, 2025, via email.)

Anna Vershinina, *ExoGarden* (2023–2024): bioactive modules for regenerative habitats

ExoGarden (2023–2024) by **Anna Vershinina** is an experimental ecosystem designed to regenerate extreme environments through the integration of biological systems and 3D printing technologies. The work consists of a series of self-supporting architectural modules conceived as bioregenerative habitats to sustain plant and microbial life both on Earth and in extraterrestrial contexts. Made with porous 3D-printed materials and organized according to biomimetic principles, the *ExoGarden* structures host closed ecosystems that recycle resources, produce oxygen, purify air, and generate nutrients through the interaction of plants, microorganisms, and filtering systems inspired by space biotechnology. The entire apparatus is based on principles of BLSS (Bioregenerative Life Support Systems) adapted artistically to scenarios of environmental crisis and planetary colonization.

Developed in collaboration with exobiologist Wieger Wamelink, the project has a dual significance: on one hand, it proposes a prototype for human survival in hostile environments; on the other, it acts as an aesthetic and bioregenerative structure promoting care practices also in degraded terrestrial landscapes. The modules function as autonomous micro-gardens capable of absorbing CO_2, filtering water, and supporting the growth of edible plants in the absence of fertile soil.

The internal systems are designed to minimize water consumption and optimize nutrient cycles through biological composting processes assisted by earthworms, making the device ecologically efficient and self-sufficient. Within the context of *ExoGarden*, art takes the form of a living architecture that can engage with climate change, post-industrial deserts, and future prospects of multispecies cohabitation. The aesthetic is not representational but functional and transformative, founded on symbiotic relationships among organisms, materials, and environments.

ExoGarden fully reflects the principles of post-natural aesthetics: a work where life, design, and environment intertwine to generate sustainable, open, and adaptive networks. As highlighted by the artist,

> "Art has the unique ability to shift how we see and relate to the world around us. With *ExoGarden*, Wieger Wamelink and I set out to create more than a functional prototype—we wanted to offer a vision of living habitats where humans are deeply embedded in ecosystems, not separate from them. By making biotechnologies tangible, beautiful, and emotionally engaging, art opens up space for people to imagine coexistence not as a limitation, but as a regenerative way forward. It helps us reconnect with other species and envision a future built on interdependence." (The text refers to a personal conversation held with Anna Vershinina on May 28, 2025, via email.)

With these words, Vershinina reaffirms how *ExoGarden* is a genuine invitation to rethink our presence on the planet in relational and symbiotic terms. Art thus becomes a catalyst for future ecological imaginaries, founded on interdependence and active coexistence.

Towards an operative *Genonosis*

The works presented in this essay concretely embody the theoretical hypothesis of *Genonosis*. In each of these projects, the intervention takes the form of a regenerative device, surpassing symbolic function and rooting itself in living processes. **Telhan** works on the soil through microbes and bioactive tissues, **Esparza** regenerates the marine environment through bioelectrochemical mechanisms, and **Vershinina** designs microhabitats capable of functioning as autonomous ecosystems. In each case, the artwork becomes living infrastructure—a sensitive form that transforms the environment in which it is placed. The artist, therefore, assumes the role of symbiotic mediator by facilitating relationships between organisms, technologies, and territories. Artistic action becomes ecological co-creation based on scientific knowledge, design sensitivity, and environmental responsibility. *Genonosis* establishes itself as a critical and projectual category to interpret a new genealogy of contemporary bioart: a practice that detaches from formal autonomy to become a shared organism, traversed by symbiotic interactions. It is no longer a poetics of living matter, but a strategy

of ecological activation founded on the connection between scientific knowledge and artistic imagination.

Conclusion

The practices analyzed demonstrate how contemporary art can operate within vital processes, activating environmental transformations through the use of bioactive materials, living organisms, and symbiotic technologies. *Genonosis*, in this sense, becomes a key interpretative framework for a new generation of works capable of connecting ecology, biotechnology, and aesthetic design. In an era of profound environmental imbalances, art takes on a different responsibility: no longer merely narrating the crisis but actively contributing to its transformation. As highlighted by the examined cases, bioart can act as a regenerative force for unprecedented relationships between human and non-human, between culture and the biosphere, and between aesthetics and the essential dimensions of life. The *Genonosis* paradigm thus opens up new horizons of inquiry where creativity, science, and life become fertile zones of contamination from which radically transformative visions and practices may emerge. It is in this convergence that art can become a form of active coexistence with the living.

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