IN VITRO LANDSCAPES

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In recent years, driven by the growing global ecological awareness, the landscape disciplines have practised unprecedented forms of contamination between architecture, art and science (Capuano et al. 2023) in the search for new, more effective images to understand and represent the set of transformations that coexist in a place and that are the always unstable result of the relationships between visible and invisible, macroscopic and microscopic elements (Kepes 1956). This new research dimension signals that ecology is entering the field of landscape design as a combination of practices and knowledge aimed at exploring the link between nature, technology, living systems and interpretive subjects, It becomes, as Timothy Morton (Morton 2018) has pointed out, a functional hybrid space for the formation of a reticular thought that can contribute to the definition of an environmental consciousness that is more aware of the interrelationships between human and non-human, and of the need to remove rigid boundaries between the two worlds, together with the idea of Nature with a capital N, and to renounce the imposition of a human order on the biosphere (Morton 2016). Central to Morton's position is the metaphor of *The Mesh*, intended as a sprawling network of interconnections without a centre or edge (Morton 2010, pp.28-38), a term that conveys the idea of the substantial and inextricable interrelationship between human beings and a wide range of non-human entities, from microscopic forms such as bacteria to *hyperobjects* (Morton 2016), such as global warming.

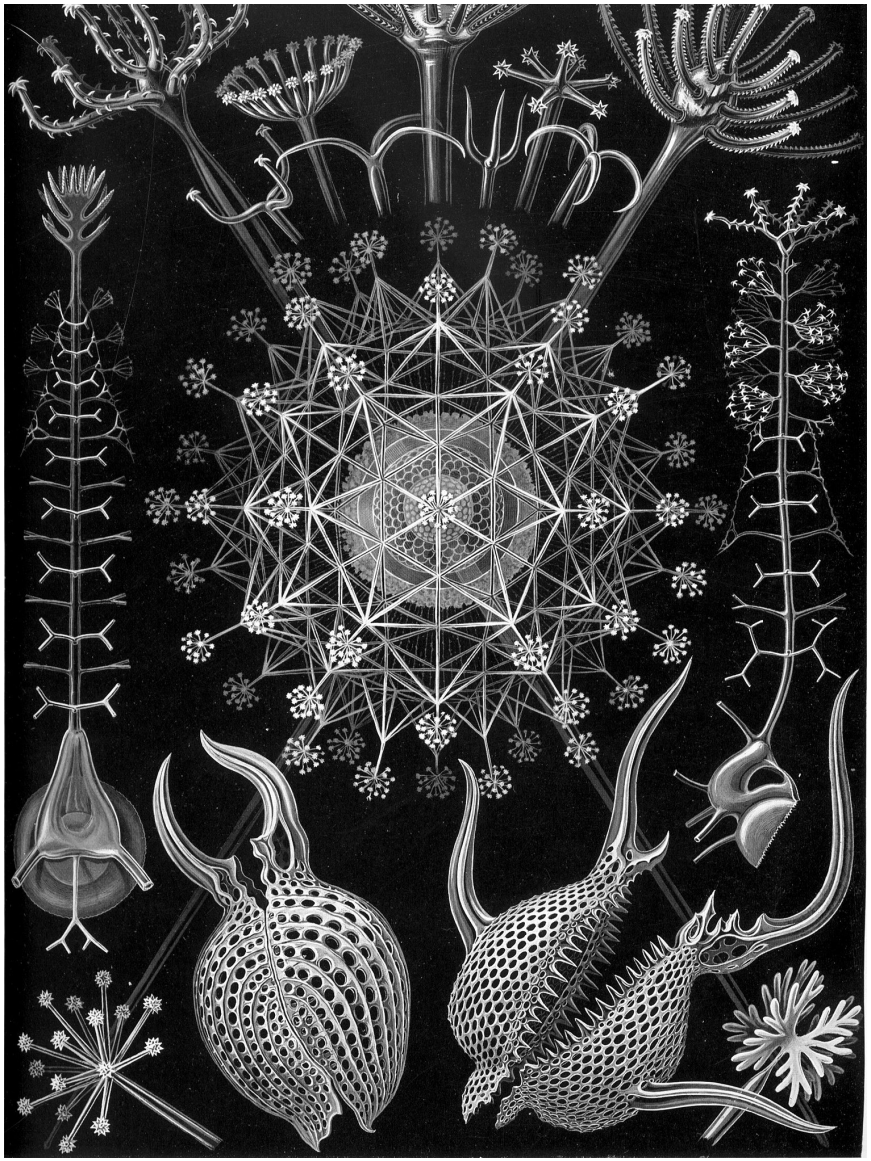
Coexistence becomes the key word for a philosophical and political manifesto that theorises the need to practise a relationship with the world that is centred on contemplation and the search for a possible coexistence between the different entities that make up the biosphere. Today, there is a widespread awareness that no organism is self-sufficient and can exist and sustain itself outside of an exchange relationship with a favourable environment. Every living thing – be it a human organism, a bacterium, a virus or a moss – modifies its environment and is at the same time profoundly influenced by it. In space and time, life reproduces and maintains itself by means of sophisticated self-regulating mechanisms in a continuous selective relationship with the physical environment. This is an extremely stimulating image, which reinterprets and extends to the plant world Pyotr Alekseevič Kropotkin's (1842-1921) idea of mutual support, according to which a key factor in evolution is "mutual support and mutual defence between animals belonging to the same species, or at least to the same society" (Kropotkin 1902, p. 83).

At the beginning of the 20th century, the biologist Jakob von Uexküll used the term *Umwelt* to identify an individual environment or world as defined by the interaction of a living organism (von Uexküll's model is limited to the animal world) with its surroundings, in which the organism and the external environment are essentially inseparable.

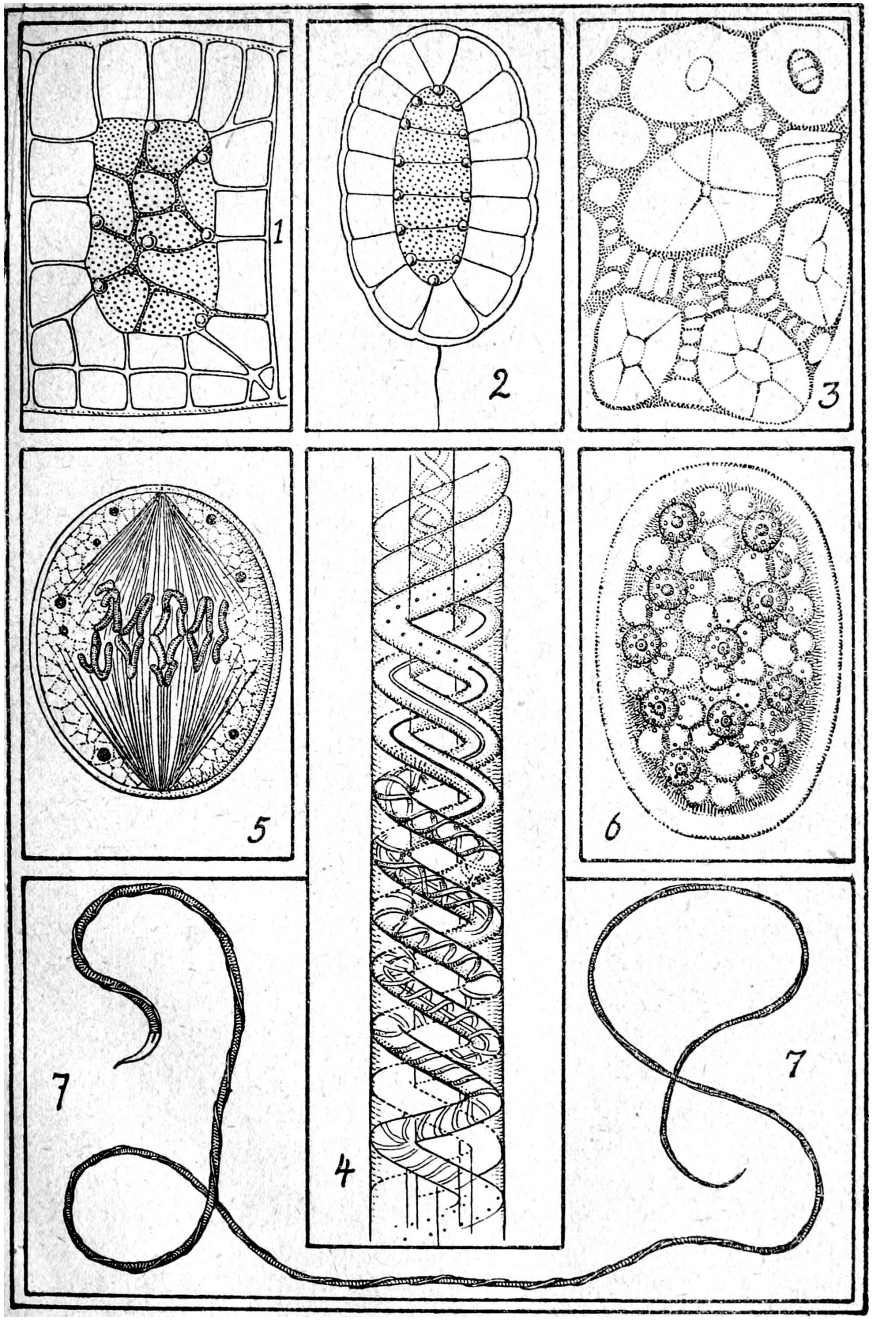
> […] we can represent all the animals living around us (beetles, butterflies, flies, mosquitoes or dragonflies) as enclosed in a kind of soap bubble that circumscribes their field of vision and encloses everything that is visible to them. Each bubble contains the dimensional axes of the working space and what we have called *places*, thanks to which the space of each animal maintains the solidity of its structure (von Uexküll 1934, p. 74).

Von Uexküll schematises the relationship between the living subject and its environment by means of two functional circuits in perfect balance with each other: the receptive system and the reactive system. The receptive organs filter the characteristics that the external environment exerts on the organism, while the effector organs allow the organism to react to stimuli on the basis of what von Uexküll calls the *Bauplan*. The *Bauplan* can be interpreted as a system that generates a particular perceptual tone in the organism, is supersensible, and is located outside of space and time. In this way, the *Umwelt* and the *Bauplan* define the construction of each perceptual sphere. The sphere surrounds and delimits the entire life of each specific living being, which is stimulated and moves coherently from within it. What lies beyond it simply does not exist, because, in von Uexküll's formulation, it is infinitely concealed. The bubbles are included or interfere with each other because they are interdependent and complementary, thus embodying von Uexküll's idea of a network of living things.In a recent essay, Emanuele Coccia, a professor at the Ecole des hautes études en sciences sociales in Paris, goes further. He breaks down not only the human/non-human boundary, but also the animal/plant boundary (Mancuso 2019) on which Western culture has based its dominant conception of nature. *Plant life. Metaphysics of Mixture*, suggests thinking of the world as a "reality of mixture in which everything breathes" (Coccia 2018, p.82). The image that initiates this new cosmology is one that characterises plants as having no hands "to handle the world, yet it would be difficult to find artists more skilled in the construction of forms" (Coccia 2018, p. 23) since "their body is an unstoppable morphogenetic factory" (Coccia 2018, p. 24). In Emanuele Coccia's reflection (which is not easy to decipher), *atmosphere* becomes the key

Plate 4: Diatomeae.
Source: Ernst Haeckel, Kunstformen der Natur, Verlag des Bibliographischen Instituts, Leipzig und Wien, 1904.



The structure of protoplasmas: 7 different configurations
Source: Raoul Heinrich Francé, Die Pflanze als Erfinder, Kosmos, Gesellschaft der Naturfreunde, Stuttgart 1920.



word: the space of mixing without losing one's identity, where through breathing a complicity/intimacy between the elements is realised that goes beyond the mechanisms of fusion:

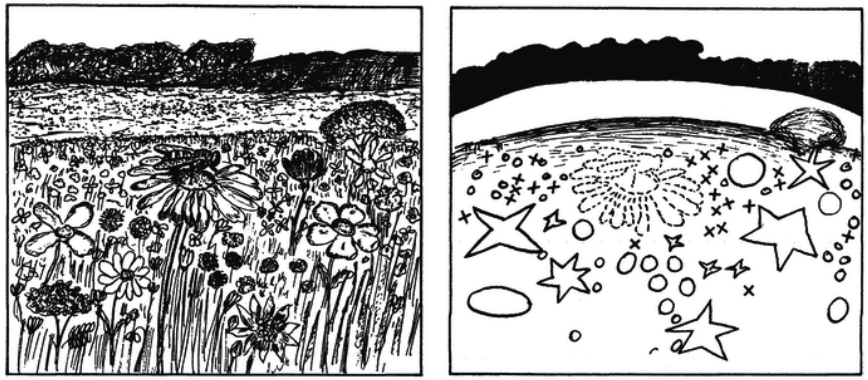
> If living is breathing, it is because our relationship with the world is not that of being thrown, nor that of the domination of a subject over an object: to be in the world is to experience transcendental immersion (Coccia 2018, p. 89).

In this view, indulging in the breath of the world is the only sustainable dimension of existence, in an *immersive, totalising and instantaneous* state.What the role and responsibility of the project (especially the landscape project) can be, and what its tools can be, are questions that have yet to be addressed, since this *immersive, totalising and instantaneous* condition seems to exclude the necessity and possibility of the project as an anticipation of a different future condition, as far as architecture and landscape are concerned. An anticipation based on the study of the present conditions and the reasons for the conformation of places, capable of activating an attitude and a gaze through which the project can trigger processes of modification, making contact with the physical space, its morphologies, the different environmental systems, its technical and infrastructural endowments, its economies and its intangible dimension linked to the sphere of meaning: with the soil, the materials, the forms, but also with the idea of nature and the idea of history.As we will see in more detail below, the figure of the *terrarium* makes it possible to define this question in a concrete space that requires contamination between different fields of research and reflection: the study of the biological processes that run through the different biota, traditionally reserved to the world of science alone and almost always condemned to invisibility; the identification of the multiple systems of relationships that organisms and other entities weave within the biota itself, which belongs to ecology and landscape ecology and only rarely reaches the dimension of the visible; the perception and imagination of the spaces in which ecological processes unfold in the realm of the visible, which has opened up and continues to suggest interesting areas of formal and artistic research (Kepes 1956).

LITERALLY: IN VITRO ENVIRONMENT

But what are we referring to when we use the term *terrarium*? Literally, it denotes a miniaturised environment in a more or less hermetically sealed container designed to house specific communities of plants, insects and certain animal species. The soil, presented in its layering of different materials, is artificially

The Umwelt of a bee. From Jakob von Uexküll, Ambienti animali e ambienti umani. Una passeggiata in mondi sconosciuti ed invisibili, (Streifzüge durch Umwelten von Tieren und Menschen. Ein Bilderuch unichtbarer Welten, 1934) Quodlibet, Macerata 2011, p. 94.



composed to give life, nourishment and shelter to living communities that share the need for specific environmental conditions.

When hermetically sealed, water vapour produced by plants condenses on the glass and falls back to the soil, returning to the roots. Oxygen emitted by the leaves through diurnal photosynthesis is used by the plants for respiration while the reverse happens for carbon dioxide, and the leaves as they age and fall contribute to fertilising the soil.

The miniaturisation and *mise-en-boîte* invite the eye to recognise the minutest detail of this miniaturised environment. As happens in the perspective boxes, created as anamorphic devices in the genre of 17th-century Belgian interior views (Brusati 2013) then disseminated throughout Europe in the 18th century, in the *terrarium* miniaturisation produces a kind of reverse microscope, which highlights because it shrinks, stimulating curiosity to look beyond what we know. In addition to this, the rarefied and mysterious atmosphere generated by the in vitro dimension produces an alienating effect: a self-sufficient microcosm is discovered enclosed in it, but saturated with references, whose mystery is accentuated by the contrast between the glass envelope and the mutability of the life forms enclosed in it, in a process frozen for an instant under the observer's gaze but always on the point of resuming its own becoming. It suggests a different dimension of space and time, inducing a sort of oneiric passage in the observer who is as if sucked into a different cosmos, in which he is no longer in front of a landscape but becomes part of it. In this sense, miniaturisation and *mise-en-boîte* make possible a perspective that goes beyond the anthropocentric paradigm by placing the human being on the same ontological level as animals, plants, stones, mosses, clouds, viruses, bacteria, etc. This is a powerful metaphor for the posture taken in recent years by some of the most interesting landscape architects (including Günther Vogt, Descombes and Rampini, Teresa Galì-Izard, Catherine Mosbach) who

> take on nature not as a repertoire of forms to be reproduced, but of behaviours to be interpreted and with which to collaborate in dialogic terms. Of the prairie, as of the river, one does not define the form, but rather the possibility of occurrence (Metta 2022, p. 161).

These landscape architects do not speak of nature with a capital letter, but of a totality that can only be understood in parts, with a wide margin of approximation. The meticulous preliminary studies that underpin their projects often operate through the construction of collections and classifications based on the order-disorder dialectic typical of scientific research.

The structure of protoplasmas: 7 different configurations
Source: Raoul Heinrich Francé, Die Pflanze als Erfinder, Kosmos, Gesellschaft der Naturfreunde, Stuttgart 1920.

But their work is not, as in the sciences, a search for a hidden order on which to build a theory, but rather the construction of a repertoire of figures on which to base a poetics.

A fascinating example of this is Catherine Mosbach's project for the park of the Louvre Museum in Lens, which is based on a meticulous sampling of the different soils resulting from mining activities, crossing different relational scales: from the vast one that reads the different morphologies of the terrain to the minute one of textures and ecological successions.

In his book *Landscape as a Cabinet of Curiosities* (Vogt 2015), Günther Vogt illustrates the importance of his own collecting activity in constructing a specific attitude towards landscape design, emphasising the difference between his collections and scientific collections.

> My own collection is completely different, more like private tinkering. I find the collecting principle of the cabinet of curiosities very interesting. They were actually archives of knowledge in which very different objects from nature, the animal kingdom, the sciences and the applied arts were assembled according to personal interests and tastes. I'm fascinated by this non-hierarchical collision of very different things that have no fixed order, but lend themselves to being constantly rearranged in new constellations and relationships (Vogt 2015, pp. 165-166).

. MINIATURISATION. THE LANDSCAPE PROJECT BETWEEN ART AND SCIENCE

Inside Outside, Catherine Mosbach's installation created in 2016 as part of the Architecture as Art exhibition in Milan - Hangar Bicocca, well represents this direction of research. The work consists of a series of incisions carved into a plaster panel, designed according to a figure articulated in straight paths, joints and curves. A complex system of lighting and humidity control makes it possible to produce atmospheric variations of the various organic substances contained in the etchings, which, over the course of the months following the exhibition's opening, are capable of creating an ecosystem of different mould inflorescences. The result is a theoretical landscape constructed as a layered, changing and essentially unpredictable ecosystem.

> This work is a web of desire. We wanted to make invisible works visible. As landscape artists, the landscape we want to deal with is a process, it's just the beginning of something, it's not the end. There are a lot of bacteria, which means they need a little bit of food to do their work and transform the air and moisture to create new forms. So we hope that in a few months we will be able to see what has happened in the channel that we proposed to follow. The purpose of the light is to make the biological effects of the process visible, because they're very microscopic and very subtle landscapes (Mosbach 2016, p. 86).

The installation proposed by Catherine Mosbach highlights an important conceptual shift in which space (the object of choice in landscape architecture) is redefined as a field, a place open to all kinds of relationships, through which different living things pass and modify it.

Animals, plants, stones, mosses, clouds, viruses, bacteria, but also words, objets trouvé, images, capable of constantly re-founding multiple processes, interact to produce new forms, mutated forms that coexist with ancient, sometimes very ancient, resistant entities.

Indeed, it is understood that the space in which we operate as researchers and designers is inhabited, traversed, modified, cultivated, constructed and devastated not only by humans but also by animals, plants, bacteria.

Multiple events and trajectories imprint the terrestrial environment with the traces of the presence and passage of different entities (animate and inanimate) interacting with each other. In this interweaving of dynamics, time (in its multiple dimensions, from a single event to the geological era) plays an essential role as a measure of transformational processes that always raise the question not only of the survival or extinction of living beings, but also of the inertia and modification of the elements that make up physical space.

Understanding landscape in this way involves a systemic description based on relational scales that open up meaningful worlds beyond the visible, in the dimensions of the infinitely small and the infinitely large that transcend our perceptual capacities. The scales of landscape are therefore multiple. We have to take into account the microscopic scale when we refer to organisms such as viruses and bacteria; or even the macroscopic, if not planetary, scale when we refer to the worlds described by geography or geology, as nineteenth-century geography, and in particular Alexander von Humboldt, had already fully understood (Willmann 2023; Botar 2017; Mertins 2001; Protasoni 2021).

This awareness is not the same that extended the discovery of the infinitely small or the infinitely large between the nineteenth and twentieth centuries, for which architecture between Art Nouveau and Modernism found inspiration in the drawings of Ernst Haeckel (Haeckel 1904) or in the microscopic research of biologists and naturalists such as Raoul Francé (Francé 1920).

In that moment, the reassuringly logical construction and even the mechanically functioning model of human-scale entities was extended to imaginary worlds.

Today ecological awareness is shaking our faith in the anthropocentric idea that there is one scale that governs all; the human scale.

It is beginning to be recognised that each entity exists in its own time, on its own scale, as In the, György Kepes pointed out in 1950s

> The obvious world that we know on the gross levels of sight, sound, taste and touch can be combined with the subtle world revealed by our scientific instruments and devices. Seen together, aerial maps of river mouths and road systems, feathers, fern leaves, branching blood vessels, nerve ganglia, electron micrographs of crystals and the tree-like patterns of electrical discharge figures are connected, although they are very different in location, origin and scale (Kepes 1956).

The small garden (about 200 square metres) that Catherine Mosbach has created in Ulsan National Park, on the banks of the Taehwa River, moves in this direction. The aim is to represent the landscapes that have been shaped over time by the dynamics of the river "against" the resistance of the land, between erosion and deposition.

The narrative dimension of the project develops both along the temporal sequence of the processes and along the spatial line of the different landscape units, evoked through a process of miniaturisation and abstraction aimed at recalling the salient features of the different phases and places.

The narrative thus takes place in a multidimensional time: the long time of geomorphological transformations, the cyclical time of the seasons and the sudden time of crises and catastrophes. As Catherine Mosbach has written (Mosbach 2023), the spaces evoked are located between the distant peaks of Mount Taebaek - a reservoir of water, seeds and fresh air - and the deep lands of the seabed - a reservoir of cultures and continuous migrations of marine and terrestrial creatures. The garden is traced as a receptacle for these phenomena, which manifest the river's incessant morphogenetic power.

The title (*Lost in Transition*) underlines the desire to represent, in the form of an apparition, those passages of this gigantic and continuous transition that have been erased.

> Water sneaks into the folds on the riverbank and crevices. Foliage filters stripes of light to the ground reflections. Mosses cling to the asperities of the deposits. Sheers protect

> an interlude of relaxation amidst the plants. Shoots of the year and their umbels communicate vigor of fertile soils. Footprints and handprints of the men who build up the garden invokes the tradition of petroglyphs flush with the rocks of Ulsan, which exposes the terrestrial food, in grateful of their benefits. Lost in transition retains the alliances between humanities and environments relaying beyond the strictly human temporalities (Mosbach 1923).

Lost in Transition, Mosbach paysagistes landscaper,
Ulsan – South Corea, 2018.