# ARCHITECTURE UNLOCKS NATURE

edited by
Silvia Mundula,
Kevin Santus,
Sara Anna Sapone

## European Research on Design and Ecological Transition



LetteraVentidue

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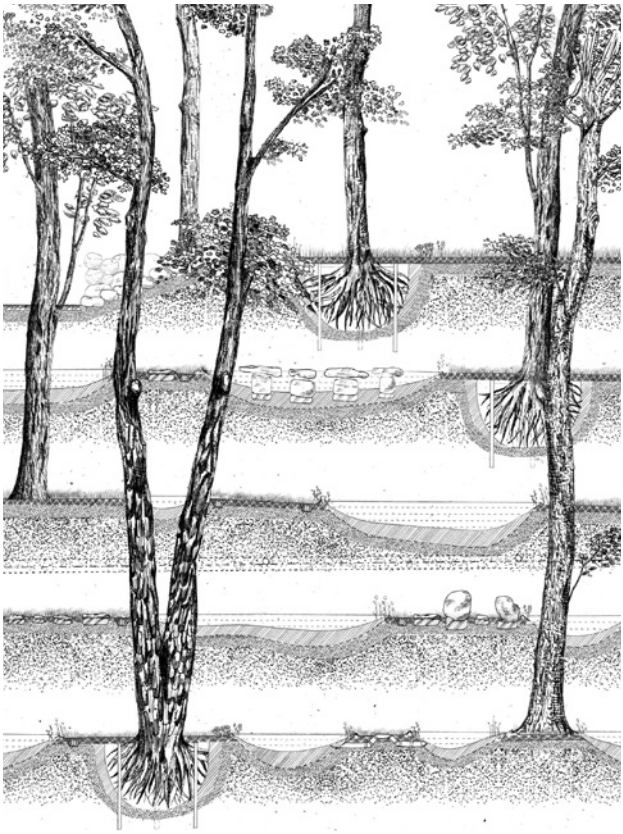
# ARCHITECTURE AND NATURE

## Contemporary Design Facing Unexpected Conditions

Giulia Setti

Politecnico di Milano



1. Junya Ishigami + Associates, *Art Biotop Water Garden. Section of natural elements,* 2019. Copyright Junya Ishigami + Associates.

'The enduring joys that come from contact with the natural world are not reserved exclusively for scientists: they are available to anyone who is inspired by the earth, the sea and the sky, and their extraordinary life' (Carson, 2024, p. 50).

The sudden and radical changes that are increasingly affecting the cities and buildings we live in are the expression of an ever-evolving scenario in which the transformations that we observe can be slower or, instead, more sudden and unexpected, though all of them are capable of disrupting the traditional tools of design. Nature, in its most extreme forms, manifests itself powerfully and, often, in opposition to architecture, destroying what mankind has built and highlighting our insufficient care and attention towards the landscape and its many fragilities (Gunderson, Allen and Holling, 2009).

This essay aims to explore the kinds of new design strategies required to build and bolster an improved relationship of cohabitation between architecture and nature, as well as to mitigate, as much as possible, the sometimes destructive phenomena that are already underway. Adaptation and, consequently, the ability to adapt, appears to be a possible way to resist these and to firmly establish new forms of design in the face of events that seem to be increasingly unpredictable; the concept of adaptation highlights an ability to reach compromises, to negotiate, and to strike new forms of balance in space and in nature (Setti, 2019, p. 29). By comparing contemporary projects, this essay observes new relationships between architecture and nature as well as identifying current design positions – some of which are more domestic in nature – that can help to construct an *archive of possible scenarios and visions*. In a context such as we have today, which is marked by progressive forms of fragility – environmental, social, economic and urban – design becomes an essential resource for intervention and action.

Architecture has always proven capable of supporting radical forms of adaptation – indeed, the ability to transform spaces to adapt them to new functions, by means of minor modifications, is a long-established approach – but at the same time, any project bears memories and traces of the past. It is a significant action to try and imagine a fresh relationship between architecture and nature, with projects capable of reconsidering the role and care of the latter, in a way that strives to reduce the often destructive effects of the climate change we are currently experiencing (Awan, Schneider and Till, 2011). The vocabulary that attempts to describe the troubled relationship between architecture, sustainability and the climate crisis has often been abused, starting with a word bandied about perhaps more than any other in recent years, resilience, which has been used to describe any form of and ability to change that is capable of resisting a constant series of new or adverse conditions. In my view, if we are to discuss adaptation, we must first



**2.** Nikissimo inc, *Art Biotop Water Garden, Tochigi, Japan,* 2019. Courtesy of Nikissimo inc.

seek out a different design lens through which to interpret the changes currently underway; architecture must adapt much more quickly than it has in the past, responding not only to new environmental demands, but also to significant technological advances that allow us to use novel materials and solutions to improve the comfort and sustainability of buildings and public spaces (Setti, 2022, p. 106).

**Theories: cultural references and positions**

Writing about the relationship between architecture and nature is certainly no mean feat, insofar as it involves – at least, within the purview of an architect and researcher – investigating the theoretical, cultural and design positions of recent years that have sought to offer critical reflections on this pairing. It is a vast field that overlaps with many different disciplines beyond the narrow confines of architecture in its strictest sense, envisioning extreme scenarios in which the pact between man, nature and architecture must be reconstructed from scratch. Countless recent contributions and research projects observe these changes and their impact on architecture and cities[1] (Rocca, 2006; Kousidi, 2022; Metta, 2022; Mundula, Santus and Sapone, 2024).

In March 2019, as part of the 22nd International Exhibition, a highly ambitious exhibition was inaugurated at the Triennale di Milano entitled *Broken Nature. Design Takes on Human Survival*, curated by Paola Antonelli, who explores the remedial role of design (and architecture) in the relationship that mankind has established with nature. It is an interesting experiment in that it involves large-scale reflections on the changes that are occurring, as well as seeking to uncover some of the more hidden aspects of the research currently being conducted on these issues. It consists of a collective mural that addresses different themes ranging from waste recycling to adapting areas and environments to new climates, from the water crisis to the digital evolution of production processes. As such, it is a highly dense and complex exhibition that lends itself to a variety of different readings, but which aims to call into question what man has done and could still do for nature and to ensure the survival of the human race on Earth (Antonelli and Tannir, 2019). The exhibition communicates in two registers simultaneously: on the one hand, it addresses the general public, explaining the sheer variety of experiments currently underway on the subject, whilst on the other, it addresses a specialised audience – architects, designers, scientists and the like – to provide different, more functional tools to help heal the fragile relationship between man and nature.

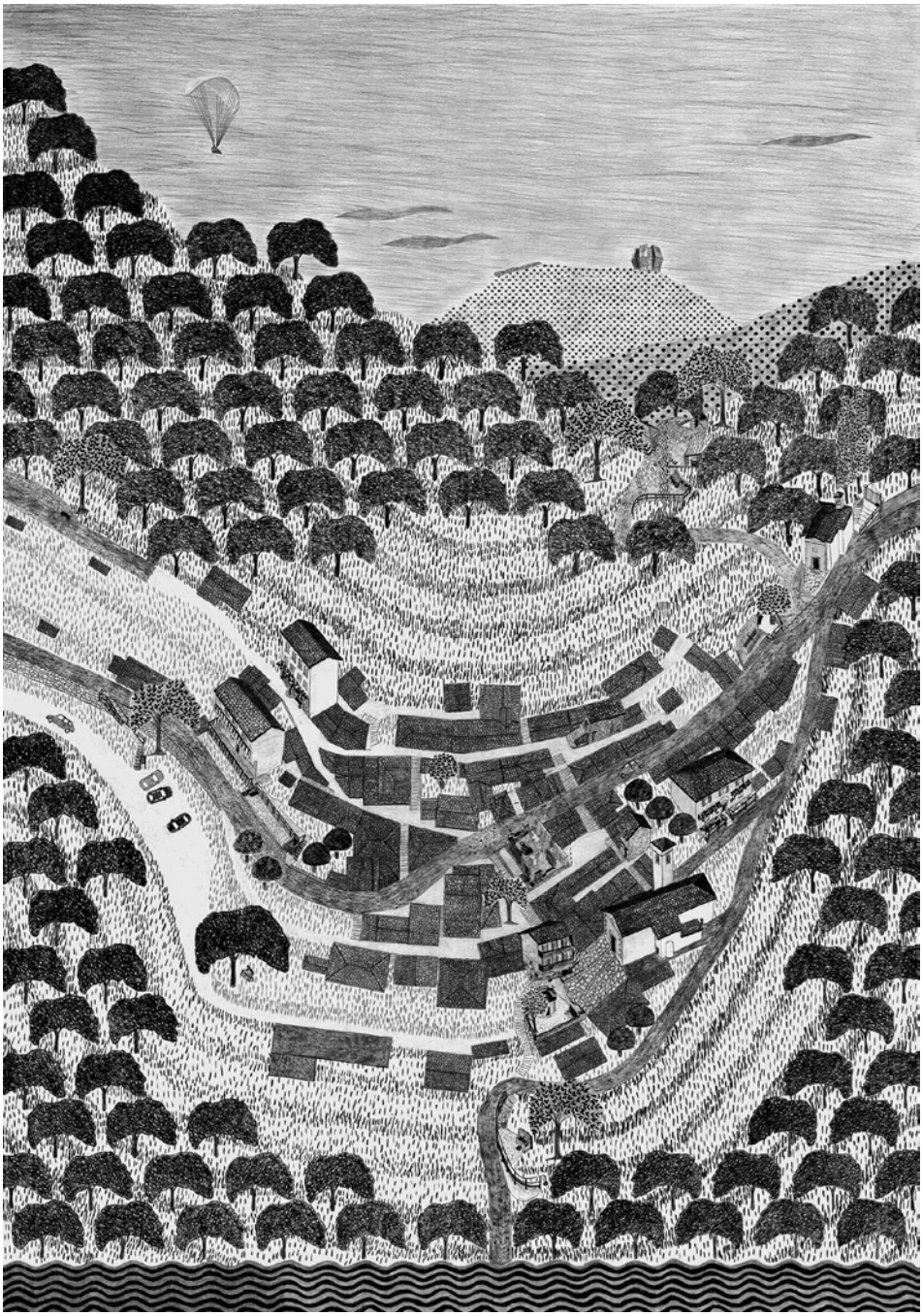
The journey that *Broken Nature* suggests helps visitors to expand their knowledge and, at the same time, develop a fresh awareness of everything that is being done to mitigate the effects of the climate change happening all around us. Cutting-edge projects and research projects exploring new and original possibilities, building and testing prototypes, dreaming up new technologies to reduce waste and the impact of pollutants on the planet. What the exhibition manages to assemble is a fully fledged *interactive archive*, capable of opening up perspectives on the future whilst at the same time preserving the memories and traditions of the past.

A year later, in 2020, the architectural magazine Lotus released a monographic issue entitled *In Response to Disasters* with a focus on the direct and tangible effects of climate change, showing some of the most shocking – and sometimes unexpected – consequences of natural events. Today, the crisis between architecture and nature is becoming increasingly evident, showing how unexpected events can compromise the lifecycle of buildings and projects in radical and irreversible ways.

The literature that accompanies a growing public awareness of the ongoing environmental crisis is very broad in scope, covering a range of different positions; the environmental crisis and its logical foundations are explored by Timothy Morton (2016) through a series of humanistic and scientific studies geared towards re-establishing new balances with non-human beings and helping mankind to forge more fulfilling connections with the spaces they

inhabit. Some even more radical and revolutionary positions are taken by Rosi Braidotti (2013), who studies aspects of hybridisation between man, nature and technology through a post-Anthropocene lens, exploring its implications on other species and the sustainability of the planet. The concept of post-humanism opens up a highly topical debate on how the genetic tools being developed are bleeding into applications in human life, increasingly blurring an already delicate line. Post-human architecture is a realm yet to be explored, because it involves imagining not only what sorts of buildings will survive the current crisis, but also how they will do so. The collection of new architectural models and archetypes of post-humanism is a way to try and envision the evolution of design by strengthening the bonds of coexistence between man and other species, as well as new technologies (Leveratto, 2021). Archetypal spaces such as the cabin, the ark and the spaceship feature in just some of the ten stories told in the volume, describing potential alliances with nature as it transforms into a material for design. The book offers an opportunity for reflection on the intimate relationship between man and design, as well as the question so often asked in the face of technological advancement, namely: *Are We Human?* (Colomina and Wigley, 2016), or perhaps even: *Are We Still Human?*. The need to reflect on the role of designers, in a world of unrelenting change and instability, leads us to wonder what we have become and how design can – and indeed must – raise questions, spark doubts and proffer new perspectives and viewpoints capable of breaking us out of the established routine of our lives (Colomina and Wigley, 2016, pp. 162-163).

A fascinating and dramatic exhibition entitled *Anthropocene*, staged between 2019 and 2020 at the MAST Foundation in Bologna, aimed to cast light on the now irreparable rifts that mankind has created on Earth. *Anthropocene* is a photography project documenting man's indelible footprint on the Earth through the extraordinary works of Edward Burtynsky, Jennifer Baichwal and Nicholas de Pencier (Hackett, Kunard and Stahel, 2018). The climate change that is currently underway, along with all its effects, are described through a variety of media, from photography to cinema all the way to augmented reality, providing an overall picture of the situation that visitors should find profoundly unsettling. A more recent exhibition, entitled *Everybody Talks About The Weather*, was held between May and November 2023 at Ca' Corner della Regina, the Venetian home of the Prada Foundation. This research project explores the many meanings of weather and the forms used to describe and engage with them in the visual arts, where weather and atmosphere provide an overture to the issue of the ongoing climate emergency (Roelstraete, 2023). The exhibition is a journey through the ways in which the climate and the weather have shaped our identity and how the human race has managed to cope with all manner of weather events on a



3. The Monte project is divided into a series of interventions spread across the village, aimed at enhancing existing potential points and creating new meeting spaces. Credits StudioSer.



**4.** Once upon a time, the only source of water in the village was a large stone fountain at the entrance. With the construction of the new aqueduct, the fountain lost its centrality and gave way to a parking lot. The intervention aims to restore the fountain's value as a collective place. Credits Sven Högger Photography.

daily basis. It offers a sort of operational summary – which could yet grow further – capable of systematising a series of interactive and non-interactive materials pertaining to the climate and the implications it has for cities and their inhabitants. Considerable efforts have been made in recent years to try and engender a certain awareness around the (now compromised) relationship between man, architecture and nature; chronologically speaking, the last piece of the puzzle is the forthcoming edition of the Venice Architecture Biennale, *Intelligens. Natural. Artificial. Collective,*[2] which is set to open on 10 May 2025 and invite different types of intelligence to work together to overhaul our idea of the built environment, primarily by working in the field of adaptation and rethinking the way we design in a world that has been profoundly transformed. The debate is broad and vast, and its depths certainly cannot be sufficiently plumbed in this brief overview which, however, paints a complex picture that raises questions that are pertinent to modern architectural design and the necessary evolution of mankind's continued approach to inhabiting planet Earth.

**Practice: projects for the conservation and care of the species**

Exploring hybrid forms of cohabitation between architecture and nature is a challenge that has been at the very heart of the design debate for quite some time, being addressed both through innovative typological studies and through interesting educational experiments. The theoretical positions described above suggest that we will increasingly veer towards extreme experiences, where sudden shifts in the climate will make life on our planet significantly more difficult (Bonneuil and Fressoz, 2016). In order to deal with these scenarios, projects are being established in the form of fully fledged species archives, intended to safeguard and preserve our current state of biodiversity. One iconic example is the *Svalbard Global Seed Vault*, a sort of monolith ensconced within a mountain built some 1300 km beyond the Arctic Circle and inaugurated by the Norwegian government in 2008, constituting the largest and most secure seed repository in the world. Seeds of all different species, originating from every corner of the world, are collected and archived in a stone vault which is capable of protecting them from extreme events. The seeds preserved there represent an invaluable genetic heritage which has only grown over time, becoming a reference point in the definition of a new typology, a modern-day ark, capable of saving a variety of species from a potential extinction event that may not be as far off as we imagine. An extension to the archive's original primary core was undertaken by architecture firm Snøhetta, creating a new volume for offices and spaces to optimise the cataloguing of species before they are transferred into the vault itself, as well as to improve the visitor experience.

A focus on nature and creating an environment capable of preserving natural species is the subject of an exceptionally intriguing project by Junya Ishigami: the *Art Biotop Water Garden*. The project is located in Tochigi, Japan, in a meadow that was once a rice paddy bordering on a recently built hotel. The construction of the hotel will necessarily have involved eradicating a section of the forest, with many trees being cut down. In response, Ishigami decided to relocate the forest to the meadow, effectively superimposing the two natural environments. The rice paddy and the forest are melded into a new landscape, meeting and merging with one another; the trees are organised and carefully arranged over the new site whilst the water, siphoned out of the existing lock, is used to fill a series of ponds connected to the irrigation system. The intermingling of the trees with the water gives rise to an entirely new landscape, with a density not usually found in nature and, as such, represents the construction of an artificial landscape that defines new forms of nature, without the need to discard or destroy any existing elements (Yoneda, 2021). Ishigami suggests approaching landscape design in much the same way as planning an architectural construction. A piece of detailed, highly precise work that involves meticulously establishing the exact

location of some 318 trees to be replanted, ensuring bright spaces between each one and accessible paths through them on the ground. The idea of relocating the forest makes it possible to modify its shape by building an entirely new structure made up of vertical elements – namely trees – and a series of horizontal elements – ponds, moss, paths and the like – that are intertwined. Ishigami's project constructs what we might call an ideal landscape, where nature is controlled by man as a means of ensuring otherwise impossible forms of cohabitation. This raises profound questions relating to the potential to modify – albeit for the purpose of preserving various species – the conditions of equilibrium established by nature that have allowed all manner of species to survive for millennia. The plans drawn up by Ishigami convey the idea of a poetic, ever-changing landscape that is constantly moving and, at times, rather unexpected (Ishigami, 2018), where the cataloguing of the trees that have been moved allows us to study every last detail of his project. In design practice, the idea of creating new equilibria with the surrounding environment necessarily involves, amongst other things, a careful and measured use of materials, as well as projects capable of using local materials in a virtuous way, thus reducing transportation and other costs, as a means of expressing a certain care for the environment and the sustainability of the projects themselves.

The series of projects carried out by Rina Rolli and Tiziano Schürch – founders of StudioSer in the *small village of Monte*, in the municipality of Castel San Pietro in Ticino – falls into this category. StudioSer proposes a measured urban regeneration project geared towards improving the accessibility and use of public spaces by the more elderly people in society. With a participatory process that involves a dialogue with the residents of the village, it invites the inhabitants to work together with the designers to forge new relationships between the wellbeing of the inhabitants and their surrounding environment (Passamonti, 2024).

The mountainous landscape of the village of Monte is home to a handful of small-scale public spaces that are transformed and adapted using specific architectural operations, such as grafts, additions and connections. The measures proposed often involve adjustments and integrations to the existing features: new elements of urban furniture such as benches and rest points, tubular handrails installed to provide support for people moving around the steeper parts of the village, new connections such as ramps and steps being renovated to ensure easier access, and a public fountain (Sergison, 2024).

Opting to work by means of silent, targeted interventions that can easily be integrated into the existing urban fabric, using local materials already commonly employed in Monte, allowed StudioSer to transform and improve the quality of public spaces with a sustainable project (Carlana and Chiorino, 2024, pp. 5-10). It could therefore be said that StudioSer's design practice



5. A new fountain is being built in the Monte cemetery, offering the community a place for watering flowers on the graves of their loved ones. The fountain is made of various elements in local stone – including Arzo Marble and Caprino stone – and reflects the geological richness of the surrounding territory. Credits Sven Högger Photography.

encourages well cared-for places by means of an empathetic approach involving becoming familiar with existing features, local construction techniques and the needs of the inhabitants themselves. In short, StudioSer is striving to imagine a design methodology that could hopefully be reproduced, as well as to establish a way of operating in small settlements with measures guided by care and attention.

Imagining new forms of cohabitation between man, architecture and nature is not only desirable, but indeed increasingly necessary as a response to the ongoing environmental crisis. The projects and theories described in this brief essay constitute a partial and deliberately limited perspective, yet one that allows us to recognise the existence of a new design observatory. This approach would see design transformed into a tool for the knowledge and care of the places where it is applied, as well as a tool that can conserve, catalogue and archive natural species. It is interesting to observe this new stance – as we might call it – which not only seeks to regain our lost empathy for nature, but which even leverages our observation of nature to find options for interventions of different scales and impacts. Design becomes a workshop of countless possible options, where we can experiment with innovative solutions to rehabilitate and conserve nature, along with all its delicate synergistic ties with humanity. Nature is no longer considered a lesser element to be tamed and controlled, but rather a tool capable of revealing new perspectives to us, some more intimate and domestic (Coccia, 2021), some more raw and wild.

**Notes**

1. One particularly original academic contribution is the PRIN (Research Projects of Significant National Interest) project entitled SYLVA: rethinking the 'forest': towards a new alliance between the biological and the artificial, nature and society, wildness and humanity, conducted by Sara Marini (IUAV Venezia) between 2020 and 2024.https://sites.google.com/iuav.it/iuav-prin-sylva/sylva.

2. Curated by Carlo Ratti, the 2025 edition of the Venice Architecture Biennale aspires to sketch out an alternative world, with new ways of imagining the relationship between nature, architecture and new technologies. Reference is made to the Biennale website and Carlo Ratti's introductory text on its themes: https://www.labiennale.org/en/architettura/2025/intervention-di-carlo-ratti.

**References**


- Antonelli, P. and Tannir, A. (eds.) (2019) *Broken Nature*. Milano, La Triennale di Milano: Electa.
- Awan, N., Schneider, T. and Till, J. (2011) *Spatial Agency: other ways of doing architecture*. London: Routledge.
- Bonneuil, C. and Fressoz, J.B. (2016) *The shock of the Anthropocene: the earth, history and us*. London, New York: Verso.
- Braidotti, R. (2013) *The posthuman*. Cambridge: Polity.
- Carlana, M. and Chiorino, F. "The design of public space. Michel Carlana and Francesca Chiorino talking with Mirko Franzoso, Mauro Marinelli, Rina Rolli, Tiziano Schürch", *Casabella*, 962, pp. 5-11.
- Carson, R. (2024) *Brevi lezioni di meraviglia. Elogio della natura per genitori e figli*. Sansepolcro: Aboca.
- Coccia, E. (2021) *Filosofia della casa. Lo spazio domestico e la felicità*. Torino: Einaudi.
- Colomina, B. and Wigley, M. (2016) *Are we human? Notes on an archeology of design*. Zürich: Lars Müller.
- Gunderson, L.H., Allen, C.R., and Holling, C.S. (eds.) (2009) *Foundations of ecological resilience*. Washington: Island Press.
- Hackett, S., Kunard. A. and Stahel, U. (2018) *Antrophocene: Burtynsky, Baichwal, de Pencier*. Canada: Art Gallery of Ontario.
- Ishigami, J. (2018) *Freeing Architecture*. Tokyo, Paris: LIXIL Publishing, Fondation Cartier pour l'art contemporain.
- Kousidi, S. (eds.) (2022) *Forest Architecture. In Search of the (Post) Modern Wilderness*. Sesto San Giovanni: Mimesis.
- Leveratto, J. (2021) *Posthuman architectures. A catalogue of archetypes*. Novato CA: Applied Research + Design Publishing.
- Metta, A. (2022) *Il paesaggio è un mostro. Città selvatiche e nature ibride*. Roma: DeriveApprodi.
- Morton, T. (2016) *Dark ecology for a logic of future coexistence*. New York: Columbia University Press.
- Mundula, S., Santus, K. and Sapone, S.A. (eds.) (2024) *Terrarium Earth Design: Ecology, Architecture and Landscape*. Sesto San Giovanni: Mimesis.
- Passamonti, S. (2024) "Seven interventions in Monte, Switzerland by Studio Ser", *The Architectural Review*, accessed February 25, 2024. https://www.architectural-review.com/awards/ar-public/seven-interventions-in-monte-switzerland-by-studio-ser.
- Rocca, A. (2006) *Architettura naturale*. Milano: 22 Publishing.
- Roelstraete, D. (ed.) (2023) *Everybody Talks about the Weather*. Venezia: Fondazione Prada.
- Sergison, J. (2024) "Lavorare con cura. Monte, studioser", *espazium*, accessed February 25, 2024. https://www.espazium.ch/it/attualita/lavorare-con-cura.
- Setti, G. (2022) "In search of adaptation: exploring design tools and theories", in Berlingieri F. and Setti G. (eds.) *Design Processes for Transitions*. Siracusa: LetteraVentidue, pp. 106-117.
- Setti, G. (2019) "Adaptation (in search of)", *Territorio*, 91, pp. 29-31. doi: 10.3280/TR2019-091003.
- Yoneda, K. (2021) "Arboreal artifice: Art Biotop Water Garden by Junya Ishigami + Associates", *The Architectural Review*, accessed February 25, 2024. https://www.architectural-review.com/places/japan/arboreal-artifice-art-biotop-water-garden-by-junya-ishigami-associates.

## BIOGRAPHIES

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**Sara Anna Sapone** Architect, research fellow, and adjunct professor in Landscape Architecture at Politecnico di Milano, with a PhD thesis co-developed at TU Delft. Alongside her academic path, she collaborates with Milan-based design firms. Her current research investigates post-industrial and energy landscapes, linking site infrastructures, ruderal ecologies, and spatial transformations.

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**Thomas Cabai** Architect and PhD candidate in Architectural Urban and Interior Design in Politecnico di Milano. He is a member of the National Biodiversity Future Center in Italy, collaborating on projects of Restoration Ecology, Phytoremediation, and Mycoremediation. The same interest is pursued as a practitioner, dealing with restoration projects of abandoned wetlands and meadows in northern Italy.

**Alberto Cervesato** Architect, PhD, research fellow and adjunct professor at the University of Udine. He teaches as part of the PhD in Civil-Environmental Engineering and Architecture of the University of Trieste. He carries out research abroad at the University of Moròn in Buenos Aires.

**Nicolò Chierichetti** Architect and PhD candidate in Architectural Urban Interior Design at Politecnico di Milano, and TU Delft guest researcher. His PNRR and FNMGroup funded research focuses on sustainable mobility as a catalyst for urban regeneration of the Milanese ring road system residual spaces.

**Angelos Chiotis** PhD candidate in Architecture Philosophy and Theory at Delft University of Technology. His research examines the Greek nation-state's formation through the lens of Pentelic marble, following a new materialist decolonial approach. His dissertation is supported by the Bodossaki Foundation Scholarship and the James Fenimore Cooper Traveling Fund.

**Andrea Foppiani** PhD candidate from the DAStU department at Politecnico di Milano, where he graduated in Sustainable Architecture and Landscape Design. His academic research focuses on post-logistics landscapes in the Po Valley, working through more-than-human ecologies to explore hybrid scenarios of renaturation and radical rewilding. His practice lies at the intersection of installation design and interior landscaping, through floral and mineral matter.

**Chiara Geroldi** PhD, Architect, and Assistant Professor in Landscape Architecture at Politecnico di Milano, DAStU. Her research concerns the design of discarded fill, the energy landscape, and brownfields regeneration. She is the author of *Moved Earth: Designing Landscapes with Discarded Fill* (Routledge, 2026) and she co-edited two books on desealing: *Ecologies of Desealing* (Mimesis, 2025) and *Open Ground* (Mimesis International, 2025).

**Andreas Körner** Austrian architectural designer and researcher based in London, Innsbruck, and Vienna. In his research, he explores weathering, its theoretical relevance in the context of climate change, and its integration into design through simulation and fabrication.

**Eloy Llevat** Architect, PhD, graduated from Politecnico di Torino with a thesis about experimental housing models. He obtained his PhD from Politecnico di Torino and EPFL exploring Geneva's industrial spatial shifts after implementing Industrial Ecology principles. Currently, he focuses on production, energy, ecology, and space interactions.

**Lucia Ludovici** Urban planner currently enrolled in the interdisciplinary PhD program in Science, Technology, and Policy for Sustainable Change. Her research interests involve the socio-ecological dimensions of urban transformations, investigating both conflictual and cooperative dynamics to foster a new culture of urban biodiversity.

**Davide Montanari** He graduated with honors in Sustainable Architecture and Landscape Design from Politecnico di Milano where he is currently doing a PhD in Architectural, Urban, and Interior Design. His research investigates the practices of water appropriation within the Po River Basin through the lens of biopolitics, exploring the microphysics of power related to the spaces of water.

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The expression "Architecture Unlocks Nature" may seem paradoxical, as architecture and nature have long been interpreted as opposites. Yet, in contemporary theory and practice, this dichotomy has been called into question, calling for a redefinition of this conflictual relationship.

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The overarching questions addressed throughout the text are: "What are the roles of Design and Nature today? How do they engage with one another? And how does ecological transition become a spatial matter?" Across these pages, nature emerges as an active agent that generates architectural thinking.

By examining spatial interfaces, human and non-human cohabitation, uncertain climatic futures, and altered territories, the authors investigate how architecture, landscape, and urban design contribute to, and are influenced by, this change.

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