buildings

MDPI

Article

Strategies for Sustainable Rooting in Landscape: Arrangements between Architecture and the Ground

David Casino Rubio *, Fernando Rodriguez Ramirez and Héctor Fernández-Elorza

Department of Architectural Projects, School of Architecture, Universidad Politécnica de Madrid, 28040 Madrid, Spain; fernando.rodriguezr@upm.es (F.R.R.); hectordaniel.fernandez@upm.es (H.F.-E.)
* Correspondence: david.casino@upm.es

Abstract: Contemporary environmental awareness requires new architectural practices to reformulate the relationship between buildings and the ground. Among these, the way in which buildings land on the site emerges as a key architectural condition that must be reviewed, focusing on generating new systems of articulation, more sensitive and attentive to the specific conditions of the grounds. Drawing on the ecological perspectives put forth by authors like Bruno Latour in recent years, this article presents a critical analysis of the rooting systems developed by some of the most significant architectural practices today. This case study provides a catalogue of various sustainable topographical strategies that prioritize the conservation and nurturing of soil properties. The discussion of these strategies enables the synthesis of a series of design guidelines to foster new relationships of affinity with the land, positioning architecture not as an imposition on the territory but as a facilitator of its natural development.

Keywords: ecological rooting; ground; topography; landscape; siting of buildings

Citation: Casino Rubio, D.; Rodriguez Ramirez, F.; Fernández-Elorza, H. Strategies for Sustainable Rooting in Landscape: Arrangements between Architecture and the Ground. *Buildings* **2024**, *14*, 1006. https://doi.org/10.3390/buildings14041006

Academic Editors: Derek Clements-Croome and Bo Hong

Received: 29 January 2024
Revised: 15 March 2024
Accepted: 25 March 2024
Published: 4 April 2024

1. Introduction

> *There have been countless initiatives for returning to the soil, a term that is found everywhere: in art exhibits as well as in scientific journals, in the revival of interest in shared resources, in the reoccupation of remote rural areas.* [1] (p. 91)

Recent years have seen a surge of interest in environmental and ecological concerns across various disciplines. This renewed focus has manifested in exhibitions, seminars, congresses, and articles in specialized magazines, all examining the critical and multifaceted role of the ground plane. Artistic exhibitions such as Reclaim the Earth [2], cartographic projects such as *Terra Forma* [3] (Figure 1), or research such as the Smart Forest Atlas [4] are some of the numerous examples through which different disciplines tangential to architecture—such as art, geography, or sociology—are currently emphasizing the importance of caring for and preserving the soil layer, the foundation where life on Earth develops [5].

In many of these initiatives, we find key concepts and ideas influenced by the French philosopher Bruno Latour, particularly from his book *Down to Earth* [1]. The idea of 'the terrestrial' emerges as an operative concept that encourages new ways of engaging with the soil aiming to preserve its inherent qualities. According to this French philosopher, replacing the global or local drift to which today's society is heading, 'the terrestrial' shifts our focus to fostering a new kind of 'belonging to the soil' [1] (p. 53). This involves taking care of the land, becoming attached to it, and taking root to a physical place in a broader and more open sense. This intellectual position, which has nothing to do either with questions of identity or with geographical or political limits, incites the urgent creation of actions of an ecological nature, centred on the development of mechanisms of care and coexistence with the rest of the species, and mineral and vegetable elements that inhabit the different soils of the planet [1] (pp. 312–315).

Figure 1. Model Soil. Terra Forma, Manuel de Cartographies Potentielles. Based on Latour's ideas, the recent work by architects Arènes and Grégoire and historian Aït-Touati, proposes new ways of mapping the Earth's surface in order to understand the phenomena of the transformation of the soil stratum over time, such as surface erosion, the depletion of energy resources, or the loss of its natural properties due to the advance of urbanisation. Source of image: http://s-o-c.fr/index.php/terraforma/ (accessed on 18 February 2024).

This importance that Latour projects on the soil, as a foundational layer housing the intricate networks connecting humans and non-humans [6], is what also underlies the exhibition project Critical Zones [7,8], directed by Latour himself together with Peter Weibel. The interdisciplinary approach of this ambitious research highlights soil as a fundamental resource that provides support, not only to buildings, but also to all the different living ecosystems on Earth. The exhibition seeks to challenge the perception of soil as merely a surface, presenting it instead as a complex stratum composed of various layers, known as 'soil horizons' [9] (p. 24). These layers reveal the memory of the soil, narrating tales of rainfall, drought, plant roots, and the organisms that give it its shape and composition. As this French philosopher warns, the soil is the fundamental part of the 'critical zone' where life is produced and where terrestrials dwell: a zone inhabited by 'all terrestrials and not only humans' [1] (p. 57).

This ecological sensitivity, evident in the works of Bruno Latour, is also reflected in the work of historians such as Richard Bardgett [10] or Donna Haraway [11]. It is our understanding that this sensitivity should become an integral part of architectural research. Authors such as Albena Yaneba [12] already claim the need to generate a new agenda for architecture capable of rethinking the design theory of human and material coexistence. To carry out this ambitious proposal, necessary for the Anthropocene epoch, the architectural

discipline should begin to develop, as Alexandra Arènes [13] (p. 312) points out, under a new mode of operation that considers the impact of architecture on the vital cycles of the landscape and fosters a different type of affinity with the territory. In this sense, the way in which buildings connect with the ground and affect the development of its constituent elements (such as rocks, trees, or water) becomes a critical issue that should be one of the main pillars of architectural research.

However, focusing on the most recent theoretical research addressing this 'universal question'—how architecture interacts with the stratum upon which it rests—a significant gap becomes apparent. There is a lack of detailed analysis and definition of operational strategies that facilitate the ecological and soil-friendly integration of architectural projects into the landscape. Predominantly, such studies approach the issue through a historical lens. Tomá Berlanda's work, *Architectural Topographies* [14], addresses the relationship between the building and the ground through the study of the main forms of settlement developed by twentieth-century architecture. Despite the methodological interest of this research, which employs the section drawing as an analytical tool, the results present a catalogue of settlement mechanisms that mainly addresses morphological criteria and positioning relative to the ground level. This specific approach to the subject of the ground can also be recognized in the study *Being the Mountain* [15] carried out by Bedoya, Jaime, Ickx, and Perles (Productora Studio). This study similarly examines the relationship between architecture and the land it occupies, revisiting pivotal moments in architectural history to uncover new possibilities within this essential interaction for architects. However, it lacks critical reflection from an ecological standpoint.

Such approaches reveal a significant knowledge gap preventing us from answering a key question that deeply impacts today's architectural practice: what strategies should be incorporated into this discipline to ensure effective articulation in the field and achieve its integration into the territory where it is inserted in a more sustainable and ecologically responsible way? Although answering this ambitious question requires extensive research beyond the scope of this article, our aim is to introduce a new perspective on the role of land in architecture. We critically analyse some of the mechanisms of implementation on the periphery of the city and in the non-urban territories where current architectural practices seek to respond to the challenges posed by the climate urgency in which we are immersed. This article endeavours to identify and explore operational strategies that enable projects to realize their full potential in fostering sustainable engagement with the ground plane.

2. Materials and Methods

The article is developed through a methodology based on a comparative case study. The selection of cases was based on several parameters:

1. Scale. The selected architectural works are houses since it is in the domestic scale where the more radical experiments in terms of ecological agreements between building and ground can be conducted.
2. Context. The eight cases belong to a European context in the 21st century. Since the relationship between building and ground needs to pay attention to several environmental conditions, the study requires a controlled contextual range.
3. Relevance. The selected houses have been widely recognized, and their relevance has not been linked directly to environmental or ecological recognitions but general ones. This strengthens the idea that improving these strategies produces significant architectural achievements in an overall approach.

The case selection consists of an examination of architectural works selected from the 21st century, chosen for their exemplary integration with the terrain. This shortlist of cases includes works from renowned contemporary architecture firms such as Andrés Jaque, Johansen Skovsted, 6a Architects, Ted'a Architectes, LCLA, De Vylder Vinck Taillieu, and OFFICE. The analyses of the selected buildings commence with the reference, by means of an introduction, to a paradigmatic example from the second half of the 20th century that

embodies a ground working approach which we could consider to have been a precursor to contemporary examples.

By analysing how these buildings engage with their foundational landscapes, the study aims to identify and categorize contemporary strategies for site integration. The analysis of the cases is carried out mainly through two main approaches, to be considered the key analytical categories that define ecological sensitivity and respect for the ground:

1. The analysis of how a building interacts with the terrain, through defining the key architectural operations that enable the building's sustainable implementation on the ground.
2. Understanding the effects that implementation mechanisms generate on the support stratum, particularly in relation to their impact on the topographic features and natural vegetation of the landscape.

Therefore, the analyses carried out will attempt to redefine two fundamental parameters in contemporary design action. On the one hand, the contemporary understanding of the ground, conceptualized as a stratum capable of being topographically modelled and becoming a transforming agent of the territory, as can be deduced from the concepts enunciated by Latour. On the other hand, the concept of rootedness from the environmental condition latent in contemporary thought and which raises, as suggested by Yaneba, the redefinition of 'techniques, scales and operational devices in architecture' [12], in this case applied to the integration of buildings with the ground.

The analyses carried out were based on three types of fundamental data: The first is the published photographs of the buildings. These are images taken by the architectural firms themselves and published in various specialized media. For this study we have selected only those photographs capable of showing the contact of the building with the ground and its relationship with the landscape where the project is located. The second are the architectural drawings of the buildings. Among all the published graphic documentation, we have selected only those that facilitate checking how the buildings are aligned with the terrain. In this sense, the perspectives and floor drawings and especially the sections of the buildings at different scales are key documents which allow us to verify the rooting strategies carried out. Those considered as most representative plans have been included as illustrations in this paper. The third piece of information refers to the project reports. These texts encompass the descriptions given by the architects about their buildings in relation to the soil issue. In most cases, these are brief and synthetic descriptions. For this research we have selected only those explanations given by the authors that deal exclusively with the subject in question.

The sources from which these three types of data used in the analyses (photographs, drawings, and texts, understood as the fundamental tools of architectural thought) have been extracted come from a wide range of specialised architecture publications, both digital and printed. In addition to all of the documentation provided by the architectural firms authoring the buildings, the present research has also taken into account other studies that have critically analysed the buildings. However, as these are recent projects, the number of published analyses about them is rather limited. Moreover, as explained in the introduction of the paper, critical texts dealing specifically with the rooting mechanisms are even more scarce. Yet, when available, they have been used in the analyses. The use of such a varied data sets has allowed the development of a critical analysis of the architectural mechanism developed to locate the building in the landscape. Thus, we have been able to verify the effects generated on the landscape adjacent to the construction.

From these analyses, a set of key strategies for sustainable rooting in the landscape is derived to enable architectural projects to address the complex array of issues characterizing the current environmental context:

Preservation: Configurations that promote the conservation of existing topographic relief and biodiversity;
Delocalization: Mechanisms endowed with a certain temporal character that enables adaptation to different locations with low impacts on the soil section;

Symbiosis: Landscape insertions that incorporate natural elements that are part of the landscape's identity through the building's own formal configuration;
Dissolution: Rooting in the soil section that take advantage of the topography to reduce visual impact on the landscape;
Appropriation: Occupation of the ground procedures generated from the utilization of certain existing traces and marks at the site;
Dispersion: Site placement tactics consisting of the fragmentation of built structures in order to reduce the footprint on the terrain;
Infiltration: Insertion systems of new natural soils into existing structures to generate a new relationship between the natural and the artificial;
Reuse: Topographic actions that work based on the recycling of soil material to generate reliefs that reconstruct the layer of soil damaged by the construction.

Finally, based on the understanding of these strategies, the research develops a critical confrontation of the results, which will also allow us to define a set of appropriate tools and processes, such as design guidelines, to undertake topographic processes in contemporary architecture (Figure 2).

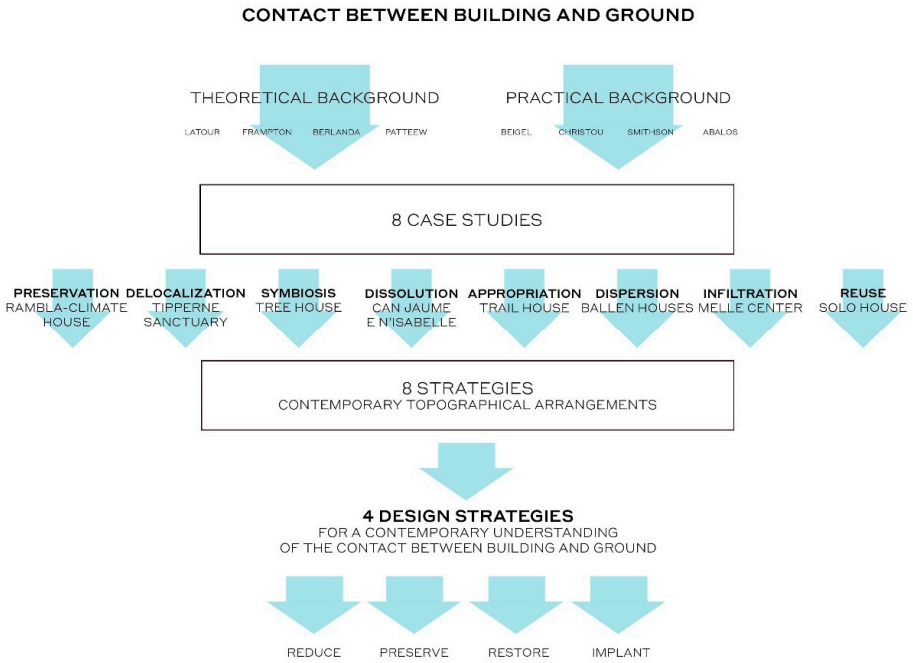


Figure 2. Scientific Structure of the Paper. Source: Authors, 2024.

3. The Ground as a Design Tactic

Although many of the tools for addressing architectural siting that emerged in the context of the second half of the 20th century [16] are still valid, they are not fully operational today and need to be revised. After several decades, the motivations and objectives of architecture have changed and evolved, and the climate crisis is having a huge impact on architectural debates. Current approaches to the ground no longer reflect the same concerns that led the second generation of modern architects to propose expressive earthworks where the building touches the ground, as can be seen in some of the works of Alison and Peter Smithson [17] or James Stirling [18]. These topographical forms of articulation, which are linked to certain fundamental interests of the last century (see, for instance, Robert Smithson's works on geological processes and landscape transformation [19]) constitute a valid starting point, but they also need to be reviewed in the light of contemporary interests [20].

The interpretation we make today of certain theoretical perspectives from the 1980s, such as that articulated by Secchi [21], which aimed to rediscover the value of 'working with

the ground', enables us to discern a path toward new objectives and methods in grounding strategies [17]. For instance, Kenneth Frampton's emphasis on the ground and topography at the time, in order to counter inexorable postmodern relativism, could today become a new 'strategy of resistance', as Patteeuw states [22], to some objectivist approaches that are still latent today [23]. According to her, the capacity of Frampton's text, 'Towards a Critical Regionalism: Six Points for an Architecture of Resistance' [24], to formulate new design strategies linked to place and to the cultural and material context, makes his work a reference for promoting the emergence of a new sensibilities capable of managing the way in which architects must now negotiate the contact between their creations and the ground [25].

In the late 1990s and early 2000s, certain European practices moved towards redefining the issue of the ground from different perspectives. Among them, Florian Beigel's and Philip Christou's Architecture Research Unit is one of the proposals that has explored more decisively the potential of the alteration of the ground as an organising element of architecture [26] (p. 6). At that time, Beigel pointed out that 'the ground was perhaps the most important element for architects' [27]. This statement had nothing to do with the generation of artificial grounds by means of digital techniques [28] that were so common in those years [29] (p. 363). The perspective of this architect and professor from London Metropolitan University involves constructing a comprehensive discourse on building placement tactics through a deliberate examination of techniques and objectives in contemporary landscaping [30]. This approach anticipated current environmental concerns.

The way these architects inscribed their work in almost every geological or archaeological process [30] has forced them to understand places as sites grounded on several temporary layers. The observation and analysis of natural and human sites was part of the design process. Along with these interests, their design strategies consciously moved away from the objectual condition of architecture [31] (p. 189), bringing them closer to processes in which what was transcendent was what happened in the void, in the 'space in between' [31] (p. 191). In this way, they materialized their projects in various types of grounds charged with potential, meaning, and memory (Figure 3). This approach to the architectural project, which focuses on the contextual condition of the building rather than the building itself, generates new avenues of understanding the ground that can have an impact on the architectural practices of this 21st century.

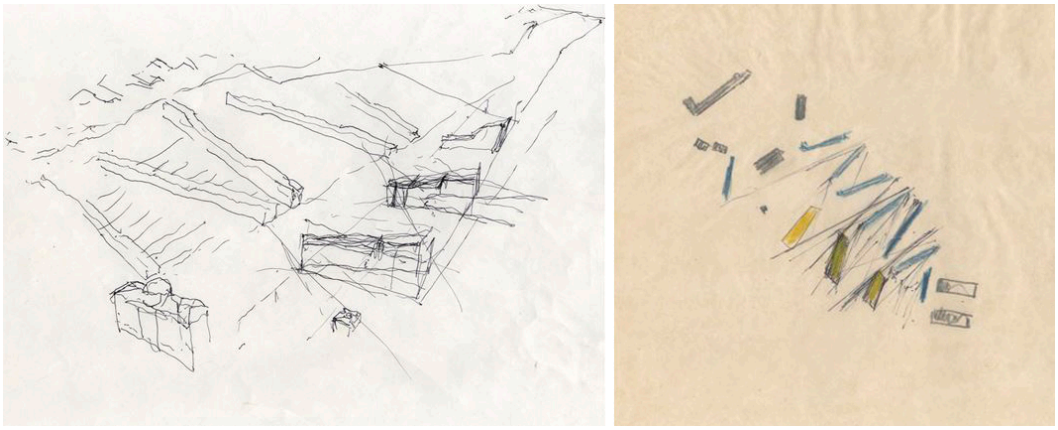


Figure 3. Architecture Research Unit (ARU): Kunstlandschaft Cospuden, 1997–2001 [32], near Leipzig, Germany. The projects of Beigel and Christou act as new traces in the ground. The buildings generate new footprints that adapt to the topography without altering it. The strategy is an attempt at the generation of voids rather than objects. Images compiled by the authors. Source of imagens: http://www.grahamfoundation.org/grantees/5957-florian-beigel-and-the-architecture-research-unit-a-survey (accessed on 18 February 2024).

4. Back to the Ground

Today, the ecological, energetic, and social transition, together with the emergence of a growing sensitivity that directs the practice of architectural design to operate on what has already been built, through strategies of reappropriation and reuse of the existing (natural or artificial), requires that architecture as a field reformulates certain meanings and mechanisms to work with the stratum that configures the surface of the ground.

Firstly, the ground—i.e., the support beneath buildings—can no longer be conceptualized or represented as a neutral line or surface, as was the case in most of the representations of object architecture. As Latour states, the ground is a volume, a thickness full of life [7]. The heterogeneity and complexity of this stratum [33] necessitate, more than ever, a careful examination to rearticulate its relationship with what is placed on it. For architecture, this state of the ground—stratified and habitable—implies the need to develop a more attentive view of what is happening beneath the surface, and to promote new protocols that enhance the understanding of its material substance. In 1975, Peter Smithson's well-known drawing of the Upper Lawn ground section [34] (p. 29) indicates the path toward a more advanced assimilation of the supporting stratum. This depiction of the ground, which includes the topographical relief of its surface as well as the roots of the trees and the existing well, resonates with some of the current representations of projects that already incorporate the composition of the ground as another agent of the physical context in which the building is inserted. This new approach to architectural project design can be seen in the drawings of Andres Jaque's Reggio School building [35] or Junya Ishigami's Water Garden project [36]. Such representations, increasingly frequent in contemporary practice, as we see in the Design Earth research project [37], are clear manifestations of a reformulation of the tools [12] (p. 120)—graphic ones, in this instance—that architects must implement in the new climatic regime (Figure 4).

(**a**) (**b**)

Figure 4. (**a**) A. Jaque/Office for Political Innovation: Reggio School, 2019 [35]. Axonometric drawing. The project drawing shows the ground as a large stratum in which the building is rooted. Drawing: Office for Political Innovation. Source: <https://www.scielo.cl/img/revistas/arq/n106//0717-6996-arq-106-48-gf12.png> (accessed on: 18 February 2024). (**b**) Junya Ishigami, Water Garden, 2018 [36]. Through a sophisticated form of representation of the soil layer, the project demonstrates a growing sensitivity to protecting the uniqueness of the landscape. Drawing: Junya Ishigami. Source: https://divisare.com/projects/415578-junya-ishigami-associates-art-biotop-water-garden (accessed on 18 February 2024).

Secondly, it is necessary to redefine the objectives and tools that we use to work with the ground. The implementation of contemporary strategies of articulation and contact with the land, while trying to achieve the enduring relationship between architecture and ground—as we can see in various episodes of modern architecture [14]—must also respond to current concerns and interests. In this sense, the radicalization of the climate crisis urgently requires a reorientation of the mechanisms of placement in the landscape. As Allen states, 'if architecture is to construct a relationship with nature today that goes beyond mimesis, we have to begin with an expanded sense of space of landscape itself' [38] (p. 285). Operating within this immersive context of reality means that architects must begin to embrace the condition that necessitates establishment on 'habitable ground.' This urgent need implies the development of articulation mechanisms characterised by a concern for 'where one treads', as Beigel pointed out [31] (p. 187), creating careful relationships of affinity between the building and the land, as well as activating its topographical potential to promote interaction with the environment.

5. Case Studies: Contemporary Topographical Arrangements

As we have seen, a few decades ago, a certain type of architecture insisted on creating a tabula rasa on building sites, but now, there is a growing sensitivity towards valuing the singularity of the terrain. This new sensitivity towards the ground and its artificial manipulation is manifested in the developments of new support systems that, from a technical and constructive point of view, promote a more responsible negotiation with the stratum that allows life on the planet. This way of working responds to a series of interests and key issues of an ecological, energetic, or landscape nature, on which some of the most important topographical actions of recent architectural practice currently focus (Figure 5).

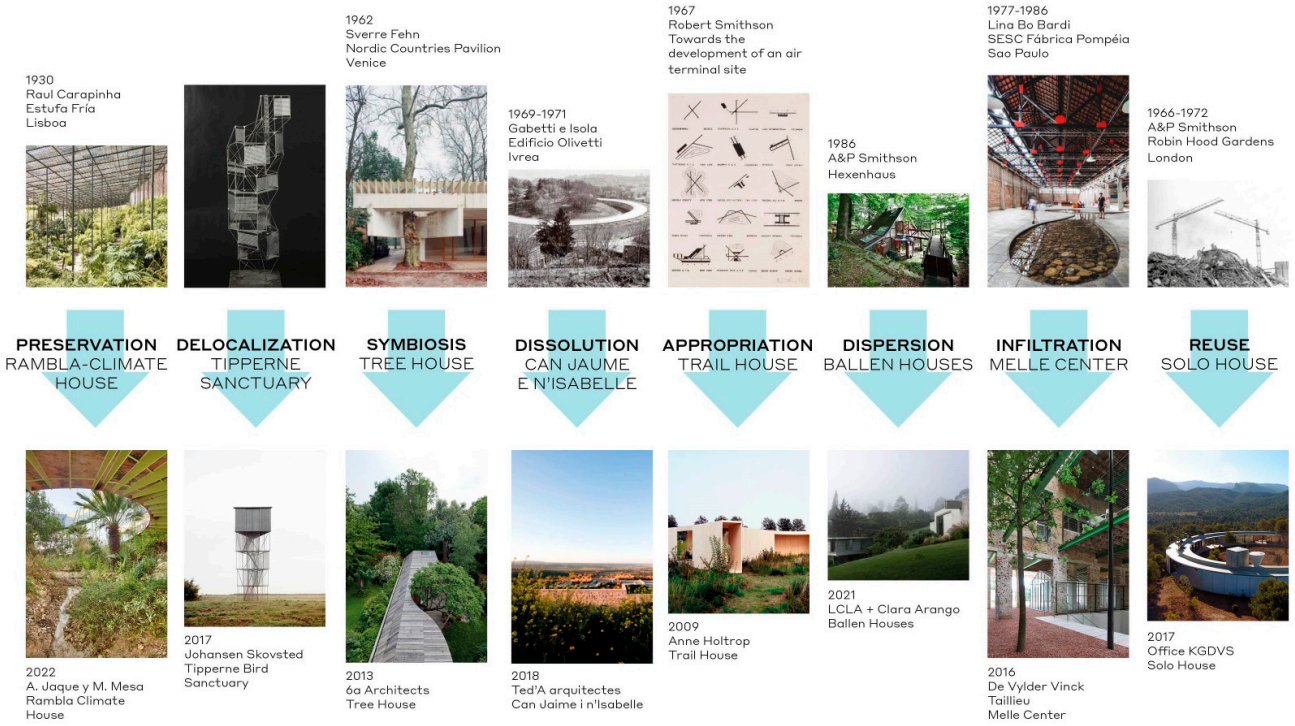


Figure 5. Case studies and evolutionary diagram of rooting strategies. Analysis of contemporary cases based on an ecological relationship with the soil, from other paradigmatic examples developed in the 20th century. Source: Authors, 2024.

5.1. Preservation

Some contemporary tactics for promoting a more ecological contact between the building and the ground have as an essential goal the preservation of the soil stratum and its qualities. From the study of exemplary modern cases in their ways of reaching

the ground, such as Estufa Fria in Lisbon (Raul Carapinha, 1930–1933) [39] (p. 30), we now recognise a series of small-scale projects that elaborate different strategies seeking to preserve the topography and the existing environmental regime.

Rambla Climate-House (A. Jaque and M. Mesa, 2022 [40]) proposes minimal impact placements, in which the space between the building and the ground becomes an uninterrupted place that maintains its original state, thus actively involving the natural environment in the project [41]. This building seeks to reduce the built footprint and allow the ground in which it is inserted to continue to evolve naturally. In this example, elevating the building above ground level is not a response to the criteria of the modernist style, but rather to more significant considerations. These considerations are related to the goal of ensuring coexistence between the artificial built environment and the natural terrain, which supports non-human processes and species.

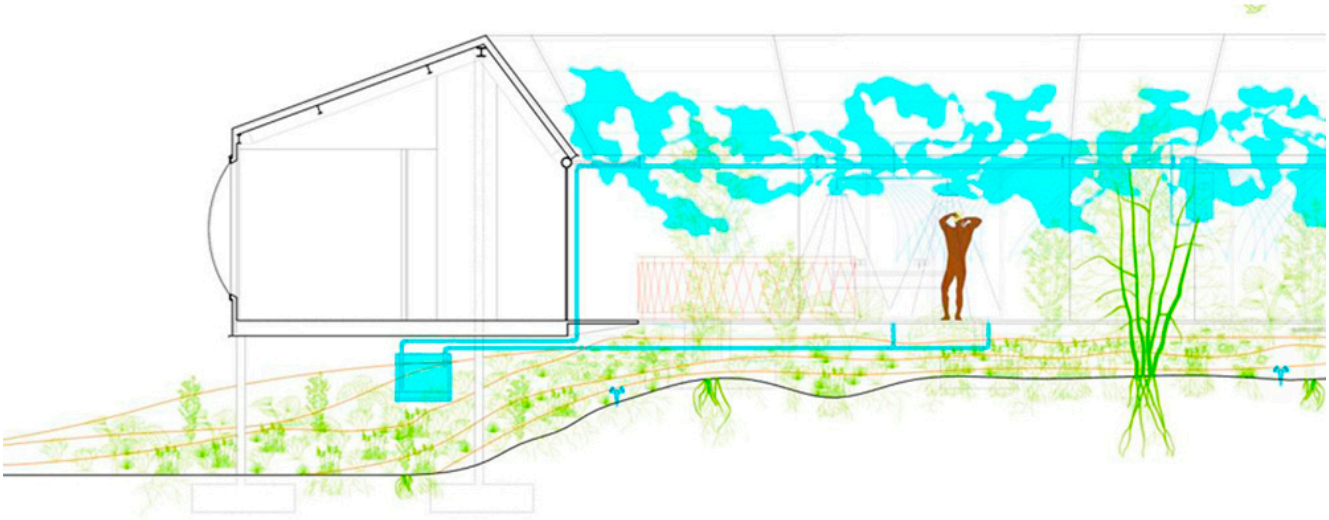
The documentation of the project shows how the house has developed an ingenious mechanism for rooting in the site. The building rises above the existing topography. It minimally touches the ground through a series of thin columns. Thanks to this elevation mechanism, the relief of the ground remains intact, except for the topographical transformation directly created to solve the problem of road access. The ecological approach is based on the idea that the existing vegetation and topography are primary conditions to be protected. A fragment of the existing landscape is carefully surrounded by the courtyard around which the house is organised. In this central space, the biodiversity of the site is preserved. There is no evidence of alteration or removal of the natural soil conditions. The effect of this rooting system creates a deliberate agreement between artifice and nature (Figure 6).

5.2. Delocalisation

In addition to these so-called 'light contact' strategies, such as the example discussed above, we are increasingly witnessing realizations in which architecture sheds its physical materiality and transforms into a temporary phenomenon, a pure installation that leaves hardly any trace in the long term. In these cases, architecture is not considered a stable form that sinks into the ground and anchors itself to the site, and the project becomes unstable in relation to the contact with the ground, implementing mechanisms of occupation with hardly any foundations or earthworks. In this vein and linked to the radical experiences of the 1960s and 1970s, such as the prototypes of the towers for New Babylon by Constant Nieuwenhuys [42] (p. 36), we recognize a number of proposals that seek to promote architectures without a sense of permanence.

The Tipperne Bird Sanctuary project (Johansen Skovsted, 2017 [43]) is an artefact-like architecture that can be uninstalled at any time and whose careful relationship with the ground is based on mechanisms of minimal contact and preservation of its own properties. It can be considered a removable architecture. Its location is determined by unsteady factors such as the evolution of the natural world. The photographs show absolute respect for the landscape in which the building is located: a horizontal place where other constructions are barely visible. Specifically, they reflect the careful relationship that this example maintains with the ground plane. The plans of the project show that there is a studied mechanism to avoid altering the horizontality of the ground. In this particular case, these minimal impact effects have been achieved through sophisticated structural ingenuity. The structural system is designed to have the smallest possible footprint on the ground, as the section showcases. The result is an artefact of maximum lightness where the footprint on the ground is barely perceptible. This system allows the base of the building to gradually expand to support an increasing footprint as the building rises. In this manner, the base of the building fades from view, while helping to preserve the natural conditions of the landscape (Figure 7).

(**a**) (**b**) (**c**)



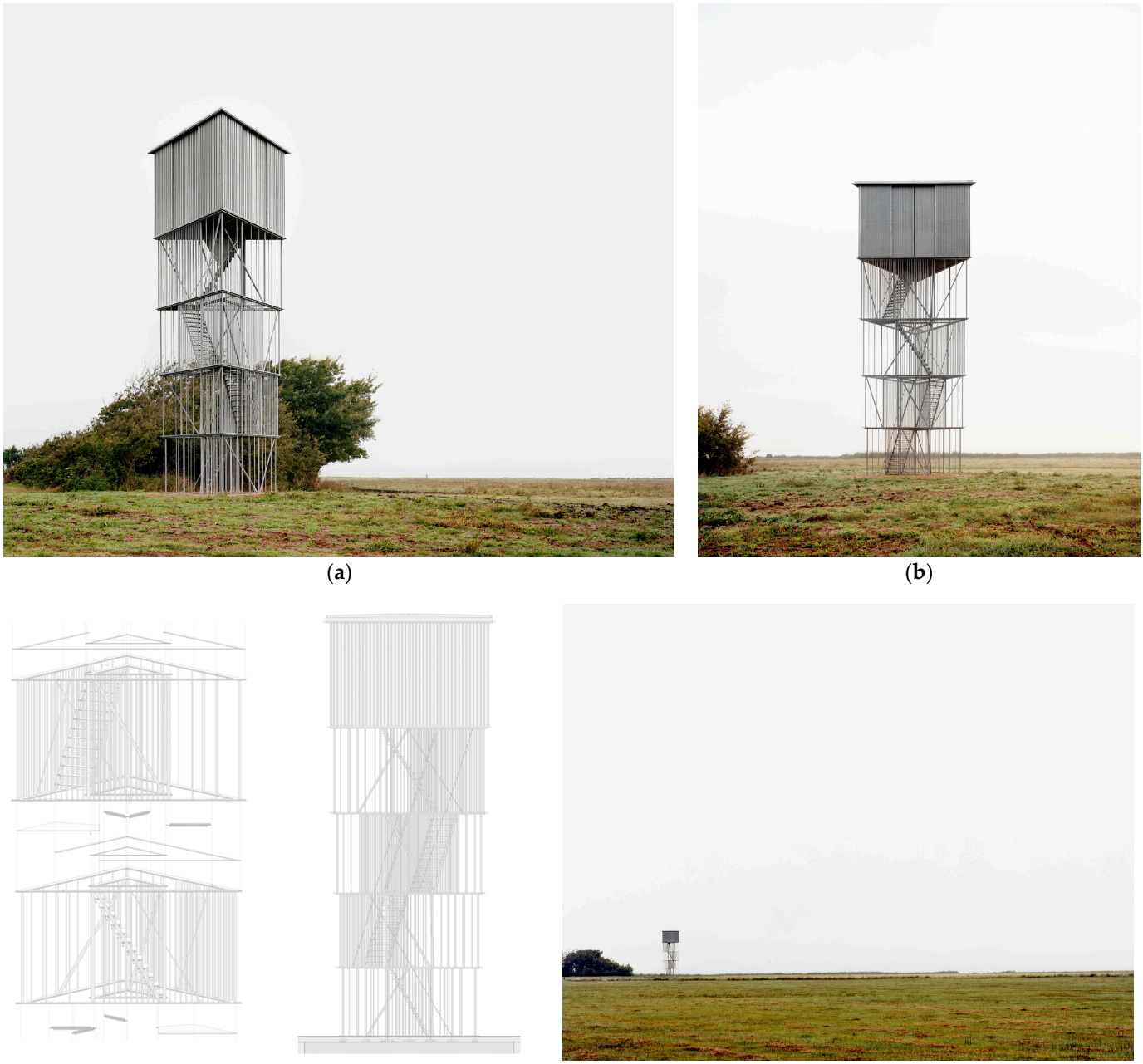
(**d**)

Figure 6. The Rambla Climate-House. Murcia, Spain. (A. Jaque and M. Mesa, 2022 [40]). (**a**) Detail of the rooting. (**b**) Aerial view. The house is built on stilts that rise from the ground (**c**) The house is organized around this elliptical void. The natural topography of the land is preserved. (**d**) Section (Fragment). Photography: José Hevia. Drawings: A. Jaque and M. Mesa. Images and drawings compiled by the authors Source: <https://officeforpoliticalinnovation.com/work/marblelous-crowned-house/> (accessed on 18 February 2024).

5.3. Symbiosis

Linked to the eco-biological strategies of preserving the soil layers, new forms of implantation seek to incorporate certain mineral and vegetable components into the project.

In this context of site attention, characterized by conservation, a field of design possibilities emerges that defines articulations with the terrain based on intentional symbiotic relationships between the building and the particularities of the site, including topography, strata, planting, etc. This approach has already inspired projects such as the Nordic Countries Pavilion (Sverre Fehn, 1962 [44]) and it is also at the core of more contemporary projects.



(**a**) (**b**) (**c**) (**d**) (**e**)

Figure 7. Tipperne Bird Sanctuary. Ringkøbing. Denmark (Johansen Skovsted Arkitekter, 2017 [43]). (**a**,**b**) The building is imagined as free-standing object in the landscape. (**c**) Exploded axonometric drawing (**d**) Section. The structural system is designed as a structure that expands as it grows, allowing for a small footprint on the ground. (**e**) View of the bird watching tower. Photography: Rasmus Norlander. Drawings: Johansen Skovsted Arkitekter. Images and drawings compiled by the authors. Source: https://www.archdaily.com/883075/tipperne-bird-sanctuary-johansen-skovsted-arkitekter (accessed on 18 February 2024).

The intentional links with nature contained in the Tree House (6a Architects, 2013 [45]) promote a sophisticated rootedness in which architecture and soil—or its mineral and plant components—are intertwined through a bond of mutual and reciprocal correspondence. The project involves the extension of an existing building at the back of a garden with trees. The project contains a fundamental ecological idea: instead of trying to remove or transplant the trees from the plot to gain more living space, the project keeps the land as it was. The new pavilion, built in wood, does not follow a linear design, as would have been usual, but is distorted so as not to interfere with the existing vegetation. The photographs and plans of the building reflect an interesting accord between the building and the natural world. The consequences of this operation have a favourable impact on the project [46]. The narrowing generated in the built volume is used to generate an outdoor terrace that integrates the tree into the life of the building. In this way, the effects generated by this operation make it possible to preserve the plant identity of the plot. But they also succeed in generating a shaded outdoor space that can be used as an extension of the interior area (Figure 8).

Figure 8. Tree House, London, United Kingdom (6a Architects, 2013 [45]). (**a**) The house develops around the trees in the garden, curving to pass around the tree in the centre. (**b**) This rooting design results in a narrowed volume, which has been cleverly utilized to create an outdoor terrace. (**c**) The house is then re-branched to accommodate the uses of the dwelling. Images and drawings compiled by the authors. Photography: Johan Dehlin. Drawings: 6a Architects. Source: https://www.archdaily.com/492606/tree-house-6a-architects (accessed on 18 February 2024).

5.4. Dissolution

There are several examples of modern architecture that have attempted to dissolve into the landscape, to sink into the ground to be inconspicuous. The ambition to build without altering the appearance of a site has resulted in deeply rooted implantations with a strong impact on the section of ground. The Olivetti Building in Ivrea (Gabetti and Isola, 1969–1971 [47]), utilizes artificial terrain modelling and a deliberately 'crescent-shaped' floor plan to achieve optimal solar exposure and high thermal insulation, provided by the mass's soil.

Currently, we recognize several works that employ this topographical strategy, such as Can Jaime i n'Isabelle (Ted'A arquitectes, 2018 [48]). This structure is sunk into the terrain, lowering its centre of gravity, and aiming for invisibility through a horizontal green roof that camouflages the building within its surroundings. In these cases, the distinction between 'land' and 'ground' tends to disappear, being replaced by a unified approach that blurs the line between topography and the building itself [49]. The drawing of the building section clearly reflects this inner idea. In this drawing, the building is represented as part of the terrain. The roof of the building aims to be a horizontal fragment of the landscape. In fact, the existing vegetation on the sloping ground continues along the horizontal plane covering the house. The liveable space of the house is understood as a void excavated in the ground section itself. The courtyard shown in the section is the element that connects the terrain and the ground.

These ideas, which we can see in the project plans, correspond to the built reality. The photographs of the building, taken from the upper part of the site, reflect a clear intention of its integration into the landscape. Even though the building cannot avoid transforming the soil layer when it sinks into the ground, we can see the goal of restoring the layer damaged by this intervention. In addition, it has a beneficial effect on the area since it preserves the views and therefore the topographical identity of the landscape (Figure 9).

5.5. Appropriation

There are strategies that make visible the geological or material history of the site sedimented over time. The soil stratum contains information that architects can and should use in their projects [50]. Its fundamental traces (often invisible to the eye) form a palimpsest of marks and incisions that reflect how human activity has gradually modified the pre-existing context. This set of overlapping traces conceals multiple original identities that remain active in the collective memory. Working with the traces of the territory today, as proposed by the pioneers of 'land art' in the 1960s, as exemplified by the Towards the Development of an Air Terminal Site project, (Robert Smithson, 1967 [19]) implies refining the ways to extract formal or geometric conditions capable of guiding the process. This action arises from the appropriation of the traces of the ground: the discovery of a path hidden by the undergrowth, an ancient trail sedimented by time, or the footprint of an old construction will open the projects to the development of unexpected and surprising implantations.

Recent mechanisms of land occupation focus on this form of appropriating the memory of a specific place. Projects such as Trail House (Anne Holtrop, 2009 [51]) exemplify this way of working with the site that, instead of radically altering it, takes advantage of voids and latent geometries of the site to subtly insert the building [52]. This approach is clearly reflected in the floor plan of this project, which was part of the exhibition Unknown Territories 2009 (Almere, The Netherlands). The building emerges from the appropriation of the traces of the ground. The morphology of the building is adapted to the geometric conditions revealed in the ground. The habitable space of this installation is a spatial transformation of the paths spontaneously generated in a given place. In this way, the transformation of the ground is minimised, and concentrates only on those areas that have already been transformed by the passing of people. The rest of the space remains intact. The project includes other mechanisms to minimise its impact on the site, in addition to this surprising adaptation to the ground. The intentional openings in its section allow watching

through the building itself and therefore reducing the visual barrier result that is often created by architecture (Figure 10).

(**a**) (**b**)

(**c**)

Figure 9. Can Jaime i n'Isabelle, Palma de Mallorca, Spain (Ted'A arquitectes, 2018 [48]). (**a**) The house adapts to the topography of the land to remain unnoticed, integrating with the landscape and becoming one through a roof with native vegetation. (**b**) Detail of the roof (**c**) Longitudinal section Images and drawing compiled by the authors. Photography: Luis Díaz Díaz. Drawing: Ted'A arquitectes. Source: https://hicarquitectura.com/2020/10/teda-arquitectes-can-jaime-i-nisabelle/ (accessed on 18 February 2024).

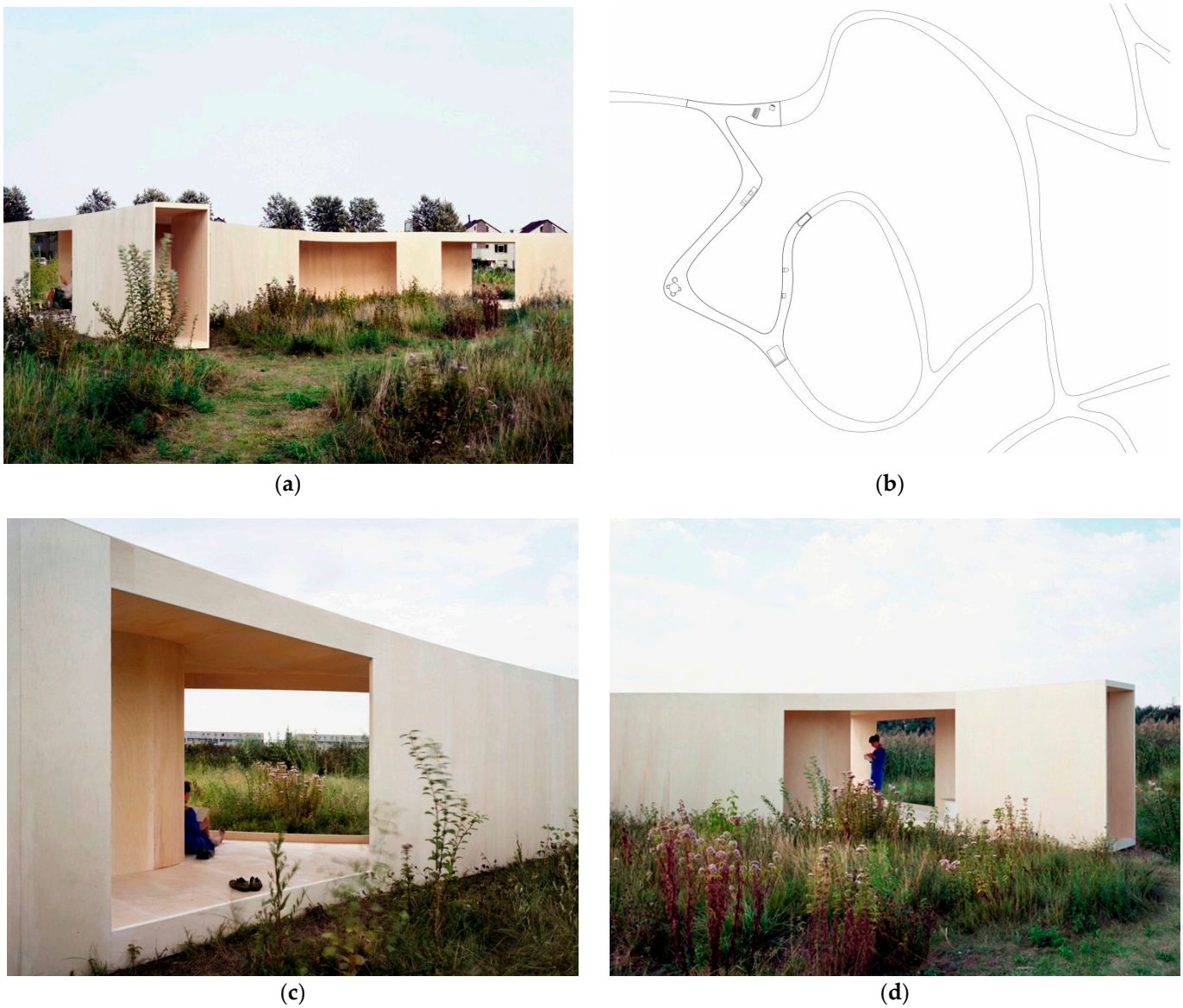


Figure 10. Trail House, Almere, Netherlands (Studio Anne Holtrop, 2009 [51]). (**a**) The house takes the shape of the existing tracks on the plot: It curves, bends, and divides following the same curvature as the paths. (**b**) Ground floor plan. (**c**,**d**) Apertures in the volume allow views to the surrounding landscape. Photography: Bas Princen. Drawings: Studio Anne Holtrop. Images compiled by the authors. Source: https://www.archdaily.com/57846/trail-house-anne-holtrop (accessed on 18 February 2024).

5.6. Dispersion

The fragmentation of the project is an action that generates a new relationship with the site. The Hexenhaus project (Alison and Peter Smithson, 1990 [53]) is made up of different elements that unfold around the site. The different pavilions and rest areas are linked by paths and bridges that generate a new understanding of the landscape. These small pavilions are raised off the ground, allowing the soil and trees to develop naturally. In this way the impact of the building on the ground is reduced and a more responsible relationship with the site is generated. The space between the buildings also constitutes a fundamental part of the project, as Stan Allen pointed out: 'Form matters, but not so much the form of things as the form between things' [54]. In this way, the sloping land between the buildings is transformed into a new garden that makes it possible to enjoy the landscape and connect the two areas.

The recovery of these ideas is present in the Ballen Houses (LCLA Office + Clara Arango, 2021 [55]). The project operates under an action of fragmentation. The house is divided into two small pavilions that are dispersed around the site. Instead of generating a single building, the architects chose to generate separate structures. These small buildings individually dialogue with the topographical conditions of the site. Each structure relates in a particular way to the slope, trying to respect the natural condition of the ground. The first of these structures is designed with a raised floorplan. This first building, which has a square floor plan, will be supported on the ground by means of concrete screens. This structural solution reinforces the intention to respect the existing topography of the site as much as possible. As we can see in the section of the building, the building rises from the ground to leave the site as it was. Through a small courtyard we can also see how the vegetation crosses the building and is integrated into the interior space. The second piece remains on the ground. In this case, it is a linear building that follows the slope of the land. This piece seeks to reduce its impact on the terrain through the treatment of its section. At one end of the building, the roof is folded down to touch the ground. Through this operation the building begins to become part of the landscape. The two buildings are connected by a corridor that runs through the existing vegetation. By doing so, the space between the buildings becomes a new garden from which to enjoy the landscape and to gain a new understanding of the place (Figure 11).

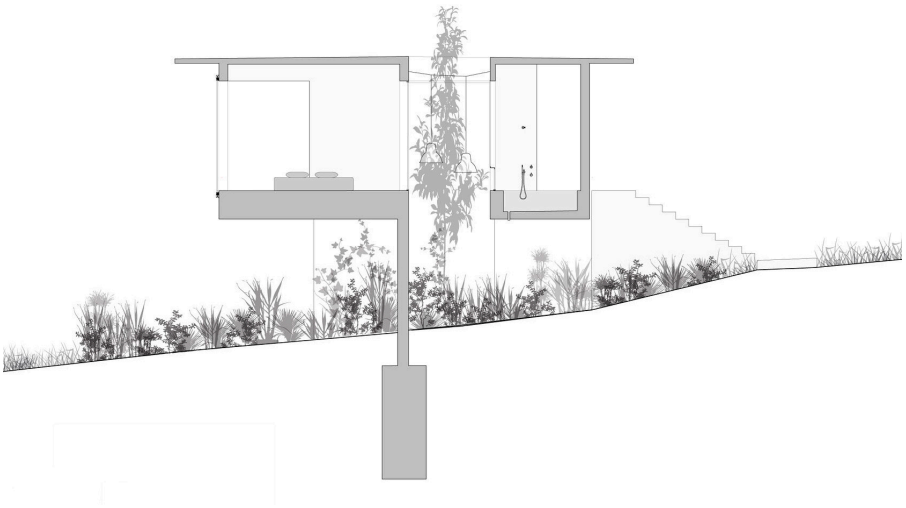
5.7. Infiltration

The ground in its multiple formalizations—natural or artificial—acts as a key tool to reverse the conditions of the outside world inside the building, as we recognize in works such as the SESC Fábrica Pompéia (Lina Bo Bardi, 1977–1986 [56]). In examining potential relationships between architecture and soil, we also uncover alternative operational methods through strategies of minimal intervention. This involves the insertion of new grounds into obsolete structures, serving as a means of urban or environmental reactivation and generating spaces with different degrees of interaction between natural environments and artificial constructions [39] (p. 33). In this type of operation, time appears as an agent that controls and modulates the experience of space. The processes of decomposition, sedimentation, and geological superimposition of matter, which appeared to be exclusive to civil works on the territory, are recovered in the contact area between the building and the ground.

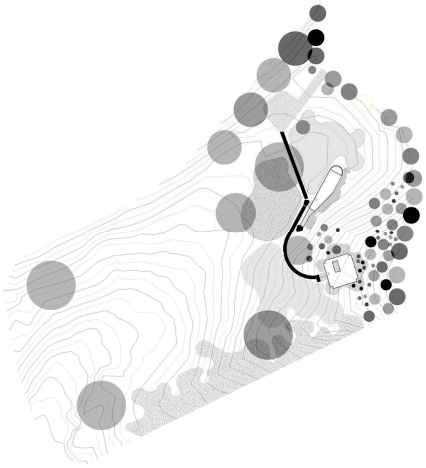
The interventions carried out in the former Psychiatric Hospital Pavilion in Melle, Belgium (De Vylder Vinck Taillieu, 2016 [57]) proposes the insertion of new topographies with natural planting on the ground floor. The result is a unique landscape that activates the old, ruined building [22]. The interior space thus becomes a protected exterior in continuity with the site's garden. The ground plan of the project shows the infiltration of the garden surrounding the building into the existing structure. The trees of the garden proliferate inside. The interaction between the existing building and the new vegetated ground is reflected in the intentional perspective drawings of the project. As a result, the old, ruined building is activated and a unique landscape episode is created. These effects create the illusion that the floor was 'external' while actually it was internal. The interior becomes a protected exterior in continuity with the site (Figure 12).

(**a**)

(**b**)



(**c**)



(**d**)

Figure 11. Ballen Houses, EL Retiro. (LCLA Office + Clara Arango, 2021 [55]). (**a**) One house rises four metres above the ground, while the other is partially sunk into the ground. (**b**) The connection between the two structures is made through a ground that respects the original topography of the site. The gardens link both houses. (**c**) Section; square building, (**d**) site plan. Photography and drawings: Luis Callejas. Images and drawings compiled by the authors. Source: https://www.architonic.com/es/project/lcla-office-ballen-house/20246250 (accessed on 18 February 2024).

Figure 12. PC Caritas, Melle, Belgium (De Vylder Vinck Taillieu, 2019 [57]). (**a**–**c**) A new ground penetrates the existing building. This operation rehabilitates and converts the old space into an experimental public place where the boundaries between inside and outside are blurred. (**d**) Ground plan, (**e**) sketch. Photography: Filip Dujardin. Drawings: De Vylder Vinck Taillieu. Images compiled by the authors. Source: https://www.archdaily.com/871034/pc-caritas-architecten-de-vylder-vinck-taillieu (accessed on 18 February 2024).

5.8. Reuse

Artificial urban topographies, such as the ground in Robin Hood Gardens (Alison and Peter Smithson, 1966–1972 [53]) reuse construction debris to constitute the hills of its outdoor space. In this project, the terrain is abruptly broken up, creating a series of hollows and mounds [58]. The strong contrast between the artificiality of these topographies and the buildings creates effects that influence the perception of their scale and dilute their objectuality. The aesthetic potential of this type of 'earthworks', linked to the artistic practices of Land Art in the second half of the 20th century, is combined with their ability to provide specificity and give the site its own identity. Contemporary architecture continues to feed off these actions, which are based on the movement and relocation of soil to create

outdoor spaces through recycling processes that reduce the amount of energy required to transport materials. Today, the spirit of major transformations of the ground to give identity to outdoor spaces has receded.

Solo House (OFFICE, 2017 [59]) also uses ground extracted from the site to shape the outdoor spaces, but in a much more constrained manner. The house occupies a site in a forest of great ecological value. The house adopts a ring geometry to carefully infiltrate across the trees, and thus minimise the impact on the existing vegetation, and to lower to the minimum the direct impact on the environment. The building reuses its own soil material to create the project's outdoor space. This reduces the energy costs of transporting materials. The part of the building that is the space surrounded by the ring is shaped as a new artificial horizontal floor planted with native vegetation. This new pretended ground is integrated into the landscape and becomes the garden of the house. Through these operations, the forest floor is partially restored to its natural state. The house looks as if it had always been there, surrounded by the trees of the forest. These rooting operations are complemented by other measures to minimise the impact on the landscape. The house makes use of the natural resources of the area—the sun, the water—and avoids the need to build invasive canals in this unspoilt area (Figure 13).

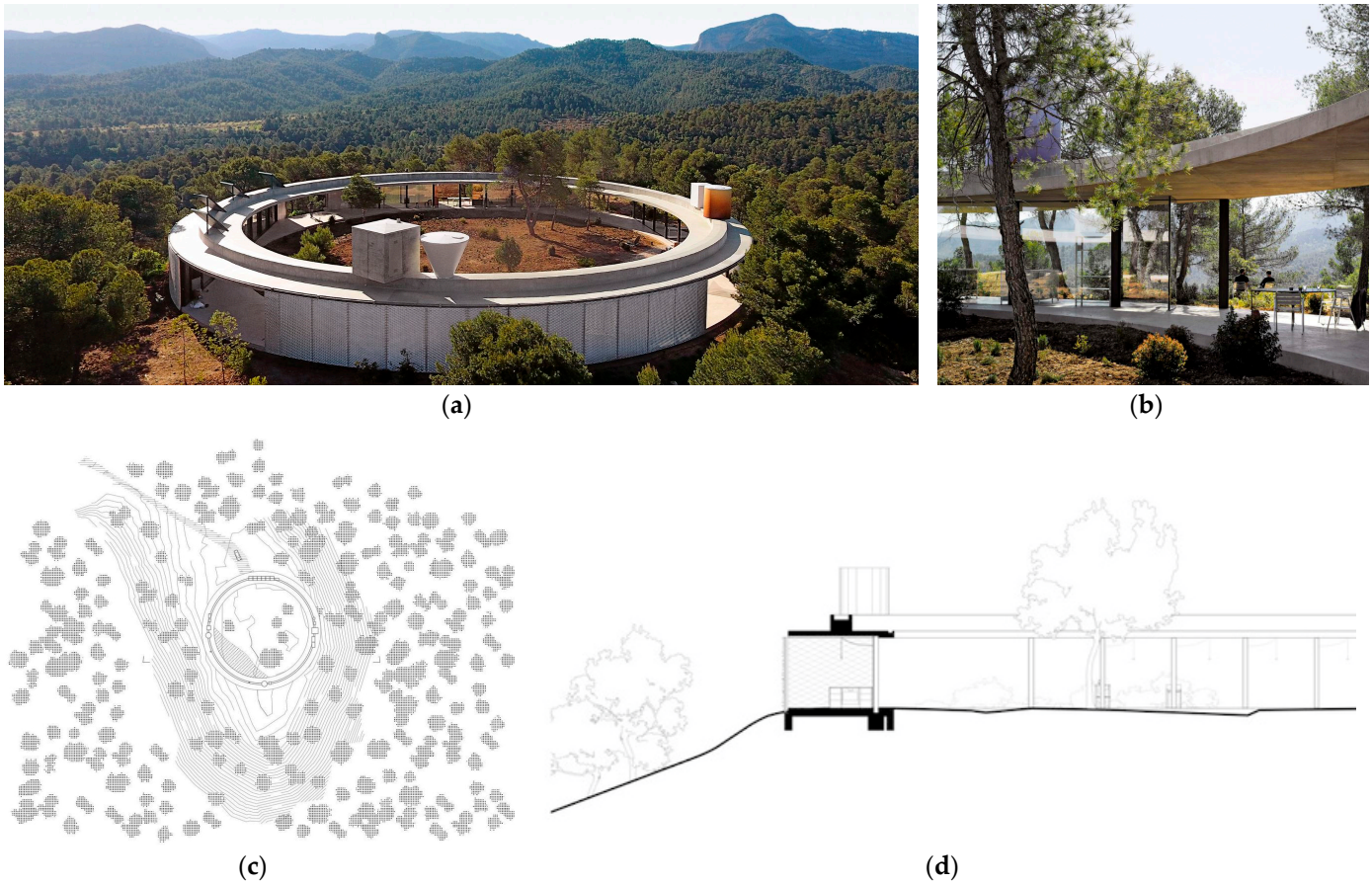


Figure 13. Solo House, Matarraña, Spain (OFFICE, Kersten Geers David Van Severen, 2017 [59]). (**a**) Aerial view. This operation creates artificial grounds covered with vegetation that give meaning to the project and discover new ways of experiencing contact with the land. (**b**) The soil displaced from the site is reused to configure the exterior space of the project. (**c**) Site plan. (**d**) Section (fragment). Photography: Bas Princen. Drawings: OFFICE. Images and drawings compiled by the authors. Source (images): <https://arquitecturaviva.com/obras/solo-house-office-kgdvs-1> (accessed on 18 February 2024). Source (drawings): https://www.archdaily.cl/cl/871712/solo-house-office-kgdvs (accessed on 18 February 2024).

6. Discussion: A New Relationship with the Ground

The analysis of how the selected buildings are sited provides ample evidence for a critical discussion on the most suitable approaches to designing the interaction between the building and the ground. The eight contemporary strategies derived from the analysis of the buildings—preservation, relocation, symbiosis, dissolution, appropriation, infiltration, and reuse—demonstrate an inherent intention to respect the soil where they are situated. These strategies represent diverse approaches where architecture ceases to be an imposition on the territory and becomes a facilitator of its natural development (Figure 14). The recognition of these strategies in the current context allows us to extract a series of useful actions, serving as design guidelines, to enhance the relationship between the building and the land in terms of sustainability and environmental adaptation.

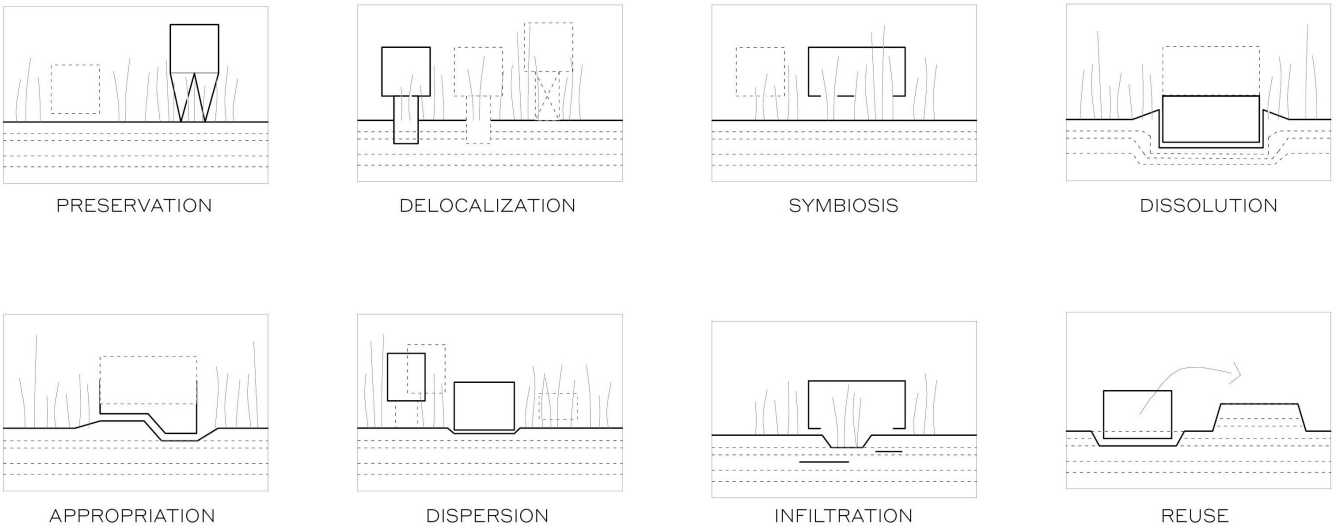


Figure 14. Diagrams of 8 grounding strategies for an ecological arrangement between architecture and the ground. Source: Authors, 2024.

6.1. Reduce the Impact on the Ground

Elevating buildings off the ground can offer a more ecologically sensitive method of construction. This approach allows for the preservation of soil permeability and natural runoff patterns, assuming thorough preliminary studies are conducted to minimize the impact on existing vegetation. This strategy would therefore avoid the destruction of the original topography and the biodiversity of the site, supporting the stability of the existing ecosystems. Nevertheless, this method requires careful consideration of various factors for its effective architectural application. It requires the development of lighter structural systems and advanced foundation techniques that minimize soil disturbance. One of the main challenges posed by this strategy is its application in larger-scale projects. Although, in ephemeral buildings, without a fixed location or of small scale—as demonstrated in the initial case studies—this tactic can provide a beneficial implementation in terms of ecology and integration into the landscape, increasing the scale of the building and raising it off the ground can lead to problems of integration into its surroundings. The lack of a correct articulation between building and ground reflects the need to establish a dialogue that is essential to the relationship between architecture and its site. To mitigate these issues, as Richard Sennett noted [60], it will be necessary to consider innovative articulation systems that foster the connection between the building and the land, creating habitable and usable spaces in between.

6.2. Respect the Inherent Conditions of the Land

The recognition of the landscape as a foundational support that must be protected is highlighted in our prior analyses through buildings designed to minimize their impact on the ground. This sensitivity, prevalent in contemporary practices, can also be recognised in developments that purposefully embrace the qualities of the landscape and its natural features. One of the ways of taking care of the ground involves strategically planning the building's placement and design to safeguard the existing vegetation and topography. In this sense, adapting the footprint of the architecture to take advantage of existing voids or degraded spaces on the site is shown to be a valuable practice that can reduce the indiscriminate destruction of fertile land. As demonstrated, adapting the geometry of buildings to the site without compromising their functionality further prevents the need for tree removal. In this way, this strategy not only contributes to terrestrial climatic stability but also enriches the adjacent outdoor with the unique natural characteristics of the locale.

6.3. Restore the Lost Soil Layer

Another sustainable action identified from the previous study is the restoration of vegetation lost during the construction process. This operation does not only consist of installing a 'green roof' on the building for reasons of energy efficiency, also represents a commitment to respecting the territory. When a building is partially submerged, the restoration of the ground plane damaged by the building is an essential operation to offset the impact on the land and the landscape. Sinking the building into the ground generates a deep earth movement that can affect the modification of its constituent properties and changes in the water table. To compensate for this negative impact on the ground, the lost topsoil can be recovered in the building envelope. In addition to trying to restore the natural landscape, this form of implantation raises other issues that must also be taken into consideration. Firstly, it preserves the integrity of the landscape, as embedding the building does not obstruct views. The second is the ability to exploit the energy potential offered by the contact with the inner layers of the ground (Ábalos, Sentkiewicz, 2020) [61]. The thermal constancy and cooling of the earth ensures the temperature inside the building remains constant, reducing the building's energy consumption. Thirdly, it offers the chance to repurpose excess soil from excavation, utilizing it to shape the project's external space. This can create earthen mounds that serve as protective barriers against noise or wind around the building.

6.4. Reimplant New Natural Soils

Intervening at the ground contact in existing buildings is also a strategic operation that can revitalize them. Within architecture, the natural ground acts as a key tool for reversing the conditions of the outside world inside the building. Introducing natural ground with vegetation inside buildings, serves as a crucial method for altering indoor conditions by mirroring the external environment. This action not only creates new places for biodiversity, but also makes it possible to regulate the environmental conditions (ventilation, radiation, shading) of the architecture. Such action, while quietly transforming the building's ground level, opens up avenues for exploring how to integrate natural ecosystems within consolidated urban settings. It encourages selective emptying in buildings, leading to innovative interpretations of the ground as a boundary between landscape and architecture.

These four design guides offer the contemporary architectural project new ways to engage with the ground plane, proposing actions that prompt a re-evaluation of the unbreakable bond between architecture and land. This re-evaluation is crucial in light of the ethical, energetic, cultural, and environmental challenges exacerbated by the environmental crisis we face today. These actions facilitate the creation of unique ground-engagement mechanisms that are far removed from the standardisation of the globalised world, thereby contributing to the emergence an architecture that is more sensitive and careful with the stratum we inhabit.

7. Conclusions

In a diagram known as the 'valley section' (first published in 1909), Patrick Geddes synthesized his idea about the relationship between human settlements and the unique local characteristics of the terrain in a graphic way. The theories of this Scottish biologist and sociologist advocated for a substantial commitment to soil and topography, thereby advocating for a paradigm shift towards a more sustainable and environmental approach. Almost a century after the formulation of Geddes' visionary ideas, most architects now actively pursue a more sustainable and ecological approach, establishing a new relationship between buildings and the ground as their primary objective [62]).

This article seeks to demonstrate how contemporary architecture has implemented a substantial variety of new ways to implant buildings into the terrain over the past two decades. The various examples examined in this paper illustrate the consolidation of a new ethos in architecture, primarily defined by a fresh ecological attitude towards the landscape. This new attitude is also reflected in a growing interest in creating sustainable mechanisms while working with the terrain.

In addition to addressing material or spatial concerns of the buildings, the strategic utilization of the surrounding ground has become an indispensable aspect of every architectural project. A number of approaches seeking to engage with the terrain in a more ecological manner are currently exerting a direct influence on project design, frequently shaping the morphological conditions of buildings. These new ways of thinking about the support of the buildings are also inspiring a number of topographic strategies that share a common ecological goal: the preservation of the identity of the ground, its topography, and its constituent elements.

In recent years, we have observed how the growing influence of ecological concerns in architecture has primarily focused on aspects that are already ingrained in our ecological ethos. The so-called 'sustainable' building has revolved a number of ecological issues by promoting a new idea of the building as a 'technical object' with a structure capable of reducing carbon emissions and energy expenditure. Although these developments are making a great impact in contemporary architecture, this is not enough. As discussed in this paper, we must thoroughly consider the various impacts of architecture on the ground beneath buildings and their effects on the habitability of the planet. The implementation strategies discussed in the article show a significant improvement in understanding and managing various project sites. New approaches for engaging with the ground are no longer based on the architect's stylistic criteria or aesthetic sensibility. The emphasis on aesthetics is shifting towards a greater focus on reducing environmental impact and preserving the terrain.

As we have examined in this paper, achieving this commitment to the ground on a broader scale will require architecture to embrace collaboration with other disciplines, which offer an enhanced technical understanding of the terrain composition. Architects have always shown a great ability to partner with other branches of knowledge to provide solutions to complex problems. In the context of the climate crisis, architects require the integration of other fields of knowledge, such as geography, geology, and hydrology, into building design. These fields can provide valuable data, measurements, and diverse perspectives essential for informed decision-making. This interdisciplinary approach is essential to preserve the biological, geological, or atmospheric cycles of the territory.

To reinforce these innovative ecological approaches to the ground, it is imperative to reassess and reshape certain conventional theories and practices within architecture. Contemporary architectural practices illustrate how drawings, models, and digital representations of buildings are extending beyond human-inhabited spaces, incorporating a more nuanced interpretation of the ground as the habitat of many non-human populations that are crucial for preserving the planet's ecosystems. The evolution in techniques within architectural practice equally is equally influencing the architectural project research. In this new setting, it is imperative to broaden approaches beyond spatial or material concerns within this field, delving into critical studies regarding the evolving significance of the

ground in contemporary architecture. This exploration can foster a renewed relationship with the natural and human landscape.

Author Contributions: Conceptualization, D.C.R., F.R.R. and H.F.-E.; methodology, D.C.R., F.R.R. and H.F.-E.; software, D.C.R., F.R.R. and H.F.-E.; validation, D.C.R., F.R.R. and H.F.-E.; formal analysis D.C.R., F.R.R. and H.F.-E.; investigation, D.C.R., F.R.R. and H.F.-E.; resources D.C.R., F.R.R. and H.F.-E.; data curation D.C.R., F.R.R. and H.F.-E.; writing—original draft preparation D.C.R., F.R.R. and H.F.-E.; writing—review and editing D.C.R., F.R.R. and H.F.-E.; visualization, D.C.R., F.R.R. and H.F.-E.; supervision D.C.R., F.R.R. and H.F.-E.; project administration D.C.R., F.R.R. and H.F.-E.; funding acquisition, D.C.R., F.R.R. and H.F.-E. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Data Availability Statement: The data presented in this study are available in the article.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Latour, B. *Down to Earth*; Politics in the New Climatic Regime; Polity Press: Cambridge, UK, 2018.
2. Reclaim the Earth. Exhibition at the Palais de Tokyo (Paris, 15/04/2022–04/09/2022). Available online: https://palaisdetokyo.com/en/exposition/reclamer-la-terre/ (accessed on 18 February 2024).
3. Aït-Touati, F.; Arènes, A.; Grégoire, A. *Terra Forma: A Book of Speculative Maps*; The MIT Press: Cambridge, MA, USA, 2022.
4. Smart Forest Atlas. Available online: https://www.jennifergabrys.net/2022/11/smart-forests-atlas/ (accessed on 18 February 2024). This research project is a living archive and virtual field site that explores how digital technologies are transforming forests.
5. *No Net Land Take by 2050? Future Brief 14. European Commission by the Science Communication Unit*; University of the West of England: Bristol, UK, 2016. Available online: https://catalogue.unccd.int/650_no_net_land_take_by_2050.pdf (accessed on 18 February 2024).
6. Latour, B. *Politiques de la Nature*; La Découverte: París, France, 1999.
7. Latour, B.; Weibel, P. *Critical Zones. The Science and Politics of Landing on Earth*; The MIT Press: Cambridge, MA, USA, 2020.
8. Critical Zones. Observatories for Earthly Politics. Exhibition at ZKM Centre for Art and Media Karslruhe. (Karslruhe, 23/05/2020–09/01/2022). Available online: https://zkm.de/en/exhibition/2020/05/critical-zones (accessed on 18 February 2024).
9. Critical Zones Digital. Fieldbook. Available online: https://zkm.de/media/file/en/cz_fieldbook_digital_en.pdf (accessed on 18 February 2024).
10. Bardgett, R. *Earth Matters: How Soil Underlies Civilization*; Oxford University Press: Oxford, UK, 2016.
11. Haraway, D. *Staying with the Trouble: Making Kin in the Chthulucene, Durham, London*; Duke University Press: Durham, NC, USA, 2016.
12. Yaneva, A. *Latour for Architects*; Routledge: Oxon, UK; New York, NY, USA, 2022.
13. Arènes, A. Architectural Design at the Time of Anthropocene: A Gaia-Graphic Approach to the Critical Zones. Ph.D. Dissertation, University of Manchester, Manchester, UK, 2022.
14. Berlanda, T. *Architectural Topographies: A Graphic Lexicon of How Buildings Touch the Ground*; Routledge: New York, NY, USA, 2014.
15. Bedoya, C.; Ickx, W.; Jaime, V.; Perles, A. *Being the Mountain*; Actar Publishers & the Illinois Institute of Technology College of Architecture Press: New York, NY, USA, 2020.
16. Leatherbarrow, D. *Uncommon Ground, Architecture, Technology, and Topography*; The Mit Press: Cambridge, MA, USA, 2000.
17. Casino, D. Ground-notations. Estrategias de enraizamiento en Alison & Peter Smithson. *REIA* **2014**, *1*, 25–38.
18. Stirling, J. *RIBA Drawings Collection*; RIBA: London, UK, 1974; p. 29.
19. Smithson, R.; Holt, N. (Eds.) *The Writings of Robert Smithson*; New York University Press: New York, NY, USA, 1979.
20. Peleman, D.; Barcelloni-Corte, M.; Ronner, E.; Viganò, P. The Project of the Soil. *OASE* **2022**, *110*, 5–7.
21. Secchi, B. Progetto di suolo. *Casabella* **1986**, *520–521*, 19–23.
22. Patteeuw, V.; Szacka, L. Critical Regionalism for Our Time. The Architectural Review. 2019. Available online: https://www.architectural-review.com/essays/critical-regionalism-for-our-time (accessed on 18 February 2024).
23. Patteeuw, V. Topographic Architecture: Kenneth Frampton's Interest in the Ground. In *Being the Mountain*; Actar Publishers & the Illinois Institute of Technology College of Architecture Press: New York, NY, USA, 2020.
24. Frampton, K. Towards a Critical Regionalism: Six Points for an Architecture of Resistance. In *The Anti-Aesthetic Essays in Postmodern Culture*; Foster, H., Ed.; Bay Press: Seattle, WA, USA, 1983; pp. 16–30.
25. Ickx, W. On Topography. Critical Regionalism. Revisited. *OASE* **2019**, *103*, 121.
26. Hatz, E. Florian Beigel: 1941–2018. *ARQ* **2019**, *23*, 4–7. [CrossRef]
27. Beigel, F. Time Architecture: Florian Beigel in conversation with David Kohn. *Scroope, Camb. Archit. J.* **1997**, *9*.
28. Lynn, G. (Ed.) *Archaeology of the Digital*; Canadian Centre for Architecture: Montreal, QC, Canada; Sternberg Press: London, UK, 2013.
29. Allen, S. Matters of Surface. In *Landform Building*; Allen, S., Mcquade, M., Eds.; Lars Müller Publishers: Baden, Switzerland; Princeton University Press: Nueva York, NY, USA, 2011; pp. 363–371.

30. Ábalos, I. El despliegue de la entropía. In *Recycled Landscapes*; Fundación COAM: Madrid, Spain, 2002.
31. Mead, A. Viajeros del tiempo. In *Naturaleza y Artificio. El Ideal Pintoresco en la Arquitectura y el Paisajismo Contemporáneos*; Ábalos, I., Ed.; Gustavo-Gili: Barcelona, Spain, 2009; pp. 183–194. (First published as Mead, A. Time Travellers, *Architectural Journal* **2003**, *3*, 26–44).
32. Available online: http://www.grahamfoundation.org/grantees/5957-florian-beigel-and-the-architecture-research-unit-a-survey (accessed on 18 February 2024).
33. Ingold, T. *Correspondences*; University of Aberdeen: Aberdeen, UK, 2017; p. 35.
34. Smithson, A.; Smithson, P. *Upper Lawn, Solar Pavilion*; MACK: London, UK, 2023; p. 29, (Fist published as *Upper Lawn, Folly Solar Pavilion*. Editions de la Universitat Politécnica de Catalunya: Barcelona, 1986).
35. Jaque, A. Reggio School. Encinar de los Reyes, Madrid, España, 2019. *ARQ* **2020**, *106*, 48–59.
36. Ishigami, J. *2G International Architecture Review*; Walther & Franz König: Berlin, Germany, 2019; Volume 78.
37. Design Earth. Available online: https://www.design-earth.org/ (accessed on 18 February 2024).
38. Allen, S. Nature in the Plural. In *Landform Building*; Allen, S., Mcquade, M., Eds.; Lars Müller Publishers: Baden, Switzerland; Princeton University Press: Nueva York, NY, USA, 2011; pp. 285–291.
39. Ábalos, I. Interiores. El talón de Aquiles de la modernidad. In *Interior, XIV Muestra Internacional de Arquitectura la Biennale di Venezia*; Arquia: Madrid, Spain, 2014; pp. 13–49.
40. Andrés Jaque/Office for Political Innovation Home Page. Available online: https://officeforpoliticalinnovation.com/work/marblelous-crowned-house/ (accessed on 18 February 2024).
41. Ayers, A. Rambla Climate House. *Archit. Rec.* **2022**, *210*, 28.
42. Alison, J.; Brayer, M.; Migayrou, F.; Spiler, N. (Eds.) *Future City. Experiment and Utopia in Architecture 1956–2006*; Barbican Art Gallery/Thames and Hudson Ltd.: London, UK, 2006.
43. Johansen Skovsted Arkitekter Home Page. Available online: https://johansenskovsted.dk/projekter/TIPPERNETarnPlacering-Tipperne-Ringkobing-FjordOpfort-2017Bygherre (accessed on 18 February 2024).
44. Sverre Fehn Home Page. Available online: https://sverrefehn.info/project/venezia/ (accessed on 18 February 2024).
45. 6a Architects Home Page. Available online: http://www.6a.co.uk/projects/more/tree_house (accessed on 18 February 2024).
46. Stierli, M. Stepahanie Macdonald and Tom Emerson in conversation with Martino Stierli. *El Croquis* **2017**, *192*, 266–267.
47. Gabetti e Isola. Available online: https://hicarquitectura.com/2023/07/gabetti-y-isola-olivetti-en-isola-1974/ (accessed on 18 February 2024).
48. Ted'a Arquitectes Home Page. Available online: http://www.tedaarquitectes.com/english/index.php?/projects/2011-jaime-and-isabelles-home/ (accessed on 18 February 2024).
49. Hernández, E. Paisaje y Despaisaje. In *Otra Arquitectura, Otro Paisaje*; Colegio Territorial de Arquitectos de Alicante y Universidad de Alicante: Alicante, Spain, 2013; pp. 31–45.
50. Beigel, F.; Christou, P.; Misselwitz, P. *Cospudem: Constructing the Site*; a+t: Vitoria-Gasteiz, Spain, 2001; Volume 17.
51. Trail House/Anne Holtrop. Available online: https://www.archdaily.com/57846/trail-house-anne-holtrop (accessed on 18 February 2024).
52. Díaz, C.; García, E. Lugar, Materia, Gesto. *El Croquis* **2020**, *206*, 264–288.
53. Smithson, A.; Smithson, P. *The Charged Void*; The Monacelli Press: New York, NY, USA, 2001.
54. Allen, S. Field Conditions. In *Points +Lines. Diagrams and Projects for the City*; Princeton Architectural Press: Nueva York, NY, USA, 1999.
55. LCLA office Home Page. Available online: https://www.luiscallejas.com/filter/completed/EL-RETIRO-Garden-in-a-clearing (accessed on 18 February 2024).
56. De Oliveira, O. *SESC Fábrica Pompeía, Sao Paulo. 2G Revista internacional de arquitectura*; Gustavo Gili: Barcelona, España, 2015; Volume 23–24, pp. 112–136.
57. De Vylder Vinck Taillieu Home Page. Available online: https://architectenjdviv.com/wordpress/wp-content/uploads/2020/08/034-Caritas-Melle-scaled.jpg (accessed on 18 February 2024).
58. Oldham, R. Undulating Landscapes. *OASE* **2022**, *110*, 129–133.
59. OFFICE Kersten Geers David Van Severen Home Page. Available online: https://officekgdvs.com/projects/130 (accessed on 18 February 2024).
60. Sennett, R. Hemos perdido el arte de hacer ciudades. In *Artesanía, Tecnología y Nuevas Formas de Hacer Trabajo*; CCCB: Barcelona, Spain, 2013; pp. 39–58.
61. Ábalos, I.; Sentkiewicz. *Nuevo Primitivismo*; Arquine: Ciudad de México, Mexico, 2020.
62. Welter, V.M. Post–war CIAM, Team X, and the Influence of Patrick Geddes. In *CIAM Team 10-the English Context*; Delft TU: Delft, The Netherlands, 2003.