# FOUNDATIONS. ROOTS OF AN ECOSYSTEM

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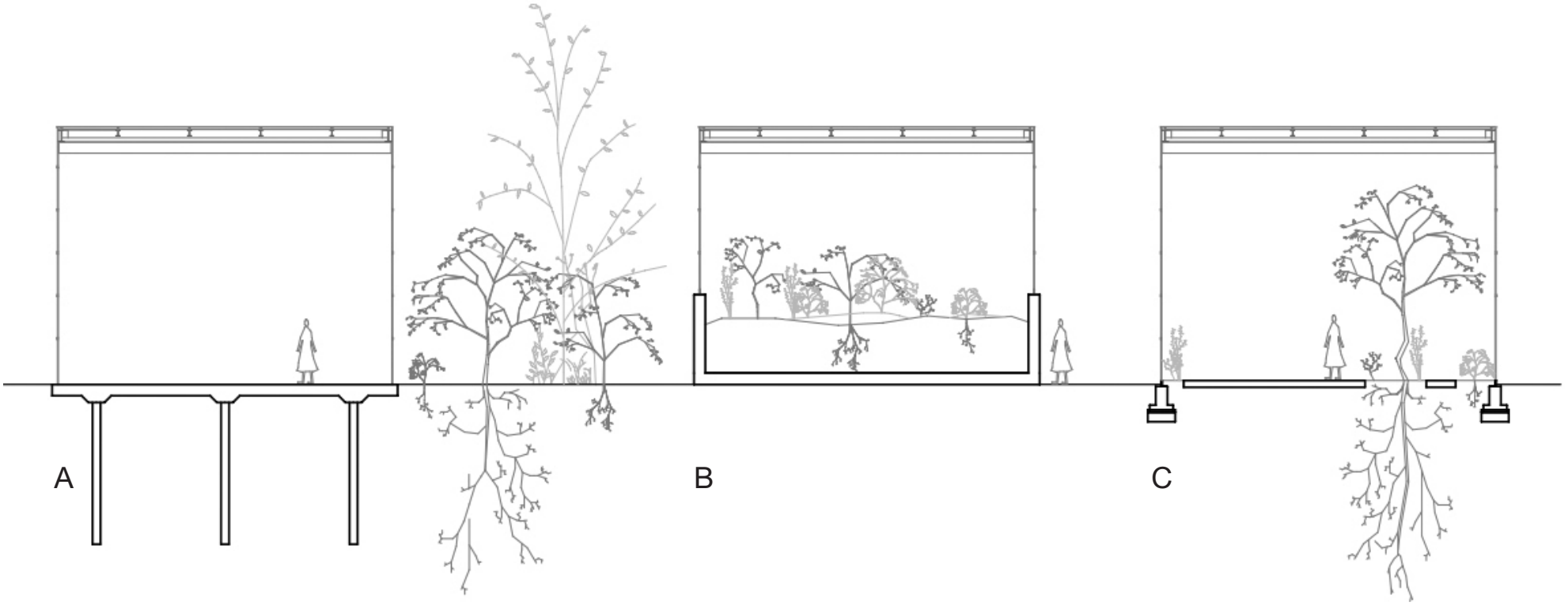
In the terrarium, the canonical relationship between soil and architecture is reversed; this container becomes the content, so what normally surrounds the architecture becomes its inhabitant. In this inversion, roots identify permanence.

The critical reading starts from a shift in concept, a reversal of meaning. In a canonical view, the relationship between artifact and landscape sees a separation, where the outside is divided from the inside. It is true that, as defined by Toma Berlanda, the artifact plays not only the role of a spectator within the landscape, but it is an active element to transform the space in which it is placed (Berlanda 2013, p. 23).

However, it is necessary to make a simplification or translation from architecture to object, as a terrarium, capable of containing the landscape within it. As an object it is an end in itself. It is no longer interesting to understand its surroundings, since it is all contained in the body itself. In this separation and reversal, the subsoil identifies the key to understanding seemingly missing relations between object and place. It is a matter of identifying an intermediate way, of cooperation and definition of an ecosystem, in a collaboration between mineral and plant roots. An interval or anomaly in the well known order of separation between things. A separate space is studied, enclosed but in continuity with its surroundings, on a perceptual and physical level in the subsoil. It is an ambiguous space, which makes this ambiguity its quality, shifting the theme from the conditions already known, to others. After making this paradigm shift from architecture as a relational element to the body capable of condensing different natures within, it is possible to consider a real project to return to the field of architecture: *House with plants* by Junya Ishigami (Tokyo, Japan, 2012).

The intended method of reading identifies the subsoil and in particular the roots, the foundations as the main comprehension tool of the architectural phenomenon, shifting the line of reading and understanding of the building from the canonical ground floor to the subsoil. The intent is to take roots as an element that can explain architectural form, through the deep relationship between artifact and soil. In this sense, Prof. John Weaver, in his book "The ecological relations of roots" (Weaver 1919) developed research on plant organisms starting from the reading of roots as key components in explaining ecosystems, growth mechanisms of different species and the conditions that determine them. Roots, whether natural or artificial, become a spy (Ginzburg 1979), a hidden element that can explain conditions, characteristics, and qualities of a soil and the environment in which they are inscribed.

Three design variations of the case studies named in the text,
highlighting different terrarium types, starting with roots.
Drawings by Gino Baldi, 2023.
A - traditional condition, separation of architecture
and nature independent roots system;
B - traditional terrarium condition, nature
inside a container and human outside with no foundations,
terrarium as an object;
C-terrarium architecture; natural and artificial space are
inhabited by human alternating natural and artificial roots



In fact, the term "foundation" ("fondamento"), does not identify a component of the construction, but the place where the construction is located (Ambrosi 1994, p. 306).

Founding is an excavation work, it goes deeper, and it works with soil and the place to find the solid layer on which to rest the structure (Ambrosi 1994, p. 306). So, it is evident how the role of foundations is linked to place. Steven Holl, in his essay "Anchoring" (Holl 1989), emphasizes how the artifact is linked with the experience of a place. The construction site is not just one data among many in the project, but constitutes its foundation in both a physical and metaphysical sense (Holl 1989).

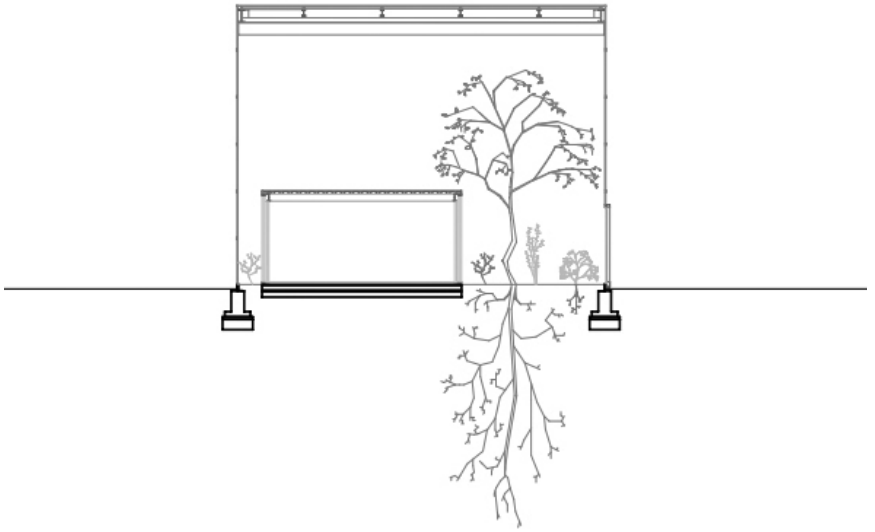
The question that arises is whether it is possible to understand and modify an ecosystem in its environmental identities, starting from its hidden conditions, its roots. To try to answer this question, a parallel between artificial and plant roots turns out to be interesting.

According to Luigi Snozzi (Croset 1990; Berlanda 2013), the basement floors of buildings, cellars and by extension foundations, as the places in direct contact with the soil, are those where it is possible to understand the entire architectural phenomenon of any building. In parallel, John Weaver (1919) identifies plant foundations (roots) as an indicator of soil conditions, type of organisms and symptom of an ecosystem. Roots become a possible tool for interpreting the "terrarium," an indicator and metaphor for an ecological way of colonizing the soil. The terrarium is a protected place, separated from the rest of the world, a reduction to an object of natural growth, as in a laboratory experiment. Junya Ishigami's project (House with Plants, Tokyo, Japan, 2012) when observed from the outside appears as an ordinary volume. In the underground, however, one understands how mineral plinths merge with plant roots in a new coalition. The floor plan of the foundation identifies the transition from an anonymous, or monotonous condition of mineral plinths or plant roots to a continuous interval, a dotted line and alternation of natural and artificial roots, united in a terrarium-architecture.

This research intends to integrate nature and artifice within the available perimeter. This principle is first visible in the foundations of the building, which are isolated and distinct between the different areas. A perimeter curb defines the anchorage of the main volume, while point foundations define the mineral platforms. The rest of the space remains natural, with earthly and plant elements of different species. This principle is based on the negotiation between natural and artificial space, visible in the foundation.

The foundation becomes an edge, a transitional condition, between an inside and an outside, an above and a below, visible

Junya Ishigami, *House with plants*, Tokyo, Japan, 2012
The project highlights the C condition characters of terrarium architecture by alternating mineral platforms with natural platforms.
Drawing by Gino Baldi, 2023.



and invisible, capable of explaining the meaning of the terrarium itself. Another negotiation project between plant roots and mineral roots can be seen in *House in Lege-Cap Ferret*, by Lacaton Vassal (France, 1998), reason whereby reading only the foundation plans one can see the continuous negotiation of existing and imposed roots. In this sense, it is important to point out a difference between natural and artificial roots, which allows one to understand the point of reading the terrarium. Artificial roots always seek solidity and compactness in the soil; the act of appropriation, while changing depending on various factors (economic, soil conditions, program needs) seeks to limit the proliferation of roots in the subsoil.

In contrast, plant organisms to enable the growth of aboveground components regularly and healthy, proliferate, grow and expand as much as possible in the underground, contaminating and overcoming obstacles they encounter.

Elements that work on the vertical (Y) axis, such as roots, going deep into the soil are analyzed to explain horizontal (X), threshold, and transition between one condition and another, between inside and outside the terrarium. To explain the content of the terrarium, it is necessary to identify its distinction from its surroundings through the transition, the threshold that separates it, and detects its inclusive characters by defining it as a closed ecosystem.

Thus, the terrarium becomes a piece of machinery, a mechanism capable of creating a microcosm in its own right, functioning with its own logic but in contact with the soil on which it settles, in a concept of terrarium-architecture, comprehensible through its deepest roots.

Lacaton Vassal, *House in Lege-Cap Ferret,* France, 1998.
The project highlights the characters of condition C of terrarium architecture by contracting domestic space with natural space.
Drawing by Gino Baldi, 2023.