



Giuseppe Perugini, Uga de Plaisant and Raynaldo Perugini, *Casa Albero*, Fregene, Italy, 1968, construction process *Casa Albero*, 1968.
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Casa Albero: an architecture experiment

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Designed in 1968, the *Casa Albero* [Tree house], in Fregene near Rome, by Giuseppe Perugini (1914-1995), Uga de Plaisant (1917-2004) and their son Raynaldo Perugini (1950-), constitutes an exceptional case of architectural experimentation. With multiple references to the aesthetic avant-gardes of the 20th century. It is presented as an example of modular, systematic and prefabricated architecture, in which the architects are, simultaneously, authors and part of the experiment themselves. The project functions as an architectural model in 1:1 scale. The concept embodied in this work offers the possibility of studying different ways of interpreting the living space within the same architectural composition.

Casa Albero, un esperimento di architettura was the title Giuseppe Perugini¹ gave to a book he had prepared to present his experimental house, built together with Uga de Plaisant² and with the collaboration of his son Raynaldo Perugini,³ also architects, in 1968. With a broad professional career, Giuseppe Perugini stood out as an architect with the project of the *Monumenti ai Martiri delle Fosse Ardeatine* (1944-1947), which has become not only the most important symbol of the immediate postwar period in Italy, but also the starting point of a new phase of Italian architecture.

The *Casa Albero* is located on a site with an area of approximately 2,300 square meters (m²) a few blocks from the sea, in the coastal town of Fregene, 40 kilometers (km) from Rome. Surrounded by streets on three sides and adjoining low houses on one of them, the site boasts many large trees that appear as a small forest, which creates an isolated environment. The house consists of three experimental buildings that make up three “*Episodi*” [episodes] – *tre “test-oggetti”*⁴ [three test-objects] – of architecture, as their own author calls them: the *Casa Albero*, properly speaking, the most important and the main nucleus of experimentation, and two smaller buildings, one called “*Cubetti*” [little cubes] and the “*Palla*” [ball], that are scattered through this kind of domestic forest of huge pines and holm oaks, discreetly enriched with other trees.

The project was carried out as an exercise in the experimentation of architectural techniques and the study of different forms of living space, in a real 1:1 scale model, in which the architect and his family become members of their own experiment: “The experimental principle is in the analysis of the creative process, which is what seems to reveal the correctness of the criteria that concur in its final conformation.”⁵ Giuseppe Perugini himself places it as a form of didactic architecture in which teaching takes place through self-architecture.

It is an incursion into a work in permanent evolution, framed in the concept of “not finished” or “not terminable,” to which parts could be infinitely added in modules. At the same time it is an abstraction of the diaphanous space, of the “architectural void,” as described by Giuseppe Perugini, since the habitable space offers “greater freedom through an infinite

range of organizational possibilities, with optimal distribution of spaces and functions, free of predefined schemes.”⁶

The experimental program concerns five different visions.⁷ The first one deals with experimentation on the theoretical plane about the concept of “not terminable” through a series of modules that determine a structural design preserving the organic part and allowing growth in every direction; the second deals with the abstraction of the architectural void in such a way that it is never perceptually determined as volume; a third one refers to the psychological effects in which static sensations are reverted to dynamic ones, through symmetry on the horizontal plane; the fourth is oriented towards the functions/services being structured in an absolutely autonomous way, also from a formal point of view and, finally, the fifth vision explains how the confrontation between the finished-unfinished concepts is experienced by contrasting the structure of the house with the spherical volume, placed at a specific point, determined by some theoretical considerations.

The “tree” and the “ball” are two opposite paradigms for other reasons as well. The first concerns the shape and the non-predefined organic increase based on the growth of the tree. Although the forms are straight, based on polygonal volumes, the development of the house emulates the growth of the branches with their clumps of leaves, which gives the name to this first project, not completed but not unfinished either. It is also a kind of *palafito* [stilt house], since in the lower part there is a water mirror, the pool, which at the same time reinforces the horizontal symmetry, reflecting, and recreating, the sky.

In opposition, the “ball” (sphere) is the completed figure, finished, without the possibility of making subsequent changes, not moldable, not modular and, nevertheless, it is a dynamic figure that, deliberately, is shown inclined outwards thanks to the oblique axis traversing the window placed around its perimeter and results in a perfectly balanced and stable interior. The sphere is also a room unit in which materials and dimensions were studied to solve acoustic problems.⁸

The concept of the *cubetti* is the intermediary between the other two buildings. They are elements of “linear variability”

in which the principle of seriation⁹ is applied and refer to the two previous episodes: the versatility of the modules and of the polygonal prefabricated elements compared to curves: the doors and windows are pieces of circular and cylindrical shapes that break with the straight line again. The module in this case measures 3 x 3 x 3 meters (m) with semi modules functioning as intervals, hosting services with a total area of approximately 40 m². The unit hosts two bedrooms, kitchen and two bathrooms. It is a form of prefabricated housing that allows multiple varieties of uses and applications. The *cubetti* were, in this case, destined to be rooms for guests, who could thus isolate themselves in their own environment.

This configuration of separate spaces provides infinite possibilities within the same house and allows different experiences of the living space.

The other relationship of the “tree” to the “ball,” has to do with the use of convex and autonomous circular volumes, which constitute the bathrooms of the house and change the rhythm of the facades, sometimes frontally, sometimes edgewise, attached to the rooms with steel profiles as huge couplings for plumbing.

The rationality of the forms is also reflected in the materials whose variety is reduced to a minimum: concrete, carbon steel and glass. With clear neoplastic and constructivist references,¹⁰ all the constituent elements are exposed and the natural-colored cement contrasts with the red-painted metallic elements.

Project, idea and performance

The architectural project arises from experiences previously carried out by Giuseppe Perugini, such as, for example, the repetition of volumes, also used in the *Monumenti ai Martiri delle Fosse Ardeatine* project, whose final objective is not the “form,” but “the possibility of proposing an architectural solution likely to contribute to solving some construction problems posing the convergence of a series of ideas from various origins.”¹¹ Indeed, the architect continually analyzes the architectures of the past to refine his project solutions.¹²

The house is built on the basis of modular pieces, which form almost cubic polygons, designed to be superimposed in an apparently random way in the manner of the “Meccanos” and was built part by part, creating a kind of habitable sculpture. In this case the house has geometric and repeatable elements, based on previous ideas embodied in sketches and studies of the shape and dimensions of each component, the construction systems, the assembly and the installations, in addition to the characteristics that both the exterior and interior space should have with respect to its location on the ground and its relationship with the surrounding environment.

The final result was conceived by making various proposals reflected in diagrams and sketches from which was chosen the one that, as architects and as users and future inhabitants of the house, was considered the most convenient.

The house can be seen from every angle and its deliberate emphasis on volumes sets aside the hierarchy of its four facades, in order to have, in fact, a three-dimensional vision with overlapping volumes that close the entire structure.

The interior, on the contrary, is an open space, devoid of

interior divisions in which, on the other hand, the different living areas are distinguished by the different levels and by the paths that allow areas of greater intimacy, also avoiding hierarchies and the standard view given to domestic spaces such as bedrooms and living rooms.

It is not an unfinished house, the central idea is an endless house, open to enlargements or reductions according to needs and always ready for modifications through the mere fact of adding or subtracting modules, which provide compositional diversity and spaces.

The house has as its starting point the structure (trunk). Concrete pillars and beams are forming a symmetrical framed support to the horizontal section and the implemented choice consists of a set of columns connected by beams which result in an asymmetrical plant. The beams are identically reproduced in the upper part, establishing the referred symmetry.

The structure acts as a three-dimensional frame and a container, on which, supported or suspended, the prefabricated modular concrete slabs are placed, separated from each other by 6 centimeter (cm) glass joints, which, at the same time, serve to cushion the expansion of the material, allowing a transparency that permanently relates the interior to the exterior. This element is also reproduced in the bathrooms.

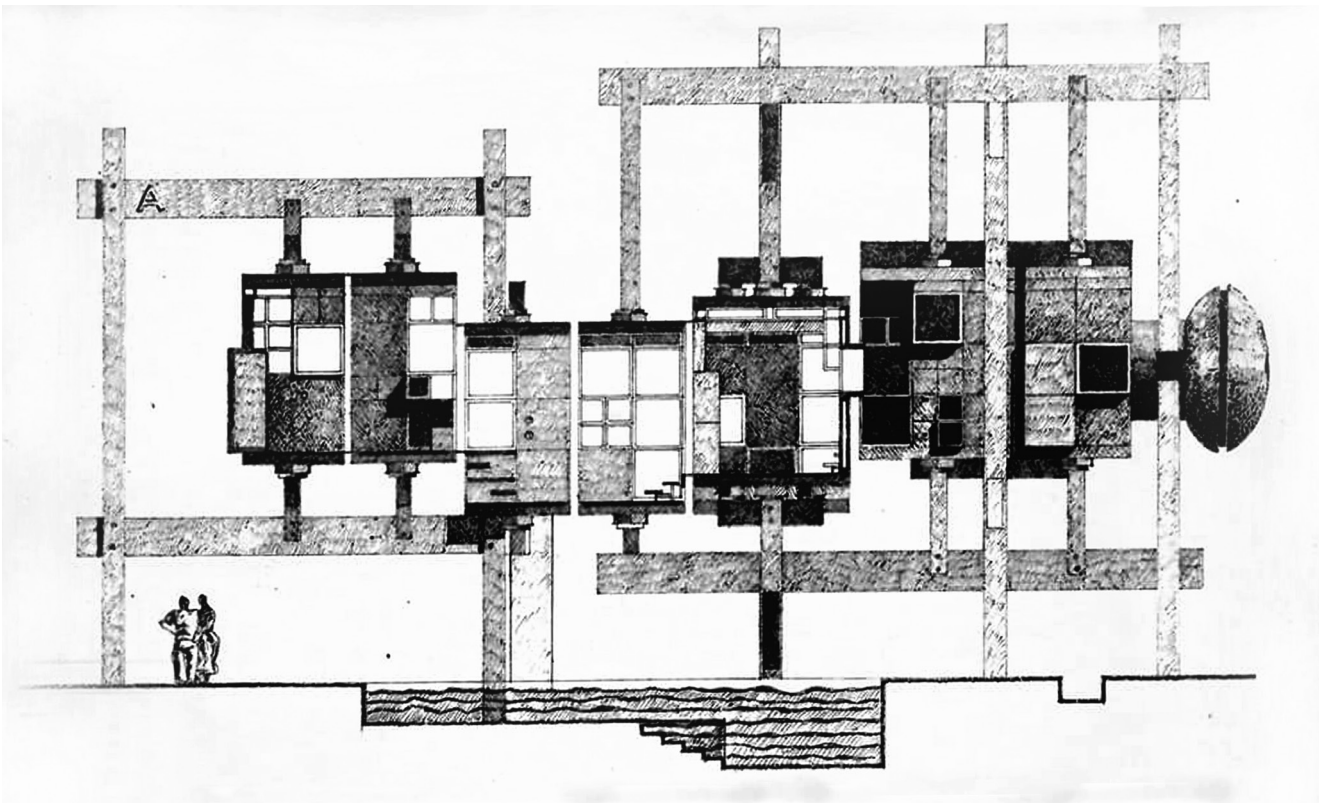
The development of the spaces begins with the placement of the plates that will serve as floors, thus defining the floor plan of the house with its different levels to give way to the construction of the exterior volumes and interior spaces, by placing the closure modules, also made of precast concrete, that form the walls. The proposed module is 0.50 x 0.50 m and pieces of different dimensions are developed from it that give rise to spaces spanning different areas from 4 m² upwards. The floor plates allow the choice of different wall materials, such as glass, brick or wallpaper.

The unevenness creates differences in floor levels of between 50 cm and 1 m and the interior stairs are independent elements from the structure, working as furniture, which are built with steel profiles according to need.



01 Giuseppe Perugini, Ugo de Plaisant and Raynaldo Perugini, *Casa Albero*, Fregene, Italy, 1968, the *Cubetti*, 2020. © Photograph of Silvia Segarra Lagunes.

02 Giuseppe Perugini, Ugo de Plaisant and Raynaldo Perugini, *Casa Albero*, Fregene, Italy, 1968, general view of the Casa Albero, 2020. © Photograph of Silvia Segarra Lagunes.



03 Giuseppe Perugini, Ugo de Plaisant and Raynaldo Perugini, *Casa Albero*, Fregene, Italy, 1968, longitudinal section, draw by Giuseppe Perugini, 1969 ca. © Archive Raynaldo Perugini.



04 Giuseppe Perugini, Uga de Plaisant and Raynaldo Perugini, *Casa Albero*, Fregene, Italy, 1968, interiors *Casa Albero*, 2020. © Photograph of Silvia Segarra Lagunes.
05 Giuseppe Perugini, Uga de Plaisant and Raynaldo Perugini, *Casa Albero*, Fregene, Italy, 1968, structure, pool and mobile draw ladder details, 2020. © Photograph of Silvia Segarra Lagunes.



06 Giuseppe Perugini, Uga de Plaisant and Raynaldo Perugini, *Casa Albero*, Fregene, Italy, 1968, the "Palla" after restoration, 2020. © Photograph of Silvia Segarra Lagunes.

In contrast to traditional architecture, in which the corners are structurally the most solid and robust part, here the corners break and fragment the volumes once and again into new rectangular polygons that are introduced into the interior space or protrude from the walls of the modules, as explained by Raynaldo Perugini.¹³

From the beginning it was defined that the house would be completely closed except for some windows and that it would be accessed by means of a mobile draw ladder, the only communication with the garden level.¹⁴

One of the features that give greater interest to the volumes is the combination of blank walls with glass walls and, above all, the one obtained with volumetric glass overlays, based on cuts and plane changes, which create voids turned inward and outward. These offer surfaces and spaces that replace a large part of the furniture: surfaces for shelves, bookcases, cabinets and, the same hollow polygons, function as shelves for objects. As a result, the rest of the furniture could be of a lighter type.

Even though the form was built on the fly, the structural solutions are not improvised, each element, especially the assemblies that join the modules, sometimes concrete elements, sometimes ties, supports and other steel pieces, are carefully studied step by step with detailed schematics and sometimes with functional test models or prototypes. No component of the house is placed at random, but each one of them has a function and is essential. In the same way that it is assembled, it could eventually be disassembled.

In this way, the parts that make up the rooms are not fixed or permanent, the system is assembled based on different steel assemblies: tie rods, cross braces for support, angles and screws that allowed fixing, but at the same time were useful to stabilize the structure and allow the necessary adjustments so that the pieces are precisely assembled.

The technical structure of the architectural object seeks the greatest possible synthesis in which

a principle of mechanization and total standardization is applied, which, by its nature, allows for an almost infinite range of possibilities that not only applies to the Casa Albero but also constitutes a whole methodological process,¹⁵

explains Giuseppe Perugini in his book dedicated to the house.

Bathrooms are external to the structure, as the conceptual plan already tells us. These are spaces attached to the walls that, in this way, do not interfere with the usable space of the house. They can be adapted to any of the exterior panels.

The design of the bathrooms, with two concave walls in the longitudinal direction, places the toilet and bidet at both ends and the washbasin frontally, centered, with a huge circular door that rotates 90°. The shower is not a closed space, but rather is located at the center of this space, allowing the entire area to be used for this purpose. The proposed system consists of a perimeter pipe that occupies the entire circumference of the capsule to launch jets of water from all angles, as described in the scheme drawn by Giuseppe Perugini and which is inspired by Leonardo's Vitruvian Man. The facilities are hidden in the walls and the floor.

Curved elements required scale models and prototypes to achieve shape perfection. Both for the baths walls and for the sphere, the manufacturing process was analogous to that employed by potters, in this case taking advantage of a sand deposit in which an excavation is made by rotation that, at the same time, serves as a hemispherical mold to pour the concrete, on which the circular shape is also obtained so that the interior and exterior present a perfect surface.

An element that was not considered in the initial project but that is equally important is the perimeter fence of the house designed by Raynaldo Perugini. It is a combination of curved railings encapsulated in concrete curved sheets. The entrance doors, a continuation of the fence curve, fold inwards with a shaft system specially designed to give

stability and support the weight of the door.

Everything in this architectural work is impregnated with details that are discovered little by little. The entrance to the *cubetti* features a suspended circular platform accompanied by a canopy in contrast to the concave cylindrical door and circular convex shutters. To reach the entrance level, there are a pair of concrete steps, shaped in a mixed cylindrical and polygonal volume, separated and offset that spans the height of the entrance. Walking through the garden, there are other elements furnished with different functions such as registration boxes or tool deposits that follow the same principles as those for the buildings: the modular pieces that make them up, with the doors or metal enclosures also painted in red show that nothing in this field was the product of chance, as can also be seen in different parts of the structure, in which they appear, stamped on the concrete elements, acronyms that are numerical references to the reproducible and assembled components in different positions, and the sculpture, simultaneously a weather vane and a symbol, that tops the *Casa Albero*.

The surviving plans were drawn from the finished house to be included in the book that remained unpublished until 2018. However, they had been completely finished in preliminary form, by Giuseppe Perugini himself, many years before.

Conservation and future expectations

For various reasons, the house has been uninhabited for several years and this has caused many deterioration problems, especially due to vandalism and illegal occupation.

Among the main problems detected are graffiti, especially on exterior and interior concrete surfaces, as well as lichen stains and oxidation.

Some of the metallic elements suffer from corrosion that increases due to the proximity to the sea and some glass is broken.

Structurally, there is no significant damage except on one of the beams that shows a slight, probably original, deformation and some insignificant oxidation points in the base reinforcement.

Despite these problems, the restoration operations to be carried out would be very easy, mainly consisting in cleaning, glass replacement, repairing of metallic elements and revision of the facilities, in short, it could be said that they are maintenance operations.

The “ball” was recently restored as a starting point for a comprehensive intervention throughout the house, with the idea of turning it into a cultural center which, in addition to allocating the spaces for various activities, could serve as accommodation for study stays.¹⁶

The house represents the realization of a dream of a modular house tailored to the needs of users, with infinite shaping possibilities to suit each inhabitant and in line with the idea of modulation and serial prefabrication very present in the Modern Movement and which has been the challenge that many architects and designers have tried to respond to with the idea of solving the housing problem on a large scale.

But inevitably, beyond its rich theoretical connotations, the *Casa Albero* stands out by its immediate perception,

which reveals it as one of the most unusual and stimulating proposals of mid-20th century architecture.¹⁷

Notes

- 1 Giuseppe Perugini (Buenos Aires 1914 – Rome 1995) arrived in Rome as a teenager with the idea in mind to become a sculptor, but due to an accident, he decided to be an architect. He studied architecture at La Sapienza (University of Rome) and was a professor of architectural composition. In addition to the project for the *Monumenti ai Martiri delle Fosse Ardeatine*, his achievements include the Palace of the Tribunal in Rome and the Delta hotel a few meters away from Colosseum. His works are among the most prominent examples of contemporary architecture in the second half of the 20th century (*Novecento*) in Italy.
- 2 Uga de Plaisant (Rome 1917-2004), studied architecture at La Sapienza where she was professor of drawing. She established an innovative method in teaching and operational research that allowed her to obtain the *Inarch/Finsider* award in 1967 in partnership with Giuseppe Perugini, for his studies on steel structures and on account of the modernity of the solutions proposed, specializing above all in educational and sports facilities, and was one of the founders of the Engineering Department at the Roma 2 University of Tor Vergata. In his turn Raynaldo Perugini is an architect Professor of History of Architecture and researcher at the Department of Architecture of the Roma Tre University of which he was also a founder.
- 3 I would like to express my deep gratitude to Raynaldo Perugini for allowing us to visit, in July 2020, the *Casa Albero* and for his remarks about the story of the house.
- 4 Giuseppe Perugini, Raynaldo Perugini, *La Casa Albero, un esperimento di architettura a Fregene*, Roma, GB Editori, 2018, 23.
- 5 *Ibid.*, 18.
- 6 *Ibid.*, 22.
- 7 From a manuscript prepared and designed by the author, *Ibid.*, 50.
- 8 Storpweber architects, *Casa Sperimentale – Interview with Angelo Bellotto, the builder*, 21 February 2020, <https://www.youtube.com/watch?v=W7FcuDjvdlI>.
- 9 Giuseppe Perugini, *Op. cit.*, 23.
- 10 “In addition to the reference to Neoplasticism, the parallelism with radical Italian architecture (Archizoom and Superstudio), of those same years, and with the projects of the Archigram group (which experimented the open and composable structure, the ‘plug in city’”, in María Margarita Segarra Lagunes, “La Casa Árbol de Fregene”, *Iscarsab newsletter*, No. 6-7, 2014, 15.
- 11 Giuseppe Perugini, *Op. cit.*, 18.
- 12 Storpweber architects, *The story of the house by Raynaldo Perugini, Architect*, 21 February 2020, <https://www.youtube.com/watch?v=q4qbvhedBM>.
- 13 *Ibid.*
- 14 *Ibid.*
- 15 Giuseppe Perugini, *Op. cit.*, 20.
- 16 This operation included, temporarily, the replacement of the original door with a metal lock. Originally it was a curved glass that integrated, in this way, the complete sphericity of this element.
- 17 I would like to thank César Rodríguez Campos for his kind help with the English phrasing.

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