

## Távora's house in Ofir: Sustainability and vernacular knowledge

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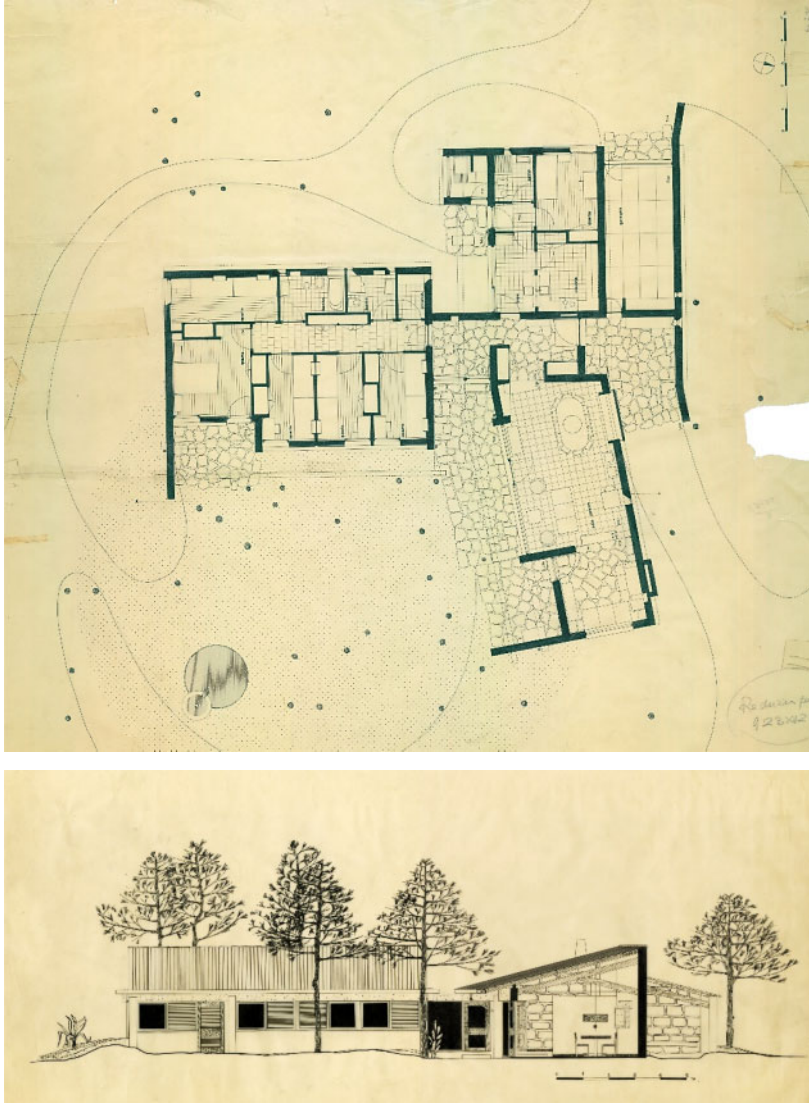
**ABSTRACT:** Although the widespread application of the term *sustainability* to architecture is relatively recent, the principles we associate to this concept are very ancient. For instance, in vernacular constructions, built without any conscious theoretical knowledge, we can find the practical application of many principles that are now considered essential in architecture sustainability. This paper aims to present Fernando Távora's project for a holiday house in Ofir (1957/58) as an example of the way a modern architect, working in the mid-fifties of the 20th century, could learn from the lessons of sustainability presented by the vernacular culture of the north of Portugal, many years before. It is important to remember those lessons, because most of them are still valid, today.

### 1 INTRODUCTION

In *De Architectura Libri Decem* (1st. Century a. C.), the first known architectural treaty, the roman architect Vitruvius explains the importance of the relationship with the topography of the site, the adaptation to the local climate and the proper choice of materials in the planning and construction of cities and houses; the most important disciplinary studies written in the Renaissance (Alberti, Palladio, etc.) share the same concerns. Accordingly, we can find in the past many other approaches that can help us consider the questions of sustainability in today's architecture; not only in erudite studies, but also in popular knowledge and practice.

In the mid-fifties of the last century, the need to study the roots of our tectonic culture led to the completion of a Survey on Vernacular Architecture, promoted by the Union of the Portuguese Architects in 1955-61 and conducted by some of the most notorious Portuguese architects. The results, published in 1961, presented vernacular buildings as functional and well adapted to the environment; today we can also recognize in these constructions the application of many principles that are now considered essential in architecture sustainability: the use of local materials, an appropriate solar exposure, a correct relation with the site, the development of building techniques and solutions that avoid unnecessary waste of energy and materials (Amaral 1961).

These conclusions were very influential in Portuguese architecture in the late 50s and early 60s, mainly in the work of Fernando Távora, who was responsible for the work in "Zone 1" of this Survey and learned how to recognize the presence of a certain kind of modernity in the vernacular architecture of the north of the country. Between 1955 and 1961 he designed an important set of works, guided by the will to create an architecture that was both Portuguese and Modern: the holiday house in Ofir, case study of this paper, is one of those paradigmatic buildings, where we can find an attempt to apply traditional materials (stone, timber, tile) and to reinterpret vernacular construction techniques (bearing walls, wooden beams and pitched roofs) within a modern and ecological approach.



Figures 1, 2. Original drawings of the house in Ofir: plan and section. Fernando Távora 1957. © Fundação Marques da Silva, Arquivo Fernando Távora (FIMS/FT/0040-pd0001/FIMS/FT/0040-pd0002)

## 2 TÁVORA AND THE SURVEY ON VERNACULAR ARCHITECTURE

Since 1945, when (at the age of 22) Fernando Távora published a newspaper article called “The Problem of the Portuguese House” (Távora 1945), he aimed to achieve an architecture that was, simultaneously, Portuguese and Modern (Fernandes 2016).

Távora was both critical of the romantic ideas of Raul Lino for the “Portuguese House” (Lino 1933) and of the growing influence of the International Style in Portugal, after the first Congress of Portuguese Architects (SNA 1948).

His ideas were reinforced by the results of the aforementioned Survey and acknowledged in the CIAM meetings of Hoddesdon (1951), Aix-en-Provence (1953) and Dubrovnik (1956), where he

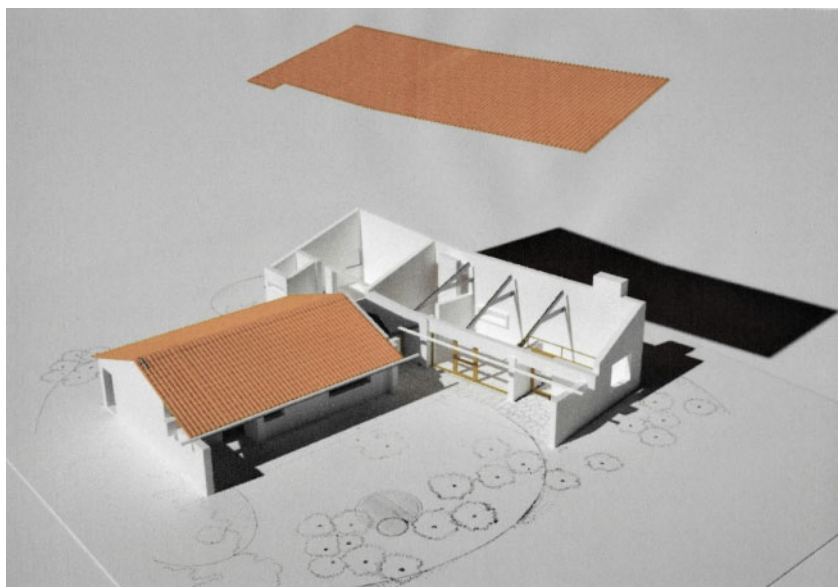


Figure 3. Tridimensional model of the house in Ofir. Fernando Távora 1957. CAD drawing by Eduardo Fernandes.

participated, having the opportunity to contact with the most influential agents of the disciplinary field.

In his theoretical production published between 1945 and 1955 Távora sustained that the study of vernacular culture was vital to achieve a truly Portuguese modern architecture, which should express the “conditions related to the Man” for whom it was created, and the “conditions related to the Land” where it was built. So, he believed that “the vernacular house will give us great lessons because it is truer, more functional and less fanciful” (Távora 1945, p. 10). These ideas were confirmed by the above-mentioned Survey on Portuguese Vernacular Architecture. Távora led one of the six field work teams, which also included two young architecture students, Rui Pimentel and António Menéres; they studied “Zone 1”, which comprehended the western coast and the Minho region, in northern Portugal. Besides being the opportunity to register an inventory of a disappearing reality, this Survey also motivated the reinterpretation of the tectonic systems of vernacular constructions, finding common ground with the principles of modern architecture: a rationality based on common sense, a functionalism created by necessity and a truthful use of materials based on the transmission of secular knowledge.

In the report of “Zone 1”, published in the book *Popular Architecture in Portugal* (Amaral 1961) we can perceive the intention of studying the geography and the history of the sites to understand how the constructions relate to the ecological conditions that surround it: topographic, hydrographic, geological, climatic and sociological; these are the main factors which justify the tectonic options and the spacial organization of villages and isolated settlements.

Therefore, the published report of this Survey presents a clear message, which Távora interpreted wisely in his work: vernacular constructions can be a source of formal guidelines for modern architecture, but also a conceptual model, explaining how to adapt buildings to the conditions of their sites, from an empirically ecological perspective. In fact, after 1955, a new character began to appear in his architecture: in the Municipal Market of Vila da Feira (1955-59), in the Tennis Pavilion of Quinta da Conceição (1956-59), in the Cedro Elementary School (1957-61) and in the Ofir House (1957-58), where this condition of sustainability is very clear.



Figures 4, 5, 6. Ofir house, by Fernando Távora. Photos by Eduardo Fernandes.

### 3 THE HOLIDAY HOUSE IN OFÍR

In a text published in the magazine *Arquitectura* about the Ofir house, Fernando Távora writes: “One of the most elementary notions of chemistry teaches us the difference between a compound and a mixture; such a notion seems to us to be perfectly applicable, in essence, to the particular case of a building. In fact, there are buildings that are compounds and buildings that are mixtures (...) and in the present case of this dwelling (...) we tried to build a true compound, a compound in which an infinite number of factors, of varying value, came into play”. So, in this project, Távora sought to achieve a compound of many factors; the work was conditioned by the obedience to a program and by the needs of a client but also by the ideas of an architect that understands the meaning of the words “organicism”, “functionalism”, “neo-empiricism” and “cubism”; furthermore, he “feels a love without limits for all the manifestations of the spontaneous architecture of his country” (Távora 1957: 11).

One important influence for that compound was the study of the “farm houses”, which deserved special attention in the published report of “Zone 1” of the aforementioned Survey. Its location, free from the “usual constraints of the villages”, allows a good relation with the characteristics of the site, provided by “the experience and taste of the master mason”. Its patio (paved with stone slabs, where the cereals are placed to dry) is an “outdoor room”, to where all doors open, giving access to all spaces. The composition of the different buildings (the house, the agricultural facilities and the animal shelters) isolates the patio from the outside; the different roofs, “extending on a low slope”, are articulated in continuity with the foliage of the surrounding branches. The house and the patio are protected “from the rains of the southwest” and “offer the sun the most lively and open faces, leaving closed walls to the side of the public path”; in the façade “devastated by bad weather”, the “tiny bedroom windows and the large entrance gate stand out” (Amaral 1961: 46).



Figures 7, 8, 9. Ofir house, by Fernando Távora. Photos by Eduardo Fernandes.

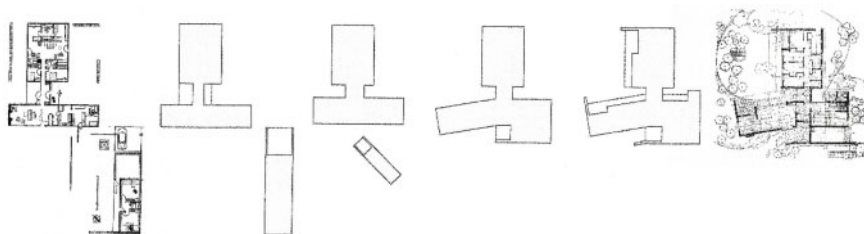
When we study the plan of the Ofir house (Figure 1), it is clear that all these principles are applied, although adapted to the conditions of a modern program: Távora creates an *outdoor room* which gives access to all the main spaces (living, dining and bedrooms); the volumes of the house isolate this patio from the north and the west; the two different roofs, covered with tiles, are not articulated in continuity but dialogue with harmony, enclosing the space; this perception of enclosure is reinforced by the extension of the two terminal walls, embracing the patio on both sides (Figure 3); to the south and to the east there are no constructions (this is not a farm house, there is no need for agricultural and animal facilities) but the space is subtly enclosed by a small elevation in the topography, moulded in a semicircle (Figures 1 and 4); the house opens to the patio its most lively faces (Figures 1 and 3), leaving closed stone walls with tiny windows to the side of the public path, on the façade devastated by bad weather (Figures 1, 2, 6).

The influence of the vernacular, mixed with a modern approach, also explains most of the tectonics options of this work, mainly the juxtaposition of the different construction elements: in the north side of the living room, the load-bearing granite wall (the most common stone in the north of Portugal) supports the timber structure, designed asymmetrically, where the sloped roof sits; in contrast, in the southern façade, the wooden trusses rest in a long concrete beam, supported by perpendicular concrete walls (Figure 2). The way these elements engage is reminiscent of the traditional wooden construction systems: the wall is trimmed to allow the half-height engagement of the beam, which exceeds the necessary length, surpassing the wall on the east façade (Figures 3 and 5), as in the Tennis Pavilion of Quinta da Conceição, designed by Távora at the same time (Fernandes 2019).

The Ofir house also displays a clear desire to express and emphasize the truth of its construction system and of the materials used, as we see in Portuguese vernacular constructions: in the north façade, the load-bearing stone wall is plastered on the outside, but exposed in the interior, where a thin layer of paint does not hide its stereotomy (Figure 7); all the wooden elements can be seen in their natural colour; the metal reinforcement of the trusses are left in sight; the concrete nature of the support beams located on the façades facing the patio is also exposed; finally, the flat concrete slab which covers the hall located between the two distinct volumes of the house is also assumed in the design.

One of the least evident effects of the vernacular influence is in the internal comfort of the house. Studies made on the ancient farm houses built in the north of Portugal show that the adequate orientation of the façades, in connection with an appropriate choice of materials and a good organization of the spaces produces a good thermal performance: the use of stone walls (with great thermal inertia), the strategic position of the fireplace, the existence of transition spaces linking inside and outside (small patios, porches, balconies) allow the interior spaces to be cooler in the summer and warmer in the winter, compared with the outside (Gonçalves 2016: 150-151).

In a holiday house, mostly used in the summer, it is important to protect the spaces from the heat; however, in the coastal areas of the north of Portugal, the strong north wind can be very uncomfortable, even in hot days. So, the house in Ofir is both protected from the winds of the north and from the strong western sunset heat; to the south, the roof shades the large windows in the summer, without preventing the sun from entering and bathing the interior spaces, in the winter.



Figures 10. Comparative scheme of the plans of the Geller house, by Marcel Breuer and of the Ofir house, by Fernando Távora. Drawing by Eduardo Fernandes using images from Breuer (1947) and Fernando Távora © Fundação Marques da Silva (FIMS/FT/0040-pd0001).

Besides, the strategic location of fireplace and kitchen (in the eastern and western ends of the main building) allow the living room to be heated from both sides, in colder days. Both in the winter and in the summer, the great thermal inertia of the stone walls helps to preserve a comfortable internal temperature. Thus, Távora's work shows a formal influence of vernacular constructions, but also a conceptual inspiration, achieved by the recognition of the rationality presented in popular constructions; however, it is important to note that in the Ofir house this is a conscious option, at a time when the general tendency was to assume modernity in a much more pronounced way, while the vernacular rationality was based in the common sense of the builders, as a direct consequence of the lack of means of the populations, which limited the possibilities of choice.

The function (holiday house) was an ideal experimental field which was presented to Távora at the right time, simultaneous with the beginning of the field work of the aforementioned Survey; so, the design could be carried out as an *avant-garde* synthesis of the values of vernacular culture, intersected with signs of contemporaneity apprehended in examples of international modern architecture and in the debates he attended on the CIAM meetings.

From a typological point of view, this house is at the forefront of housing organization research, following Marcel Breuer's studies on functional distribution: the binuclear typology of the houses for young masters (designed for Dessau in 1927, but not built), where the studio and the living space were separated into two distinct volumes, was reiterated in the "Harnischmacher" house (Wiesbaden, Germany, 1932) and in the Geller house (Long Island, USA, 1946), where the private functions (bedrooms and children's play area) are located in an autonomous volume, separated by the entrance from the eating, living and service areas (Driller 2000).

Távora once referred, in a casual conversation with Manuel Mendes, that the plan of Ofir was inspired by a Marcel Breuer's house (Mendes 2008: 146); and, in fact, there are great similarities to the organization and to the basic dimensions of the Geller house (Figure 10). But while in Breuer's work the bi-nuclear scheme is clear, both in plan and in volume, with the building of the garage appearing as an autonomous third element (which also includes the guest house), in Távora's design the location of the entrance creates a tri-nuclear scheme, dividing the living space from the service and private areas (Figure 1); besides, the volume of the garage is smaller (half the size) and is associated with the services sector. However, if this tripartite scheme is clear in plan, its formal perception is ambiguous: the continuity of the roof suggests a single volume that associates the living and service areas (Figure 3).

In Ofir, the organization is planned to emphasize an ideal route, with the intention of disclosing the house in a determined *promenade architecturale*: from the entrance gate of the property, we walk along the north wall (Figure 6), passing through a neoplastic composition formed by the vertical volume of the chimney and the horizontal outside projection of an interior concrete shelf, carved in the stone (which, from the outside, presents itself with a certain mystery).

Arriving at the entrance area, the space is compressed to a more intimate scale. From here, the plan is organized in a tripartite way: the entrance gives access to the bedrooms, to the dining room and to the services area; however, the visitor is subtly invited to walk out, towards the patio.

So, the Geller house was the starting point for Távora's approach, but the reference was subverted and adapted in the process of design; the plan evolved in a different direction, surpassing the rigid approach of the original organizational matrix to become an organic whole.

In fact, Breuer's influence is just one of the multiple different elements of Távora's architectural compound: in addition to the aforementioned influences of Portuguese Vernacular Architecture, one can also recognize in Ofir direct references to the small windows Corbusier designs for Ronchamp (Notre Dame du Haut Chapel 1950-55), to the large panoramic windows of the Malaparte house (Adalberto Libera 1937) and to the neoplastic composition principles of Mondrian, van Doesburg and Rietveld, that also characterize Távora's tennis pavilion at Quinta da Conceição (Fernandes 2019).



Figures 11, 12. Álvaro Siza, Alves Costa house (1964-71); Sergio Fernandes, Villa Alcina (1971-74). Photos by Eduardo Fernandes.

#### 4 CONCLUSION

Nowadays, the issues of sustainability in construction tend to be thought exclusively in terms of technological advances. Without neglecting the importance of the recent developments in this area, it is also important to remember the lessons of sustainability presented by vernacular constructions, because most of them are still valid, today. In the Ofir house we can find most of the current principles of construction sustainability: a relation with the site that does not imply earthworks and ensures a good relationship with the climatic conditions of the region; the use of local materials; the use of natural conditions for heating or cooling the interior space; the design of transition spaces, between indoors and outdoors, to control indoor temperature; a mixed weight construction strategy, aiming to achieve good thermal behaviour (Mendonça & Bragança 2007). However, unlike what happens in some contemporary approaches to sustainability issues in architecture, in Ofir the relationship with the ecological conditions of the context is an integral part of the compound created by Távora, inseparable from the design options and the tectonics of the work.

We recognize the presence of those principles in the house of Ofir, as well as in the works of many other architects in the north of Portugal, from this time on. In fact, there is a “circular architecture pedagogy in the work of Fernando Távora” (Hvejsel 2019), based on the transmissibility of his ideas and processes, not only to his students, but also to his colleagues; it is the recognition of this transmission chain of knowledge that gives meaning to the expression “Porto School” (Fernandes 2015).

Following the path of Távora, Álvaro Siza (Alves Costa house 1964-71) and Sergio Fernandes (Villa Alcina 1971-74), among many others, build holiday houses in the Minho region, with similar

principles. The connection between their works is not a conscious purpose to build sustainable architecture, but the will to create an harmony between the new construction and the pre-existing context. Without sacrificing the awareness of its contemporaneity, their design achieves a “timeless” quality (Alexander 1979) that brings it closer to what is most genuine in vernacular architecture. We can characterize the design and construction processes that lead to this character adapting Christopher Alexander’s discourse on the “unselfconscious process” of building (Alexander 1966) to these Minho houses: it is an architecture design with few drawings, with simple processes, with materials found in the region and construction techniques learned from older generations; there is complicity and mutual knowledge between client and designer, as the architects are friends or related to the future residents; from one house to the other, typological and constructive solutions evolve slowly and through a process of trial and error: if they do not respond to the intended use, they are improved or abandoned. In result, these works have a great unity, not because they present identical materials and shapes, but because they share the same principles.

Távora’s house in Ofir, being the first of these Minho holiday houses to be designed, was a reference to all the others; but it is also the one where the presence of a vernacular sense of sustainability is clearer.

## ACKNOWLEDGMENTS

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