



**Analysis of the Architectural Design Based on  
Architecturology of Residential Buildings by Álvaro  
Siza Vieira and Manuel Tainha**

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Extended Abstract

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## Abstract

This dissertation aims to apply the analysis methodology developed by **Philippe Boudon** - the **Arquitecturology** - from the study of the nature of the mental operations of each architect in the design process, through the analysis of their projects and speeches.

Focusing on the identification of the **Architecturological Scales**, their functions, relations, and modes of occurrence. The Architecturology manifests itself as an instrument of study of the architectural conception, in the production of the four selected works, which constitute the case studies of this work.

Throughout this study, it was made a set of diagrams able to represent both the main concepts of this methodology, as the twenty Architecturological Scales. Applying to the **Analysis of Architectural Design Based on Architecturology** especially in Freixial House (1958-60) by architect Manuel Tainha and in Avelino Duarte House (1981-85) by architect Álvaro Siza Vieira, where the main conclusions are drawn. The results obtained allow us to identify the basis of each choice during the design process of these houses and, above all, to understand each architect's way of designing in equal and different contexts.

Finally, it is intended the understanding of the reading of the premises and conceptual operations through the observation of the case studies, applying the notions of Architecturology. And, after the conclusions, it is intended to the opening to the discussion of the pertinence of a possible approach of this theoretical model developed by Philippe Boudon in the architecture teaching in the cycles of Integrated Master in Architecture.

## Research Question

*“In what we might call ‘narrative’ design the designer, or more often design team, tell a story which can be used to link together the main features of the design.” (Lawson, 2005: 205)*

As previously mentioned, this study focuses on the approach of architecturology through the study of the projects of the selected architects, to make architectural conception and all the choices involving this process, which is considered a complex system, understandable. Since it is developed in a particular way by each architect and there is no correct method for its practice.

The questions presented here arise as ways of understanding this theoretical model studied by Philippe Boudon.

### Keywords

Architecturology  
Architectural Design  
Architecturological Scales  
Philippe Boudon  
Álvaro Siza  
Manuel Tainha

How does the building arise according to this theoretical model that is architecturology?

In what way does the architect assign measures to the space?

Is the identification of scales sufficient?  
What are the fundamental aspects to consider about the scales for an ideal modelisation of the design process?

Where is knowledge about the “Architectural object” developed and defined? and how is the activity of designing manifested?

## Methods

This work will essentially consist of three phases, the first corresponds to a research process; the second aims at analyzing the case studies, and the last corresponds to a review regarding the information in the previous phases.

The analysis is done by applying the terms **pertinence**, **embrayage**<sup>1</sup>, **scale**, and **model**, which correspond to tools provided by architecturology. This research results from direct observation of the buildings in parallel with the interpretation and analysis of the drawn pieces included in the project, in order to rehearse a conceptual reading for its perception.

The structure of this dissertation is organized into three chapters for the understanding of this topic. In the end, will be presented the final considerations.

### Chapter 1 – Theory

This chapter will present all the theoretical/methodological fundamentals, which will be divided into three subchapters. The first exposes the concept of **Architecturology**; the second addresses the **designing process** of a project, and the third, focuses on the **architecturological scales**.

### Chapter 2 – The Architects and the Analysed Houses

The second chapter first describes the architects Álvaro Siza Vieira and Manuel Tainha, and then presents the four selected case houses.

### Chapter 3 – Architectural Reading

The third chapter is devoted to an architectural analysis of two case studies designed between the late 1950s and early 1980s, the first being the Freixial House (1958-1960) by Manuel Tainha and the second the Avelino Duarte House (1981-1985) by Álvaro Siza Vieira.

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<sup>1</sup> The term *Embrayage* remains in its original spelling due to the lack of an English translation capable of clarifying it. According to Boudon it represents the articulation between the conception space and the real space

## Arquitecturology

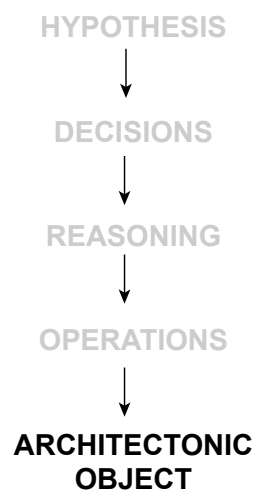
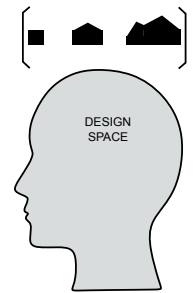
This research aims to analyse architectural conception through Architecturology, developed by Philippe Boudon in his work "Enseigner la Conception Architecturale: Cours d'Architecturologie" (2000), although, in Portugal, the analysis of his productions is a poorly addressed and developed practice.

This is a theoretical model that studies the nature of each architect's mental operations in the design process through the analysis of their projects and discourses.

The architecturological model focuses on the investigation of the work that precedes the construction of the project, as well as its graphic representation.

In such a way, this model consists of twenty fields of action entitled architecturological scales that represent the design decisions that the architect considers for his models in the design phase.

According to Boudon, the architecturological analysis consists in the identification of the architecturological scales, their functions, modes of occurrence, and other relations determined during their conception in order to structure the mental process by the architect during the elaboration of his project, demonstrated that architecture is analysed and executed in a particular way in each approach according to the author.



## The Architects Manuel Tainha and Álvaro Siza Vieira

The houses studied in this paper highlight two architects from different generations: Manuel Tainha and Álvaro Siza Vieira. These two architects are responsible for questioning the values of modern architecture and for this reason, were agents of change and evolution in the course of the history of the second half of the 20th century in Portugal. Álvaro Siza Vieira, for his part, achieved international projection with the Pritzker Prize and his work on several continents and is still today an influential architect.

Manuel Mendes Tainha, born in 1922 in Paço de Arcos, graduated from ESBAL – Lisbon Superior School of Fine Arts in 1950. A modern architect who did not fit into a single architectural current was considered an experimentalist architect. His ideas were not related to the Corbusian principles, nor the rationalist current based on the Athens Charter. He adopted an architecture that sought to understand the place, the customs, and the integration of the project with the site, and for that reason, he identified with leading figures of the Modern Movement of Central and Northern Europe, such as Adolf Loos and Alvar Aalto, among others, based on their reading of other architectures from the past, more or less erudite, such as the vernacular. (Pereira, 2013)

Álvaro Siza Vieira was born in Matosinhos on 25 June 1933, and graduated in Architecture from the Escola Superior de Belas Artes Porto (ESBAP) in 1955. He was influenced by his teacher Fernando Távora, and trained in his atelier between 1955 and 1958, having several important teachings in the practice of architecture. He was also marked by the great masters of modern architecture such as Frank Lloyd Wright and Alvar Aalto, who advocated new modernity based on organic influences.

Furthermore, he is considered the protagonist of his generation, producing architecture with an experimental character, where the relationship between the human body and space is an essential topic.

Thus, this study selects the analysis of the single-family dwelling as an object of study, enunciating a theoretical reading on the design processes of four cases of two authors of recognized quality in the panorama of the Portuguese modern.

## Feixial House



House designed between 1958 and 1960 in the village of Freixial, parish of Bucelas, it was built on a vast plot of land in the middle of a forest in an area with a low density of buildings. It stands out both for its adaptation to the site's topography and the relationship between the modern and the vernacular in its architectural expression.

The distribution of the interior spaces results from the integration of the house into the topography, forming platforms that relate to the elevations of the terrain. The plan of the house affirms the organicism of its conception and the composition of the three volumes allows its segmentation to be adapted to the platforms created, as well as the purposes of the house and the individuals who live in it.

## Martins dos Santos House



House was designed and built between 1971 and 1975, on a small rectangular plot of 780 m<sup>2</sup>, constrained by a small budget and the existing regulatory constraints. Emerges in a scenario of tension with its surroundings, the author designed a house that could only close itself to its location and live from its various and own possible implications from its specific program creating protection from an aggressive context of buildings, houses, and walls. (Pereira, 2013: 52)

## Alves Costa House



House designed by Álvaro Siza between 1964 and 1968 to be used only during weekends and holidays, commissioned by the film critic Alves Costa. Taking the shape of an "L", this house follows the topography of the site without resorting to significant alterations to the terrain.

The implantation of the house results from a study of the physical factors of the site, thus, during the design, the author considered the solar incidence, the views, and the protection from winds both in the interior spaces and in the exterior patios that serve as additions.

## Avelino Duarte House



House that was designed and built between 1980 and 1985, in Ovar. Has strong references to the architectural lines of Adolf Loos (1870-1933), such reference is manifested through how the symmetries are affirmed and then denied. The exterior is characterized by simplicity and by the absence of ornamentation, in opposition, its interior is evidenced by the richness of the noble materials used for cladding and decoration.

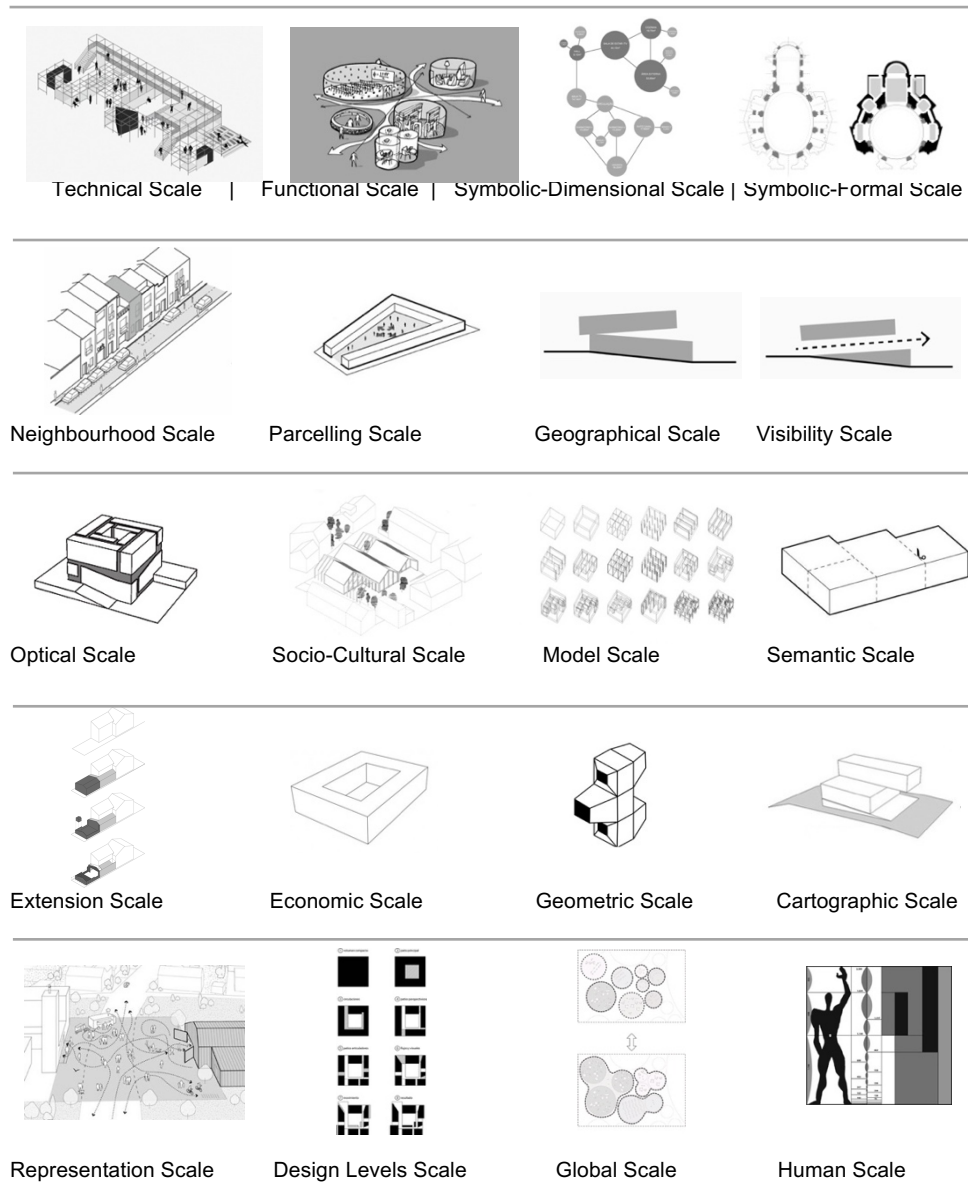
This house is divided into three articulated plans by a central triple-height void where the staircase appears.

The staircase is the generator element of the whole domestic organization, leading to a spatially complex strategy, which connects the main entrance to a central atrium, and simultaneously, circulation space between the different compartments on different floors. (Ramos, 2004: 378)



## Architecturological Reading

The following diagrams were made by the author of this dissertation in order to identify the twenty architecturological scales, being able to associate them with the analysis of Architectural Design based on Architecturology in Residential Buildings by Álvaro Siza Vieira and Manuel Tainha.



It is possible to observe that the two oldest houses of each author were built in similar contexts, integrated into the terrain and with a connection to tradition, on the other side, the two most recent ones were also built in similar contexts, in a chaotic setting with their surroundings, but in this case with a more purist aspect.

For this reason, an in-depth reading of Casa do Freixial by Manuel Tainha and Casa Avelino Duarte by Álvaro Siza will be carried out, based on the available material, to understand the whole process and the ideas of each architect.

The analysis of each case study was made in a first moment, taking into account the building site and the local geography.

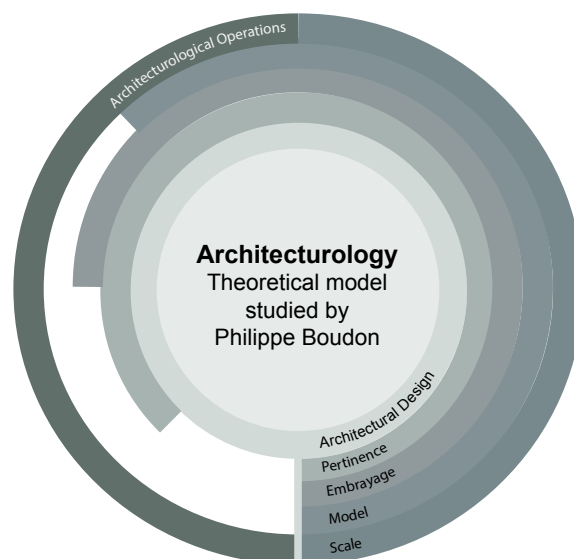
The initial sketches were fundamental for this analysis because they allow us to understand the first steps of the architect in the conception of these houses, it is visible a set of scales, but what stands out in both cases is the functionality of each space and the references used during the conception.

From the three-dimensional sketches, it was possible to perceive the definition of the volumes, the geometry, from the beginning of the process to the end, reading the building as a whole.

The photographic records also made it possible to ascertain the various references to previous important architectural models in architecture.

This study also considered factors such as the use of certain materials and construction techniques related to tradition, culture, the use of human scale in the attribution of measures to space, and, in the case of the Freixial House, taking into account the landscape.

The distinctive factor of the approach makes it interesting to apply to national examples in order to broaden the knowledge about them and the approach of their authors, not focusing on the formal quality of the resulting image of the finished product, expressly, the building, but on its conception process. Corresponding to its basis of analysis – the drawings produced in the design phase.



## Results and Discussion

The objective established for this dissertation was the application of the Architecturology as a tool for analysis of the architectural design process, through the use of such tools as pertinence, Embrayage, scale, and model. Implementing a conceptual reading of the Freixial House and the Avelino Duarte House.

This reading allowed us to identify the basis of each choice during the design process of these houses, and above all to understand the way of designing each architect in equal and different contexts.

This study allowed, above all, the reading of the conceptual operations in an in-depth way of the two above-mentioned projects through the observation of their built building applying the notions enunciated by Arquitecturologia.

In the design process of Freixial House, four scales stand out essentially because of the way they act and relate to the others, going beyond the level of elementary scales, occupying the role of meta-scales. The **Geographic Scale** is evident in the project's initialization process; the **Visibility Scale** is considered as the main one, as it is frequently present in the architect's decision making; the **Socio-Cultural Scale** and the **Model Scale** enable the structuring of various dimensions and the Technical Scale assumes the role of a global scale.

From the analysis of the documents of Avelino Duarte House, it was observed that during the design process, four architectural scales stand out above all. Due to their permanence in the project, these scales go from elementary to meta-scales. The **Functional Scale** stands out due to its initialization function; the **Model Scale** reveals itself as dominant in the design process; the **Human Scale** stands out as the main one and, finally, the **Geometric Scale** takes on the role of global scale.

In the design process of the two houses, some similar architectural pertinence is identified, but as an initialization function the **Geographic Scale** in the first house and the **Functional Scale** in the two houses stand out.

The study of this method became revealing for the author of this research while developing this Architecturological reading, perceiving the conception of these four houses under another perspective concerning the beginning of the elaboration of this work, besides elucidating how we should act when we are designing.

In that sense, the implementation of this methodology in the architecture teaching process in the cycles of Integrated Master in Architecture can operate as an essential element both for the perception of the conception process and for the practice of projecting in architecture.

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