

# Hypogea 2015

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## THE (UNDERGROUND) ARCHITECTURE AS SUBTRACTIVE ACT

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### Abstract

Conceiving a building as a cave is a unusual attitude in the modern architecture. The massive, opaque condition involved in the construction of an underground building seems to directly contradict the principles that the Modern Movement had defended most strongly. The archetype of the cave (Fig.2) as a refuge of primitive man already was replaced by the illustrations for which, another metaphor, the primitive hut represented more accurately the fundamentals of the art of building (Fig.1). The subtraction architecture consists of that way of transforming the environment that does not look at the architecture as an independent object, but rather works on the elements complexity and relations that enclose it self. Choosing to talk about the subtraction architecture instead of "passive architecture" or "negative architecture", underlines the intent of the subtractive act in the same way as building out of the soil becomes the additional act represented by assembling work and adding hand - made materials. The first is born from sculpturing the natural landscape, and in the landscape it blurs because is an essential part of that landscape, rather than a different universe relegated to depth, but it talks with the superficial life of which it is the natural extension; the second is identified with the environmental setting as an additional object and as such recognizable.

**Keywords:** architecture, void, subtraction.

### Riassunto

*Concepire un edificio come una grotta rappresenta un'attitudine insolita nell'architettura contemporanea. La condizione massiva e opaca che implica la costruzione di un edificio sotto la terra, sembra entrare in diretta contraddizione con i principi che con maggiore fermezza vanno definendosi nel Movimento Moderno. L'archetipo della caverna come rifugio degli uomini primitivi era già sostituito dalle illustrazioni per le quali, un'altra metafora, la capanna primitiva rappresentava con maggiore precisione i fondamenti dell'arte del costruire. L'architettura della sottrazione prevede una modalità di trasformazione dell'ambiente che non vede più l'architettura come oggetto a sé stante, ma lavora sul complesso degli elementi e delle relazioni che la circondano. Scegliere di parlare di architettura della sottrazione anziché "architettura passiva" o "negativa", sottolinea l'intenzionalità dell'atto sottrattivo allo stesso modo in cui costruire fuori dalla terra diviene atto additivo cioè d'assemblaggio e aggiunta di materiali lavorati. La prima nasce scolpendo il paesaggio naturale, ed in esso si confonde perché ne costituisce parte integrante, non è dunque un universo a se stante relegato in profondità, ma dialoga con la vita in superficie di cui è il naturale prolungamento; la seconda è calata nel contesto ambientale come oggetto aggiunto e per questo riconoscibile.*

**Parole chiave:** architettura, vuoto, sottrazione.

### Introduction

The archetype of the cave as a refuge of primitive man already was replaced by the illustrations for which, another metaphor, the primitive hut represented more accurately the fundamentals of the art of building. Abate Laugier's canonical image was an optimistic substitution for the dark myth of the cave, and heralded, two centuries early, Domino structural icon for which the Le Corbusier had to synthesis the new way approach to architecture which was to mark the entire 20th century.

Along the architectural history of the city and art's history the theme of the Hypogeum is developed at length. As far as the city we think of those fully structured in the bowels of the earth: Matmata or Matera. In the world of sculpture, the excavation's technique or the subtraction's technique, are represented by Jorge Oteiza. With the theory of "Desocupacion Especial" he creates time less spaces. Then there is Le Corbusier, who, with the project of Sainte Baume, suggests an excavation inside the mountain which becomes a pathway to access the holy

place: the chapel of Mary Magdalene. This project as well as the entire architectural work underground, needs a new form of reading: white-black vacuum-packed (Fig. 3).

### The concepts of "void"

"The relationship between form and space must be presented in such a way that the observer's spirit does not dwell on just one aspect, but read their mutual needs, their mutual relationship. The form takes place in the empty space so that we perceive the void as shape and form as empty" (ESPUELAS, 2004).

The concepts of "void" and "light" allow for an understanding of architecture. In our culture, a void equals an absence, or a loss compared to a whole; a lack. However, a void is an available place, or better still, a void is what exists between things. The conception of void has changed considerably over time: Aristotle, for example, held the belief that nature absolutely contains no vacuums. He arrived at this conclusion after having witnessed how when all material was removed from a place, creating a void, new material would immediately





Fig.1: *essai sur l'architecture* (by LAUGIER M.A, 1755).  
Fig.1: *saggio sull'architettura* (da LAUGIER M.A, 1755).

plunge in to refill it. To Aristotle, matter had to be everywhere. The same concept was addressed and developed by the Spanish sculptor, Eduardo Chillida, who, as part of his research on space, designed an absolute void by excavating the inside of a mountain in Tindaya.

The “Monument to Tolerance”, or the Mount Tindaya project as it is now known, began with a conceptual design of creating meaning out of an empty space. The idea of the empty chamber generated by quarrying a mountain evolved into the purposeful creation and design of a tranquil, cavernous place. Within this room, one was meant to experience through two shafts, the light of the sun and moon as they cross overhead. Integral to this natural shrine was its location. After extensive searching, Mount Tindaya on the island of Fuerteventura in the Canary Islands was selected in 1994.

The cavern consists of a central chamber measuring 65 m in length, 49 m in width and 45 m in height. For some perspective, this is just larger than the Pantheon in Rome which is 43.5 m in diameter. Chillida's artistic design very clearly stated that the ceiling and all walls must be planar and made of the mountain stone as if carved in situ. The chamber is illuminated by a small (20 x 20 x 65 m deep) and a larger (30 x 21 x 65 m deep) shaft (Figs. 3-4). Visitors enter the space through a 68m long tunnel across from the shafts and out through which one can view the ocean.

#### **Excavation is an architectural experience**

The act of excavation, as subtraction of matter, reconnects man to his origins, when he needed to seek shelter in caves. Moreover, excavation is also

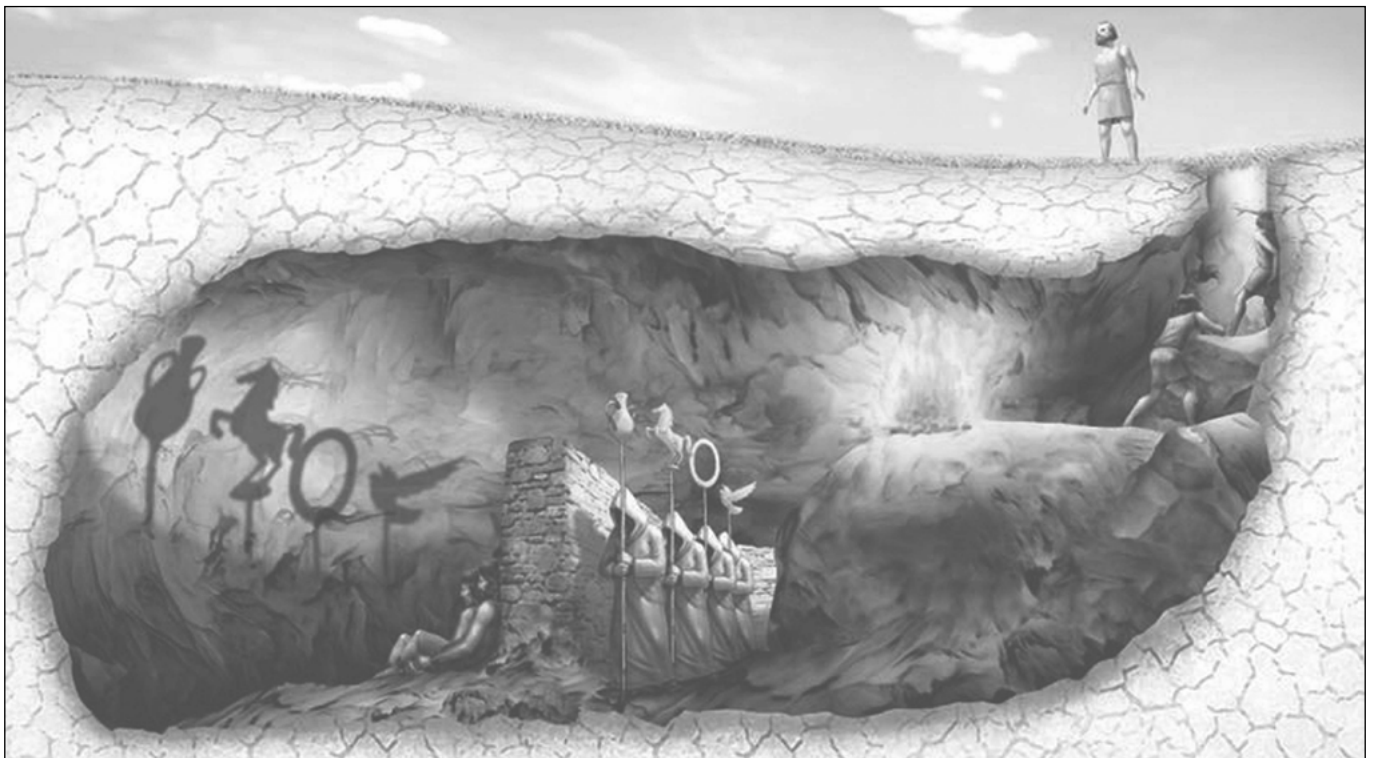


Fig. 2: *myth of the cave. Platone.*  
Fig. 2: *mito della caverna di Platone.*

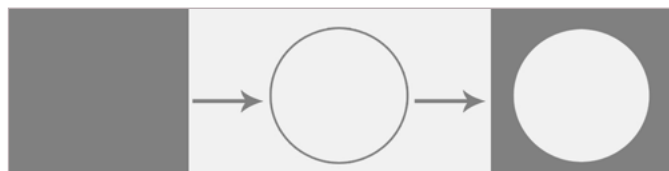


Fig. 3: scheme white-black-vacuum-packed.

Fig. 3: schema bianco-nero-vuoto-pieno.

the first operation that man performed, to dig out a space to cordon off. This way of starting from a whole to then subtract has always been present throughout the history of architecture. The most important buildings can be traced back to ancient Rome. Take the Pantheon for instance, an excellent example of architecture (Fig. 5). Here, an enormous wall mass is articulated towards an interior space through a series of niches created by the thickness of its walls.

Even in the architecture of Michelangelo we can see the concept of digging that invades a wall in order to conquer it. The artists of the Renaissance removed mass from walls to render their elements more visible (Fig. 6). In contemporary architecture we find numerous examples that relate to the idea of subtraction. For the Spanish architect Rafael Moneo, excavation is the first step in the process to establish a

link with a location's past.

Alvaro Siza, on the other hand, goes in depth and experiments with this theme in his project for the "Museo Ibero Camargo" in Port Alegre, Brazil (Fig. 8). The object of the intervention involved the site of old abandoned quarry that had its natural balance altered by preexisting human action. The Portuguese architect's project gives dignity to the site with the idea of filling its void. The museum is thought of as a large carved mass where interior spaces are obtained by the subtraction of living matter. This project is the synthesis of what was stated by Brâncuși: "*Architecture is in habited sculpture*" (BRÂNCUȘI, 2001).

## Conclusions

This subject matter has multiple interpretations and can be found in all branches of art, from painting to sculpture to architecture. It has been chosen, in this paper, to highlight only some of its manifestations in the architectural field. A collection of images of the work of Portuguese architects, Aires and Mateus for whom the concept of excavation as a creator of space has already been explored by its representation, is presented: the design makes use of a specific form of directed abstraction to highlight the principal spaces a hollowed out cavity (Fig. 9; Figs. 10-11).

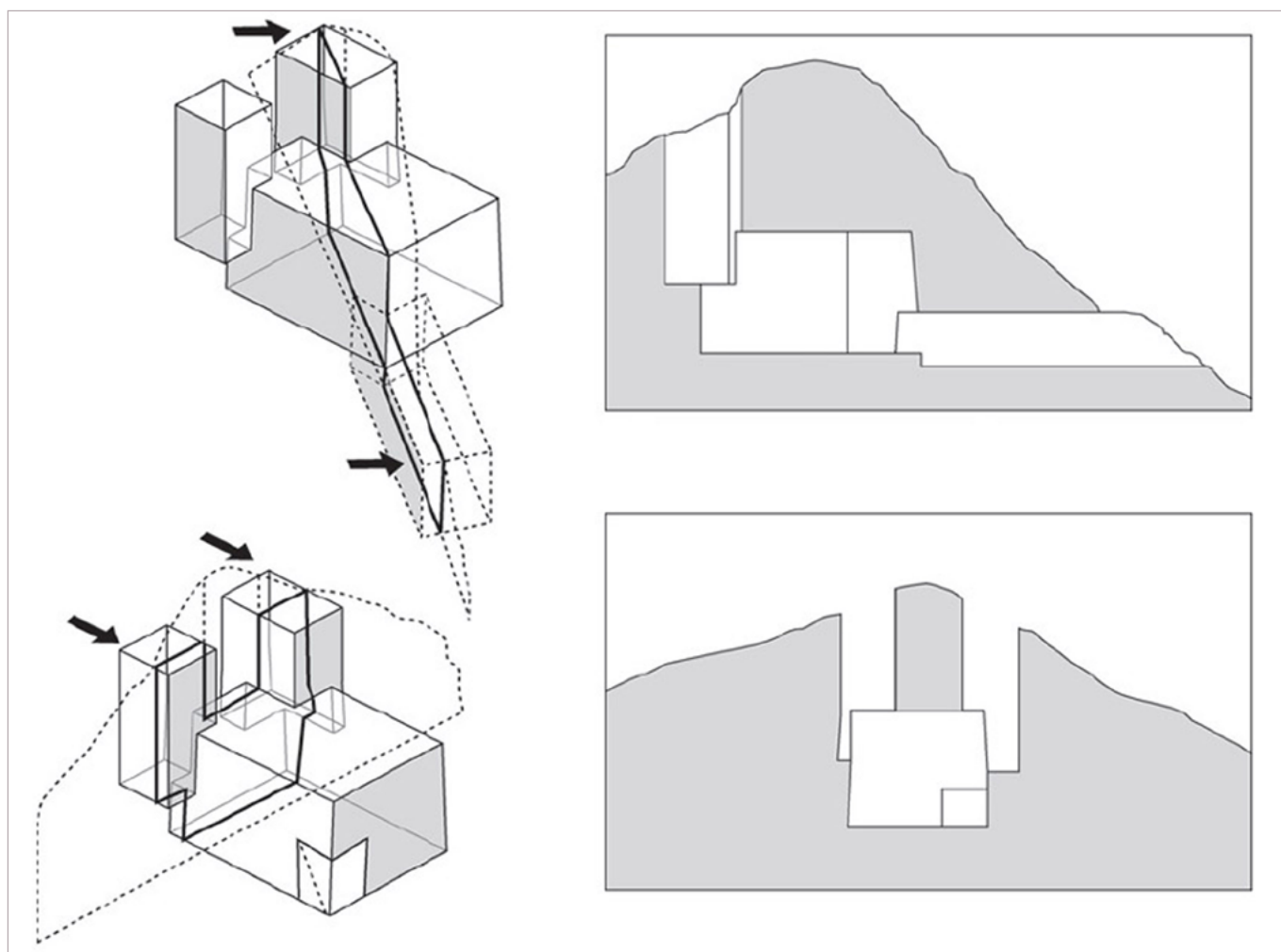


Fig. 4: mountain in Tindaya, section (by Eduardo Chillida).

Fig. 4: montagna del Tindaya, sezione (da Eduardo Chillida).



Fig. 5: mountain in Tindaya (by Eduardo Chillida).  
 Fig. 5: montagna del Tindaya (da Eduardo Chillida).

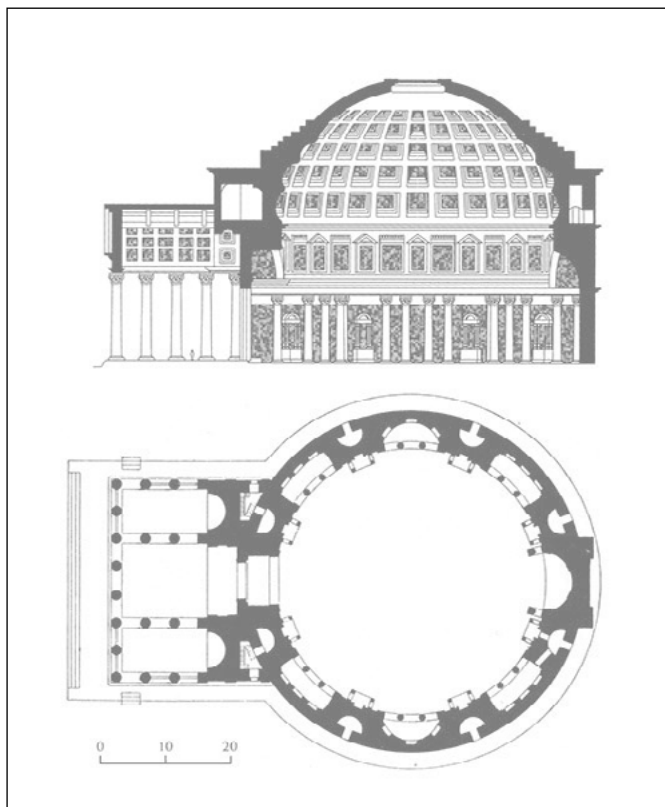


Fig. 6: Panteon, Rome.  
 Fig. 6: Panteon, Roma.

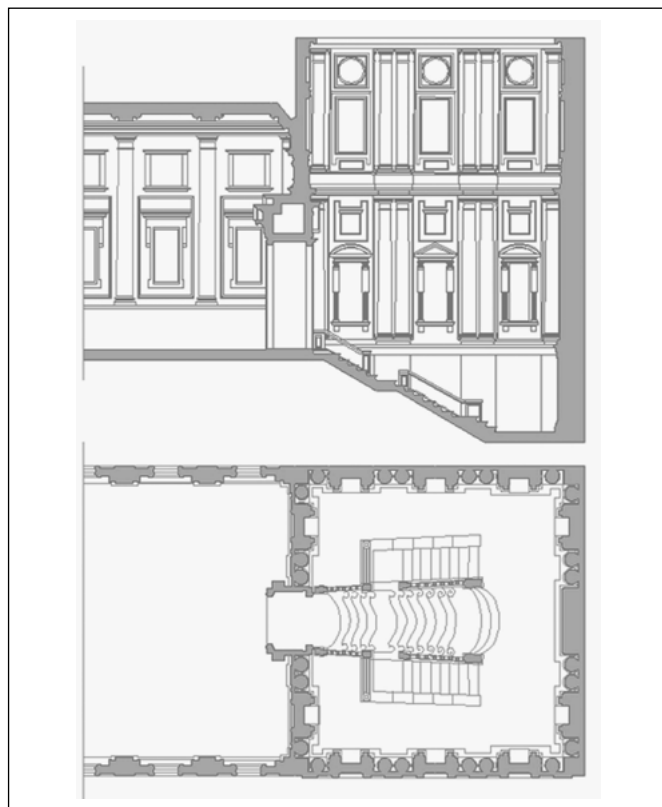


Fig. 7: Biblioteca Laurenziana, 1534, Michelangelo, Florence.  
 Fig. 7: Biblioteca Laurenziana, 1534, Michelangelo, Firenze.



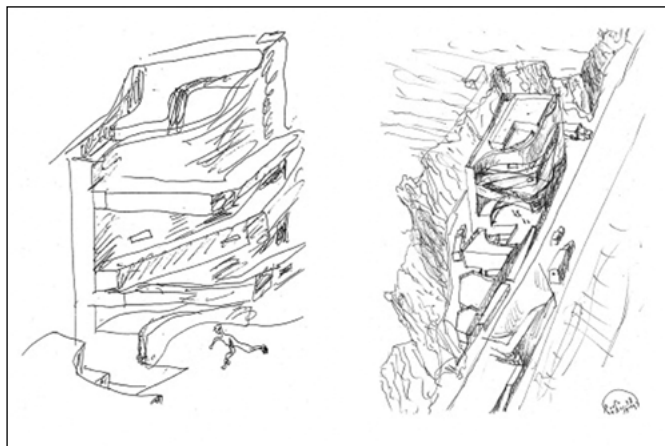


Fig. 8: Ibero Camargo Museum, Porte Alegre, Brazil.  
Fig. 8: Nuovo Museo Ibero Camargo, Porto Alegre, Brasile.

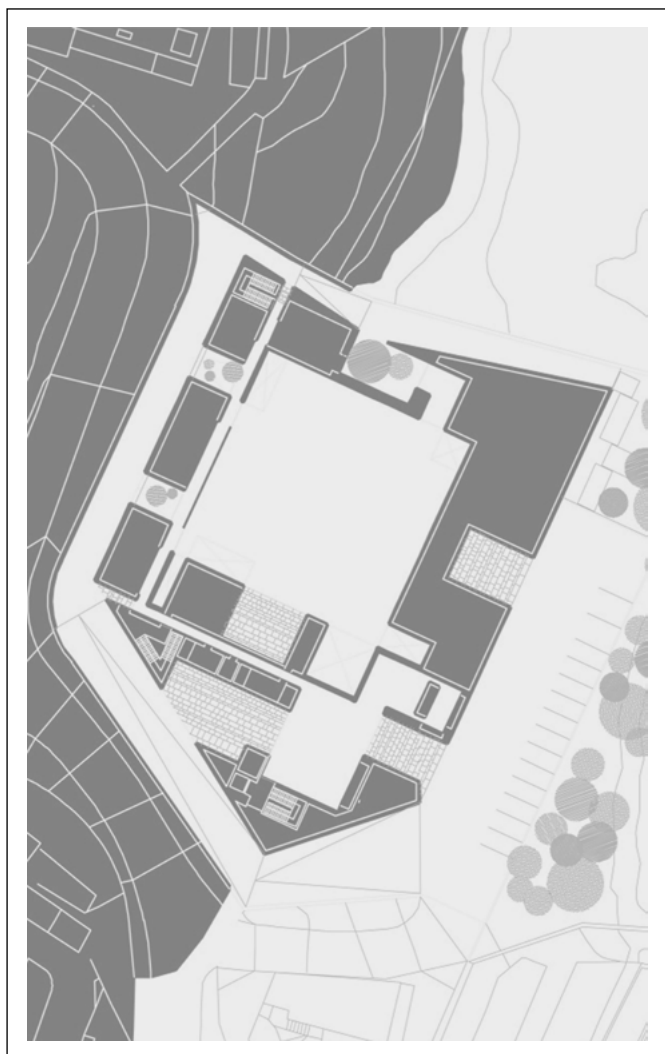


Fig. 9: Santo Tirso Call Center, Aires Mateus.  
Fig. 9: Santo Tirso Call Center, Aires Mateus.

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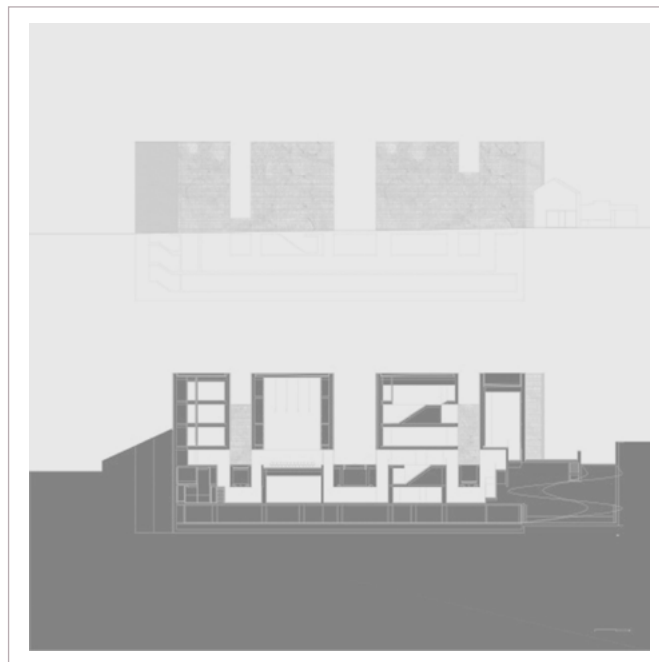


Fig. 10: Sines Art Center, Aires Mateus.  
Fig. 10: Centro culturale di Sines, Aires Mateus.



Fig. 11: Alcobaca's house, Aires Mateus.  
Fig. 11: Casa Alcobaca, Aires Mateus.

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