

# BUNKERS OF THE SPANISH WAR:

## FROM THE REARGUARD TO THE TECHNICAL CULTURE OF THE INTER-WAR PERIOD.

### THE CASE OF CLOT DE GALVANY

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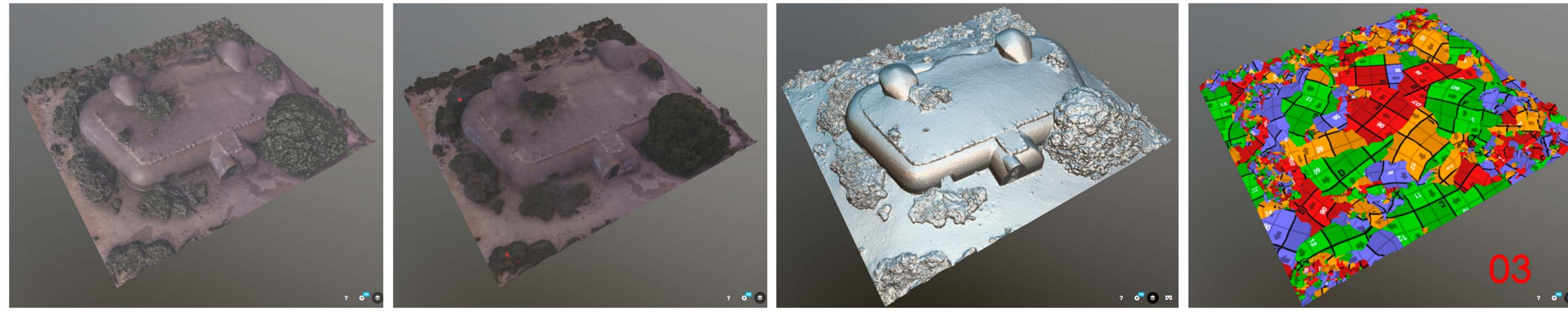
#### ABSTRACT:

During the Spanish Civil War (1936-39) the Second Republic ordered to build, from the end of 1937, a series of military structures to protect the cities located on the Mediterranean coast from a hypothetical landing or air incursions of the national side. This set of defenses was organized in two lines: coastal and antiaircraft detachments on top of hills and bunkers on the coast. In this work we proceed to the drawing of the bunker CG-bk04.elc, located in Clot de Galvany (Elche), 8 km south of Alicante, next to Carabassí beach, whose shape and dimensions are relevant enough, and its state of repair is quite good. This bunker is part of a larger group with a total of ten bunkers (of which eight still stand) that tried to prevent the advance of the enemy. The exterior drawing has been done by photogrammetry and the interior one manually, due to the small dimensions of its spaces. This work is included in a larger plan to document all these defences that are part of our technical and material legacy, as real ruins of the first modern concrete architecture, since the original designs of these bunkers were lost at the end of the conflict and nothing remains in the Army archives about them.

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#### KEY WORDS:

Mediterranean Wall, Bunkers and Antiaircraft Systems, Coastal Defences, Military Heritage, Concrete Ruins, Modern Architecture, Architectural Typologies, Spanish Civil War (1936-1939).



#### 01 UNDOCUMENTED BUNKERS

During the Spanish Civil War, the new armaments of modern wars were tested on both sides. In fact, the government of the Second Republic, decided to fortify the Mediterranean coast line at the end of 1937 in order to defend the cities and the citizenship from the bombings that the Italian aviation launched on the Republican coast. This system of defences, constituted by bunkers and shelters, is called 'Muro Mediterráneo' by its similarity with Atlantikwall (1942-44). These architectures were executed taking as reference the manuals of the sapper engineers. However, many drawings disappeared during the war, in particular, those related to the province of Alicante. In the Archive of the Marqués del Viso (Ciudad Real) no projects of the Spanish southeast are preserved. Thus, the case that concerns us is the restitution of the designs of the main bunker: a the military settlement located 8 km south of Alicante which is erected to repel a hypothetical landing.

#### 02 GEOGRAPHIC ENCLAVE

The enclave where our bunker is located is known as Clot de Galvany: a lake area near the beach that presents a series of particular geographical and geological features. The topographic conditions allowed the construction of a set of defences which is the largest in the settlement. This little system of defence is located on a small island in the lake that emerges to surface in the rainy years. This bunker is coordinated with seven other bunkers forming a line of defences that is coupled to the contours of the hills to control and defend the flat terrain that connected the sea with the national road -which could be reached by the enemy troops after a landing in the adjacent beach of Carabassí. As we have already pointed out, the bunker object of the photogrammetric restitution is the main and larger one of the Clot de Galvany military settlement. It constitutes one of the seven enclaves considered in the province of Alicante. Here the bunkers are located on the northern edge of this wetland, perched, to a greater or lesser extent, to the hills and small headlands that, abruptly, dominate the bottom of the tectonic depression occupied by the Clot de Galvany-Bassars with unevenness up to 35 m. The situation of the 8 small structures that remain is strategically measured to neutralize a penetration from the sea that, taking advantage of the corridor configured by the current wet zone, pretended to progress towards the north, that is, towards the city of Alicante, reaching the road -that is only 2 km from the beach.

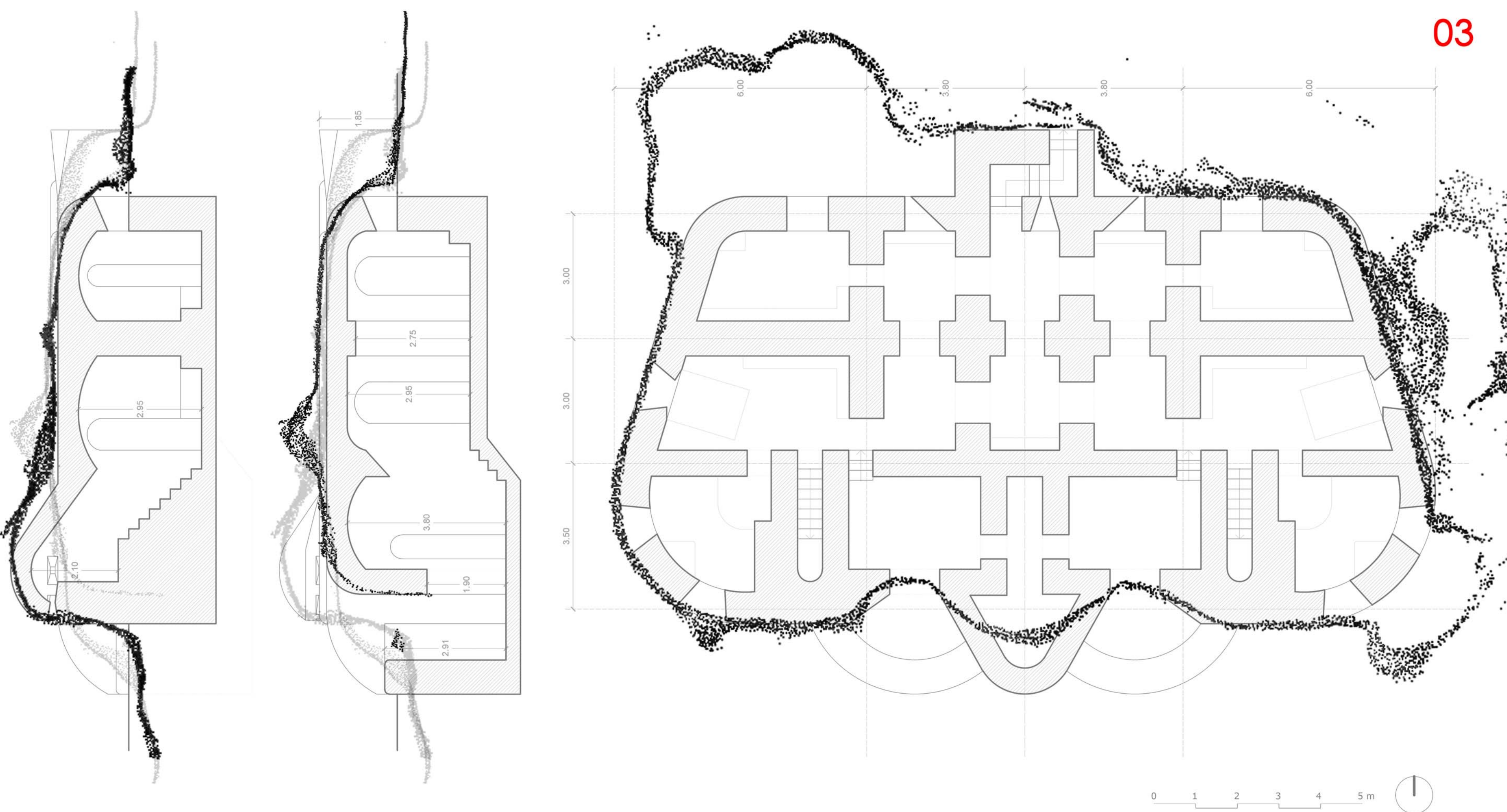
#### 03 DIGITAL RESTITUTION

In a photogrammetric context, the workflow necessary to obtain the final result is far from being autonomous and independent of our interests and capabilities. In the case at hand, after selecting the photographs and making the necessary masks to obviate the irrelevant information, all our decisions were aimed at obtaining a final model with the minimum noise or deviation of their points. The graphic results have been shared in the digital repository Sketchfab (<https://sketchfab.com/>). In them we can orbit in real time, as if it were a virtual flight, around the resulting models (mesh plus projected texture). During the different approaches to the representation of the bunker (drawings of this poster with the number 03), we detected that, in an academic context of rigor and precision, the vegetation and the surrounding terrain is an indelible and inseparable parameter without which the construction loses its condition of temporal actuality. This concept can be observed, not only during the analysis of the top view with the level curves, but also, and especially where we can distinguish different cross sections arranged as a sequence.



#### 04 AN OUTDOOR MUSEUM

The technique of photogrammetry has allowed us to obtain the exterior of the bunker with high quality and precision, however, its interior space is easier to measure from autographed tools and techniques. Among the highlights of this bunker would be: 1) Its shape resembles a twin-engine with wide wings extended, 2) Its surface, 204 m<sup>2</sup>, is one of the largest of the bunkers built by the Mediterranean Wall, 3) Its rigorous and elementary geometry links it with the typologies of the concrete small forts of Atlantikwall, 4) The proportion between built and useful area is 45-55%, which denotes the robustness of the walls, and 5) The interior distribution is zoned so that in the previous part the rooms for defense of the position are located and in the upper part are the rest rooms, armourer and intendence. Beyond the romantic evocation of this type of ruins that Paul Virilio detected decades ago, digital restoration work will be available to visitors in the open-air museum of the Clot de Galvany enclave, offering a real and geometric documentation that inform of these singular architectures, perhaps the first ruins of reinforced concrete. Perhaps the reflections of Walter Benjamin during those years are true when he affirmed that "Never exists a document of culture without it being at the same time of barbarism".



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