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http://www.press.ierek.com

ARChive Scientific Research

ISSN (Print: 2537-0154, online: 2537-0162)

Proceedings of the Academic Research Community on Social and Behavioral Sciences

Research Paper

Received: 31 March 2025, Accepted: 22 October 2025, Published online: 31 October 2025

**DOI: 10.21625/archive-sr.v9i4.1199**

# Strategies for the Conservation and Valorization of 20th-Century War Landscapes: The Case of the Mediterranean Wall Ruins

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## Correction Note:

This article was corrected on 27th November 2025 to include resized Figures (2, 3, 5, and 15) for improved clarity. A formal Corrigendum will be published in the *(Volume 10, Issue 1, January 2026)* to formally document this change. The conclusions of the paper are unaffected.

## Abstarct

The so-called Mediterranean Wall—a term referring to the system of coastal defenses built between 1936 and 1945 across various Mediterranean countries—exhibits distinct characteristics when compared to the Atlantikwall. Unlike the latter's continuous and technologically unified design, Mediterranean defenses were fragmented, heterogeneous, and closely adapted to local territorial and environmental conditions. This article analyses the morphology and geographic distribution of these military landscapes in Spain and Italy, approaching them as architectural and landscape heritage with specific material and perceptual features. A two-phase methodology is adopted: the first involves the identification and documentation of existing reuse interventions, supported by fieldwork and archival research; the second presents a comparative evaluation of four selected case studies based on criteria such as restoration practices, accessibility, and landscape integration. The comparative analysis highlights a wide spectrum of adaptive reuse strategies and underscores the multidimensional challenges of valorisation. Rather than treating these structures as static wartime remnants, the article advocates for their reintegration into broader cultural, ecological, and touristic networks. Through a holistic approach combining architectural reuse, inclusive accessibility, and civic participation, the Mediterranean fortifications may be transformed into dynamic sites for memory, interpretation, and environmental awareness—reframing their legacy within contemporary territorial narratives.



***Keywords***

*Cultural landscape; World War II fortifications; adaptive reuse; coastal defenses; military heritage.*

## 1. Introduction: Twentieth-Century Military Architectural Ruins

The observation of architectural ruins—tangible vestiges of the passage of time—has long invited reflection on the past. In their fragmentary state, marked by cracks, collapses, and voids, these structures acquire both aesthetic and symbolic resonance. Their visual incompleteness activates a process of temporal transposition, often rooted in a romantic imagination that attempts to reconstruct—either faithfully or idealistically—the original meaning of what once was. This phenomenon is evident in both the surviving columns of the Temple of Poseidon at Cape Sounion and the fictional ruin of the Statue of Liberty in *Planet of the Apes* (1968), which represent culturally charged images of loss and reinterpretation.

Aloïs Riegl (2008, 1903) associated the aesthetic experience of decaying built forms with an "age value," rooted in the nostalgic recognition of their temporal depth and inevitable disintegration. From this perspective, monumentality is not necessarily determined by scale or intended design, but rather by the capacity of a structure to activate historical memory and cultural meaning—a notion explored in the fields of heritage studies and memory theory (Lowenthal, 1985; Huyssen, 2003). The slow erosion of these ruins by natural agents transforms them into material witnesses of impermanence and continuity (Figure 1).

Figure 1: Ruins of the Temple of Poseidon at Cape Sounion (Greece) and, on the right, a bunker in Quartu Sant'Elena (Italy) disguised as a rural church (photos by A. Martinez-Medina and G. Sanna).

Among the architectural typologies most resistant to temporal deterioration are military fortifications. Designed to withstand the destructive forces of war, they also exhibit inherent resilience against the erosive effects of time. Fortresses, alcazabas, bastions, and casemates—massive constructions of masonry and concrete—embody a symbolic language of impregnability and permanence. Yet even these robust structures are not immune to decay. The widespread adoption of reinforced concrete in the late nineteenth and early twentieth centuries marked a decisive shift in construction practices, particularly in the field of military engineering. Its versatility, structural strength, and economic cost made it the preferred material for large-scale infrastructure and defensive works (Forty 2012).

Within this vast corpus of twentieth-century military architecture, special attention must be paid to bunkers, anti-aircraft sites, and coastal batteries. Deployed in strategic locations along the coasts of belligerent nations, these structures remain as residual fragments ambiguously integrated into the postwar landscapes that emerged after the conflict. They now appear as 'artificial stones' (Virilio 1975), colonized by moss and vegetation, forming heterogeneous presences within their surroundings. Some protrude silently alongside roadways as mute mounds (Figure 2), while others resemble petrified sentinels gazing out to sea. In certain contexts, they are so deeply assimilated into rural landscapes as to be nearly invisible; in others, their alignment along the coast evokes the image of a shipwreck—scattered relics, smoothed and recontextualized by time and tide (Figure 3).

This fragmented continuity has led scholars to conceptualize these remains as a "layered palimpsest of conflict" (Bevan 2006), or even as a necklace of cursed stones, historically charged and materially resilient. It is important to emphasize that bunkers, casemates, batteries, observation posts, trenches, and shelters do not constitute a

disconnected collection of isolated elements. On the contrary, they are the physical expression of integrated defensive strategies—coherent systems designed to deter invasion through spatial coordination and infrastructural redundancy. Although now fragmented, these systems still retain the memory of their original military logic and territorial control.

One of the most emblematic manifestations of this logic is the Atlantikwall, a vast network of fortifications constructed by the German army along the Atlantic coast during the Second World War. A comparable, though more dispersed system was developed along the shores of the Mediterranean. Known as the Mediterranean Wall, this network emerged from the Spanish Civil War (1936–1939) and the Second World War (1939–1945), through a series of regionally executed fortifications that were adapted to diverse geopolitical and geographical contexts. Today, both systems endure as imperishable witnesses of war and its territorial imprint. Their presence invites critical reflection on their potential for reinterpretation within a broader strategy aimed at preserving and valorizing military heritage as a manifestation of the material and technical culture of their time.

Figure 2: Left: a pair of bunkers along a rural road in Arborea (Italy); center: a Tobruk bunker overlooking the Atlantic at Utah Beach (France); right: a control bunker along the national road in Monforte del Cid (Spain) (photos by A. Martinez-Medina).

Figure 3: Left: German Army bunkers scattered along the beach of Løkken (Denmark); right: a solitary observation bunker on the Calabrian coast in Italy (photos by A. Martinez-Medina).

## 2. Materials and Methods

Despite their differing ecological contexts—ranging from dunes and pine forests to brackish wetlands and Mediterranean scrubland—the selected sites share a common challenge: the reactivation of a fragmented and often overlooked form of heritage through strategies that combine accessibility, interpretive communication, and landscape integration. By focusing on these extended defensive systems, rather than on singular monuments, the research addresses critical issues such as visibility, legibility, ecological compatibility, and narrative coherence—elements essential to the valorization of the so-called Mediterranean Wall.

Although the comparative analysis is intentionally limited to a small number of representative case studies—allowing for greater analytical depth—the methodological framework is designed to be replicable and scalable. It is currently being extended to a broader array of Mediterranean outposts with similar typological and territorial features, with the aim of validating the proposed evaluative model in diverse contexts.The methodological approach is structured in three interrelated phases.

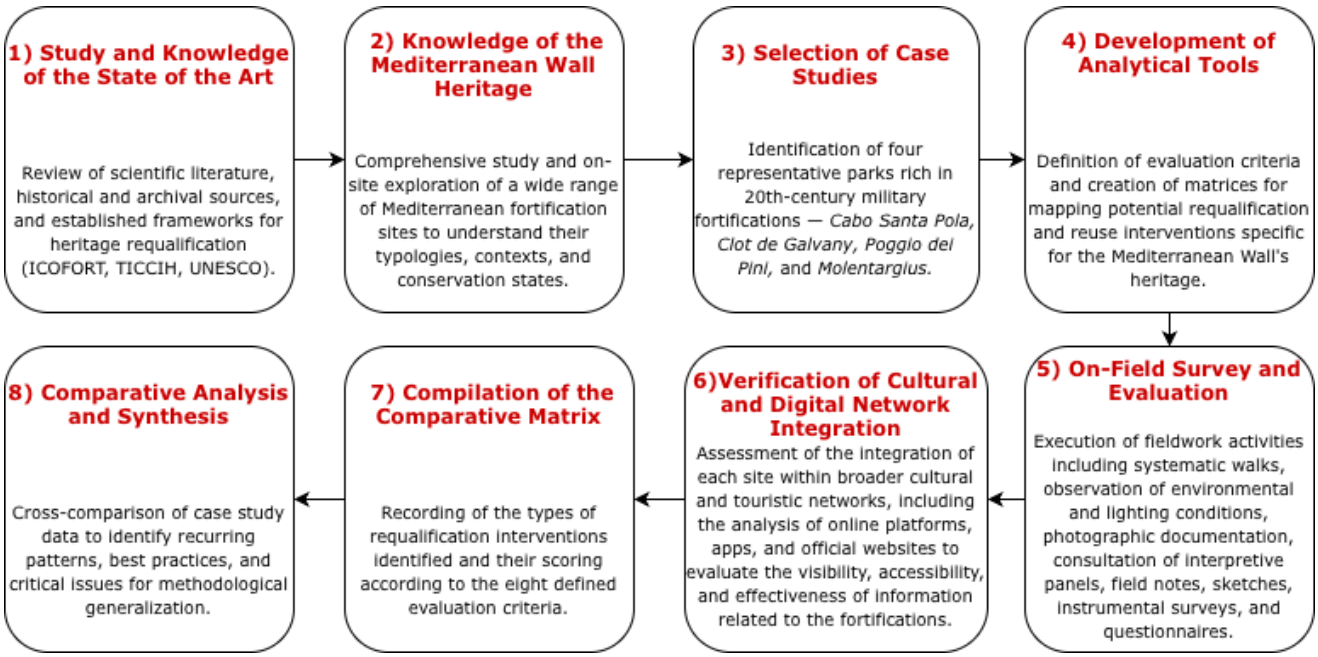


Figure 4: Flowchart of the methodological framework adopted to assess and compare requalification and valorization interventions applied to the coastal fortifications belonging to the Mediterranean Wall.

## 2.1 Fieldwork and Documentation

Since 2010, our research group has conducted an extensive field campaign on fortified sites from the Spanish Civil War and the Second World War in Italy. In this initial phase, the primary objective was the documentation of the heritage itself through systematic surveys: photographic and digital recordings, cartographic analysis, hand-drawn sketches, and descriptive field notes. These activities aimed to capture the architectural, spatial, and material characteristics of the structures, as well as their integration within mobility systems, infrastructures, and surrounding landscapes.

This long-term empirical engagement provided an in-depth understanding of the defensive architectures' physical integrity, landscape setting, and operational logic. However, the present study, while not neglecting the identification and inventory of this heritage, moves beyond heritage documentation in the strict sense: the focus here is on evaluating interventions of recovery, reuse, and valorization carried out on such sites. The analytical tools described below were therefore designed not to assess the original military assets per se, but to measure the quality and effectiveness of actions taken to conserve, interpret, and reintegrate them into contemporary cultural and social contexts.

In parallel with fieldwork, a targeted literature review was undertaken to identify methodological frameworks that could inform the construction of this evaluation system. Although no comprehensive or universally adopted model exists for twentieth-century military landscapes, relevant guidelines were identified in heritage sectors sharing comparable preservation challenges. Of particular relevance are the ICOMOS/ICOFORT Guidelines on Fortifications and Military Heritage (ICOMOS, 2021), which define a set of strategic principles relating fortifications to their tactical purpose and landscape setting. Among these, the Mediterranean Wall fortifications in Sardinia—particularly the strongholds and secondary inland lines—align most closely with the *Command* principle (ICOMOS 2021, art. 2º), being designed to monitor extensive 360° territorial sectors and prevent enemy forces from approaching the defended zone. Their camouflaged nature excluded a primary role in deterrence, yet their configuration often incorporated flanking elements to cover blind spots and, in certain cases, depth strategies through successive coastal and inland lines. Direct barrier protection of civilian activities was secondary, as these sites functioned primarily as armed coverage points within a wider defensive network.

A distinctive feature highlighted by the Guidelines is the external functional scope beyond physical boundaries, where the operational range of fortifications—shaped by contemporary technology—extended far into the surrounding

landscape, reinforcing their inseparable link with the cultural-territorial context (IPCE, 2024). The document also outlines a broad spectrum of heritage values—architectural and technical, territorial and geographical, cultural, strategic, human and anthropological, memorial and identity-related, educational, historical, social, and economic (ICOMOS 2021, art. 4º)—that frame the significance of such sites. While these values establish a general basis for conservation and intervention, their breadth requires adaptation to the specificities of conflict heritage. The present study builds on these principles, developing targeted criteria to evaluate recovery, reuse, and valorization actions, thus bridging the gap between theoretical guidance and operational assessment.

Further methodological parallels are offered by the *Nizhny Tagil Charter on Industrial Heritage* (TICCIH, 2003), whose emphasis on functionalist design, integration of built form with operational apparatus, and embedding in territorial systems is relevant to military heritage. Differences remain in aspects such as camouflage versus visibility, the contested dimension of memory, and reuse patterns often restricted to commemorative purposes.

Given its layered and palimpsestic nature, twentieth-century military heritage intersects with multiple overarching themes in heritage studies, including cultural landscape relationships, conservation challenges, the construction of heritage meaning, collective memory, nationalism, and the socio-political dimensions of cultural identity. These interconnections call for an expanded interpretative framework that situates conflict heritage within the broader discourse on heritage values, power, and cultural narratives (Graham, Ashworth, Tunbridge, 2016; Avrami, Mason, de la Torre, 2000). This broader perspective complements the sector-specific frameworks discussed above, providing a conceptual foundation for the evaluative methodology outlined in the following section.

## 2.2 Construction of Analytical Tools

Building on the dual foundation of empirical field observation and theoretical anchoring, the research developed two complementary tools for evaluating valorization strategies. The first is a presence–absence matrix, conceived as a descriptive register indicating whether specific physical and interpretive components—such as trails, signage, rest areas, lighting, or digital media—are present. The second is a qualitative evaluative framework, based on an ordinal four-level scale (*Absent – Poor – Good – Excellent*), applied across thematic criteria to assess how effectively each element contributes to reuse, interpretive clarity, and cultural integration. While informed by international frameworks (ICOFORT for fortifications, TICCIH for industrial heritage, UNESCO for cultural landscapes), the model represents a context-specific adaptation. Categories such as accessibility, authenticity, integrity, and community engagement were reinterpreted in light of the operational, memorial, and environmental attributes of wartime architectures. Concepts from post-industrial and difficult heritage scholarship were merged with case-based evidence from the field, ensuring methodological robustness and operational relevance.

- **Accessibility (physical and cognitive)** – This criterion addresses both physical access and interpretive accessibility in relation to difficult or traumatic histories, as well as safety constraints arising from the site's former military function. It was evaluated through direct inspection of entrances, trails, and signage, supplemented by informal user feedback.
- **Preservation of Landscape Values** (naturalistic and artificial) – This criterion considers ecological and visual integration, and the extent to which the site retains its original mimetic camouflage or has undergone alterations that compromise this strategic design feature. It was assessed by comparing historical cartography with current topographic data and by documenting visible alterations through systematic photographic surveys.
- **Restoration, Recovery and** Reuse – Adaptive reuse strategies were evaluated in light of both functional innovation and narrative coherence, with emphasis on respecting the spatial logic of defensive design. This criterion was examined via architectural surveys of the military structures, with particular attention to material integrity and adaptive interventions.
- **Night-time Valorization** – This criterion considers the potential of illumination to alter the original camouflage effect, balancing aesthetic enhancement with historical authenticity. It was evaluated by documenting the presence, typology, and environmental compatibility of lighting infrastructure.

- **Digital Tools and Signage** – This criterion evaluates narrative clarity, accessibility, and emotional resonance, addressing both factual information and critical reflection on the legacy of war. Communication tools were assessed by documenting digital media, signage, and information panels, and by testing their clarity through qualitative observations of visitor interaction.
- **Integration into Cultural and Tourist Networks** – This criterion measures connectivity with broader cultural, ecological, and memorial circuits, avoiding the isolation that often characterizes conflict heritage sites. It was established by cross-checking regional tourism guides, online platforms, and institutional brochures.
- **Community Involvement and Participation** – This criterion measures not only the presence of community initiatives but also their role in shaping interpretive narratives, especially in contexts of contested memory. It was assessed by examining the frequency and type of participatory initiatives, verified through management plans, event calendars, and reports from local associations.
- **Educational and Interpretive Effectiveness** – This criterion prioritizes interpretive frameworks that confront and contextualize the complex meanings of wartime heritage, moving beyond purely descriptive approaches. It was analyzed through the content and narrative coherence of interpretive devices, complemented by short conversations with visitors during field visits.

These indicators ensured that even intangible dimensions—such as interpretive accessibility or community participation—were grounded in observable, replicable evidence rather than subjective impressions. Together, the eight criteria form the analytical backbone of the comparative evaluation. By combining objective indicators with qualitative judgment, and by adapting established heritage principles to the specific challenges of twentieth-century military landscapes, the framework ensures both rigor and innovation.

## 2.3 Comparative Evaluation

The multidimensional data gathered during the field campaign were synthesized into a comparative matrix, enabling the identification of recurrent patterns, best practices, and unresolved challenges across the case studies. This matrix also provided the empirical foundation for a systematic comparison of intervention strategies. To ensure the robustness and comparability of the evaluation process, a triangulation of data sources was adopted, including direct field observation, photographic documentation, heritage inventories, urban planning documents, and online platforms. A standardized checklist was applied across all sites to minimize subjective interpretation and maintain consistency in scoring. The result is a methodological framework that combines empirical rigor with interpretive depth, offering a robust tool for the evaluation of adaptive reuse strategies in post-war military landscapes.

# 3. State of Art: Interpreting the Spatial Logic of Twentieth-Century Coastal Fortifications

The term Mediterranean Wall refers to a discontinuous system of military fortifications built along Mediterranean coastlines during the first half of the twentieth century. This designation explicitly invites comparison with a more prominent system of military architecture: the Atlantic Wall (Atlantikwall). Constructed between 1942 and 1944 by the Organisation Todt, the Atlantic Wall extended from France to Norway, forming a vast coastal defense network. It comprised fortified positions—including bunkers, coastal batteries, and other assorted structures—organized into over 600 typological variants, each adapted to accommodate specific types of weaponry. Its primary function was to create an impenetrable barrier against Allied incursions.

Following the end of the Second World War, these engineering structures—designed with the precision of industrial artifacts—gradually fell into disuse, losing their original military function. Nevertheless, their robust construction enabled them to withstand the passage of time, positioning them among the earliest examples of modern architecture resilient to natural degradation.

It was precisely this material resistance that captured the attention of Paul Virilio. Observing the bunkers scattered along the Normandy coast, Virilio was struck by how these relics of a recent conflict evoked a sense of monumentality comparable to that of ancient temples or funerary ruins. His exhibition *Bunker Archeology* (Virilio, 2012, orig. 1975), held in Paris, was a pivotal moment in the critical reception of this architectural legacy—marked by a double stigma:

its association with traumatic historical events and its ambiguous status as heritage, diverging from the traditional canon of the monument (Cocroft, Schofield, 2007; Dolf-Bonekämper, 2008). “My objective was purely archaeological. I captured these grey forms until they revealed part of their mystery…” (Virilio, 1975, p. 11). Virilio’s work sparked broader interest in these fortifications, leading to more systematic academic investigations. Among the most notable are those of Rudi Rolf, who classified the fortifications according to typological and dimensional criteria (Rolf, 1988, 1998, 2014) (Figure 5). Also significant are the research efforts led by Gennaro Postiglione, who proposed interpreting bunkers as expressions of the Modern Movement during the interwar period (Postiglione, 2005, 2008), as well as components of a fragmented but coherent cultural landscape (Bassanelli, Postiglione, 2011).

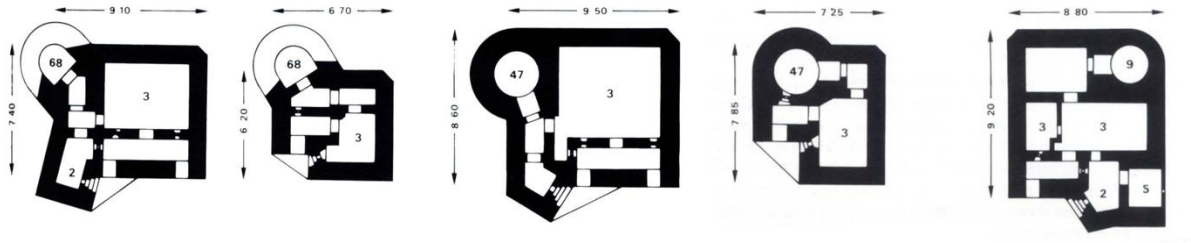


**Figure 5.** One of Rudi Rolf’s diagrams showing the genealogy of Atlantikwall bunkers. Reproduced from Rolf (1985, p. 33).

By its very nature, military architecture has always represented the avant-garde of innovation in terms of technology, functional optimization, and resource efficiency. It therefore embodies, in a radical form, the famous principle articulated by Louis Sullivan in 1896: “form always follows function” (Sullivan, 1957: 169, orig. 1901). Nowhere is this principle more visible than in the design of twentieth-century bunkers.

## 3.1 Geography and Geometry of the Mediterranean Wall

The outbreak of the Spanish Civil War (1936-1939)—five years before the construction of the Atlantikwall and following earlier projects such as the Maginot Line—provided a testing ground for advanced military technologies and tactics. During the conflict, the insurgent faction used the island of Mallorca as a strategic base for aerial bombing campaigns against Republican territories, raising fears of amphibious attacks on the mainland. In response, the Spanish Republican government developed a coastal defense plan in 1937 (Figure 6).

This strategy pursued a dual approach (Gil, Galdón, 2007): on the one hand, it involved the installation of coastal artillery and elevated anti-aircraft positions to counter threats from both sea and air; on the other hand, it included the construction of a discontinuous chain of casemates along the coastline to deter amphibious landings. The bunkers—typically spaced approximately 500 meters apart, in line with the effective range of their weaponry—created a defensive mesh intended to maximize territorial control (Figure 7).

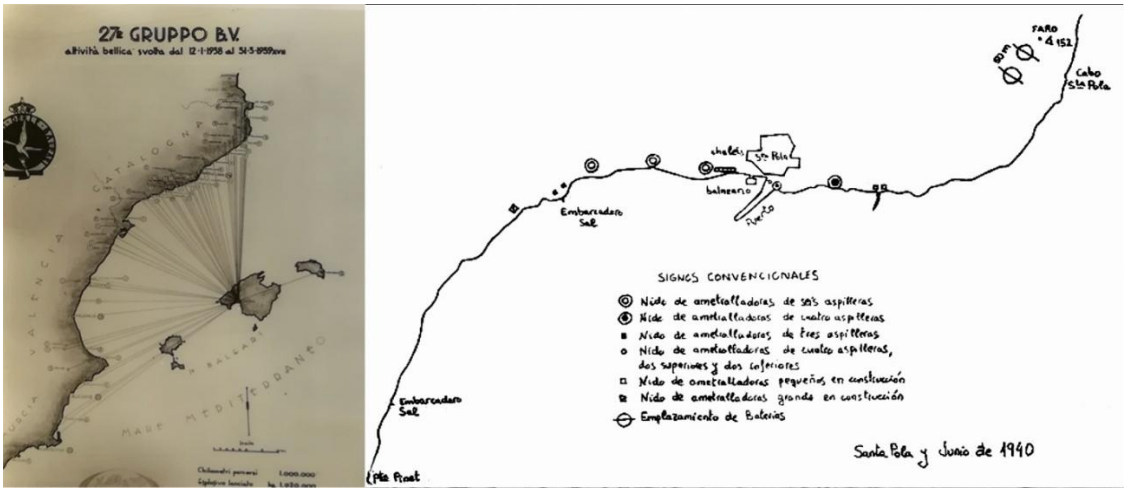


Figure 6: (left) Map of air raids on the Spanish coast from the island of Mallorca (1938) and (right) the coastal defense system of the Santa Pola coast (1940) (García & Ruiz 2000, p. 37)

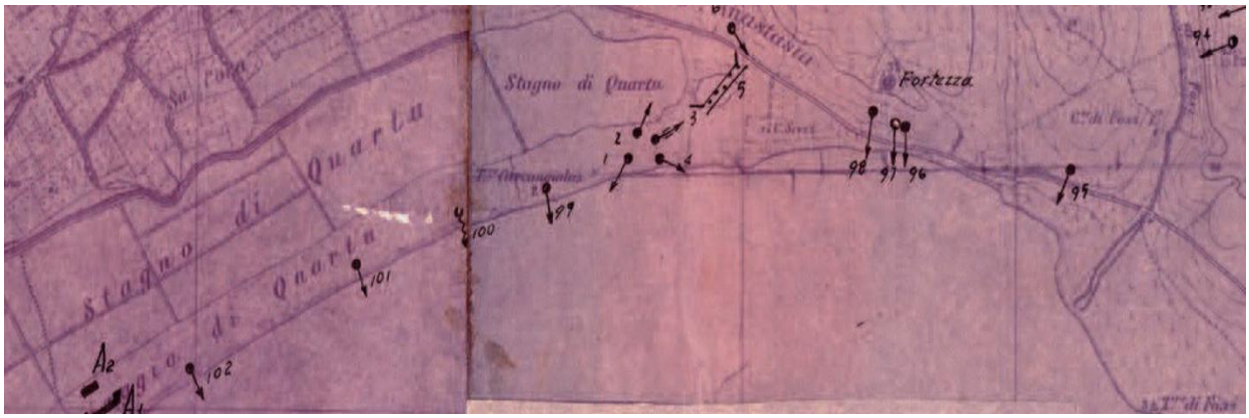


Figure 7: IGM Map the coastal defense system of Poetto beach in Quartu S'Elena, Italy (Genio Militare, 1943).

The siting of these structures was determined through strategic calculations aimed at maximizing operational coverage while minimizing costs and aerial visibility. Camouflage techniques were employed, such as aerodynamic shaping and the use of locally sourced materials for exterior cladding, which enhanced the integration of the structures into their surroundings. Although a few exceptions appeared in urban zones, the majority of the fortifications were built in sparsely inhabited rural or coastal environments. The implementation of this defensive system was delegated to local authorities, who relied on standardized typologies drawn from military engineering manuals. However, due to the urgency of wartime construction, few original plans have survived. As a result, contemporary reconstructions of this defensive system rely heavily on field studies and fragmented archival documentation.

During the Second World War, the Francoist regime expanded and reused this existing infrastructure in anticipation of a possible Allied invasion. In the 1940s, the regime began restoring earlier structures and commissioned the construction of new, more technically advanced fortifications along the Pyrenees and the Strait of Gibraltar (Atanasio, 2017). This resulted in a fortified coastal belt extending from Cádiz to Girona, forming what is now known as the Spanish segment of the Mediterranean Wall.

Although more limited in scale than the Atlantic Wall, the Mediterranean Wall adapted as well to the challenges of the Second World War. Italy, in particular, presents a revealing case study. Alongside the reinforcement of internal defense lines—such as the Galla Placidia Line—the Italian authorities launched a campaign to fortify coastal areas starting in May 1943 (Grioni, Carro, 2014, pp. 24–26). At that time, Sardinia and Sicily were identified as probable targets of Allied amphibious operations, making the rapid development of a coastal defense system a necessity. Italy's fortification strategy involved the construction of bunkers, batteries, and other defensive facilities located at river mouths, estuaries, ports, and near critical infrastructure such as roads and railways. These interventions often overlapped with or were integrated into pre-existing defensive elements—such as coastal watchtowers from the 15th to 18th centuries and other historical military installations—thereby reinforcing existing surveillance and territorial control capacities.

According to Grioni and Carro (2014), more than 1,500 military structures from this period are still preserved in Sardinia alone, many in a relatively good state of conservation. This condition is often attributed to the widespread use of reinforced concrete (Figure 8)—a material chosen for its mechanical strength, durability, and suitability for rapid construction. This stands in contrast to the Spanish Republican period (1936–1939), where wartime material shortages led to a more frequent use of traditional masonry techniques, unlike the later Francoist bunkers (1940–1945), which were indeed built in reinforced concrete. The centralized nature of Italy's military engineering apparatus—coordinated through the Genio Militare and the Regia Marina—also contributed to the systematic production and preservation of technical drawings and archival records. These documents are now essential for contemporary mapping and cataloging efforts.

The coastal defenses of the Mediterranean Wall followed precise strategic and architectural principles. Most structures were made of reinforced concrete and, when possible, clad with stone or local aggregates to improve camouflage. Morphologically, they adapted to the rugged topography of the coast, minimizing visual impact through

chromatic and volumetric integration with the surrounding terrain. Functionally, the bunkers were designed as armored shelters capable of continuously housing personnel. Their internal layout typically included a rear compartment for storage or accommodation and a front area equipped with horizontal embrasures for observation and the deployment of firearms (Figure 8). These features reflect a typological consistency aligned with the defensive doctrines of the time, while also accommodating specific site conditions and logistical constraints.

Figure 8: Left: the interior of a reinforced concrete bunker used in Arborea, Italy; right: the interior of a bunker with a brick formwork in Balsares, Spain (photos by A. Martinez-Medina).

A fundamental principle common to all these structures was the close correspondence between form and function. Their geometric configurations were dictated by operational needs, giving rise to elementary forms—such as circles and squares—that could be modularly combined to generate more complex spatial solutions. This logic is particularly evident in the family of defensive typologies distributed along the coast of Alicante province (Spain) (Martínez-Medina, 2016). Moreover, their construction followed principles of standardization and serial production, reflecting avant-garde architectural trends of the interwar period. These fortifications embody the rationality, functionality, and economic pragmatism characteristic of twentieth-century military design. Although this analysis focuses on Spain and Italy, it is important to acknowledge that the Mediterranean Wall extended across other countries, including France, Croatia, Slovenia, Albania (Stefa, Mydyti, Muçaj, 2012), Greece, Libya, and Algeria. In each of these territories, bunkers were constructed at different times but always followed similar defensive logics and compositional principles. Lastly, it is worth noting that the settlement patterns of twentieth-century military architecture often echo those of coastal watchtowers built between the fifteenth and eighteenth centuries to defend the *Mare Nostrum*. The key distinction lies in their visual approach: whereas earlier towers asserted their presence through large volumes and elemental geometry, many modern fortifications emphasized concealment through landscape camouflage—a tactical necessity to preserve the element of surprise (Figure 9).

Figure 9: Left: a camouflaged bunker in the settlement of El Portixol, Spain; right: Marceddì Tower (1580) with an attached and camouflaged bunker in Terralba, Italy (photos by A. Martinez-Medina).

## 3.2 Tourism and War *versus* Territory and Landscape

The defensive system of the Mediterranean Wall—unlike battlefields marked by epic narratives—belongs more properly to the domain of material culture and military engineering. These ruins, which have rarely witnessed major direct combat, are embedded in the landscape, often camouflaged within its morphology to avoid detection by enemy forces. In this context, an intriguing analogy arises between the soldier defending a position and the tourist exploring a territory. As Diller and Scofidio have pointed out, the English word "travel" originates from *travail*, denoting labor, hardship, and suffering.

The mission of the soldier intersects with the experience of the tourist: their movements are strikingly similar, and both—albeit in very different ways—leave a visible imprint on the landscape. "Tourism and war seem to represent polar opposites of cultural activity: on the one hand, the paradigm of international agreement (tourism), and on the other, that of discord (war)" (Diller, Scofidio, 1995, 2011, p. 39). This reflection becomes especially relevant when considering the location of most bunkers, batteries, and shelters of the Mediterranean Wall, which are often situated in ecologically sensitive areas such as mountains, lagoons, dunes, and coastal zones.

Since the early 21st century, increasing attention has been devoted in Spain to the documentation and cataloguing of these fortifications. Significant studies have addressed the defensive system of the Pyrenees, reinforcement strategies in the Gibraltar area, and wartime infrastructures in Catalonia (Cabezas, 2013), as well as the fortifications stretching from the Murcian coast. Particularly noteworthy is the comprehensive inventory of defensive structures along the southern coastline of the Valencian Community (Martínez-Medina, 2016; Gil-Piqueras et al., 2022), which has contributed to the inclusion of numerous sites in municipal heritage protection registries.

A similar phenomenon is occurring in Italy. Numerous initiatives have been launched to document and catalogue bunkers along the coast of Sardinia (Sanna, 1999; Carro, Grioni, 2001; Rassu, 2013; Grioni, Carro, 2014; Fiorino, Pintus, 2015; Mura, Sanjust, 2016; Fiorino, 2018; Pirinu, Argiolas, Paba, 2021) (Figure 10), as well as in Calabria (Caniglia, 2023), and in inland regions such as valleys and hills, where defensive positions were often adapted from existing watchtowers. In Emilia-Romagna (Mariotti, Ugolini, Zampini, 2018), some bunkers have been reappropriated by local communities and successfully integrated into the contemporary urban fabric.

The creation of detailed location maps, metric and graphic documentation of these structures, and the comparative analysis of their architectural and spatial characteristics have laid the groundwork for future academic research. This has significantly advanced our understanding of the distributed defensive systems that line the Mediterranean coast. However, beyond documentation, the key challenge remains the implementation of concrete interventions aimed at the recovery and reuse of this often neglected heritage, much of which is located in areas of exceptional environmental and landscape value (Figure 11).

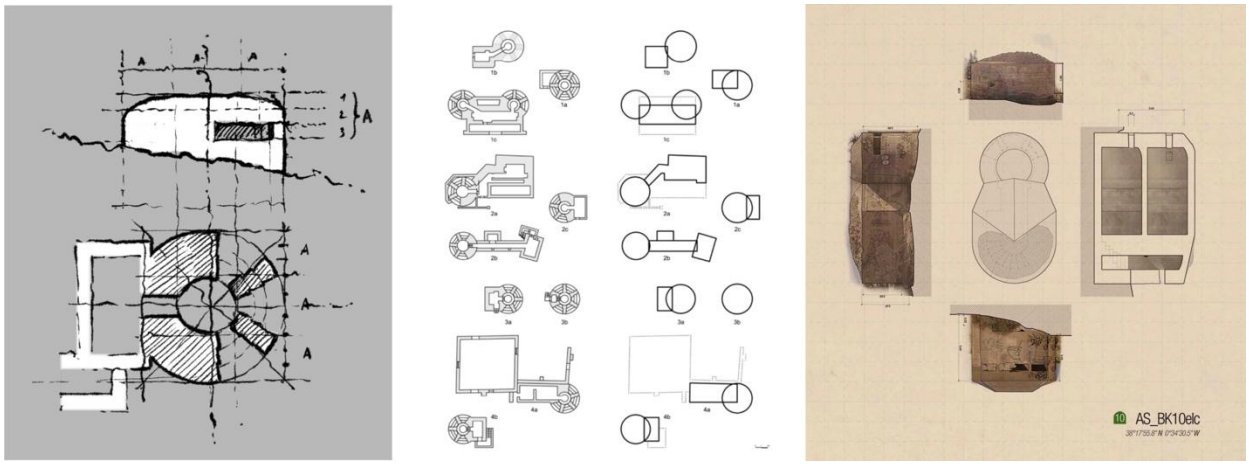


Figure 10: Typological cataloging studies of bunkers: (left and middle) in Sardinia (graphical elaborations by Giancarlo Sanna and Andrea Pirinu); right, along the Valencian coast, in Spain (graphical elaboration by A. Martinez-Medina).

Figure 11: View of the Mediterranean horizon from a bunker in Is Mortorius, Sardinia, Italy (photo by A. Martinez-Medina).

## 4. Discussion: the "fortification park" as a Case Study

The study of modern coastal fortifications across Europe—built primarily during the tumultuous decades of the twentieth century, including the Spanish Civil War and the Second World War—offers valuable insights into how military heritage can be reintegrated into contemporary cultural landscapes. Although the so-called Mediterranean Wall remains less well-known and more fragmented than the Atlantikwall, it nonetheless comprises a vast, territorially dispersed network of bunkers, batteries, and fortified outposts constructed by various regimes along the southern European coasts.

These defensive systems—often anonymous, standardized, and mass-produced—represent a form of minor heritage, distinct from monumental architecture yet deeply embedded in the material and symbolic fabric of their environments. While their modest dimensions and functional nature may limit opportunities for interior reuse, they remain powerful spatial testimonies to historical memory, territorial control, and environmental transformation. Importantly, they are not isolated artefacts, but rather parts of broader territorial systems whose interpretation requires a shift in scale and perspective. Contemporary approaches to this heritage increasingly emphasize its systemic and relational value. The reinterpretation of fortifications as networks of spatially distributed elements—trenches, bunkers, artillery sites, and observation posts—has gained traction in both architectural theory and heritage practice. These are no longer seen merely as relics of conflict, but as dynamic instruments for reading the layered palimpsest of modern landscapes. The notion of the "dispersed museum", as articulated by Fredi Drugman (2003), offers a compelling conceptual model: one in which memory, architecture, and landscape are integrated to create decentralized and place-specific narratives.

Some of the most influential examples (Figure 12) come from the rehabilitation of the Atlantic Wall and earlier fortification systems in northern Europe. The transformation of the Amsterdam Defence Line (Netherlands)—a 19th-century military ring—into a UNESCO World Heritage Site has demonstrated the viability of connecting military heritage to ecological tourism and soft mobility infrastructures through pedestrian and cycling paths. Since the late twentieth century, various European projects have reinterpreted wartime bunkers through creative reuse—ranging from early artistic interventions such as Bill Woodrow's *Bunker Mule* (1985) on the beaches of Blåvand, to more recent landscape-based restorations like the dramatic sectioning of Bunker 599 (2010) within the New Dutch Waterline, and the architectural conversion of a former bunker into the Tirpitz Museum (2017) by BIG in Denmark. These interventions reposition wartime structures within contemporary spatial imagination, combining historical integrity with expressive reinterpretation. Although these northern precedents differ in geography and historical context, they provide valuable references for the adaptive reuse of Mediterranean military landscapes. In both cases, military infrastructures have been reconceptualized as frameworks for distributed heritage, linking conservation with new functions, participatory practices, and landscape narratives. Within the Mediterranean context, fortifications often occupy ecologically significant areas—such as wetlands, coastal dunes, or wooded hillsides—and are deeply embedded in topographic, environmental, and strategic specificities. This spatial embeddedness makes them particularly suitable for valorization models that integrate military memory with environmental awareness, educational initiatives, and cultural tourism.

In selecting the case studies for this research, priority was given to sites located in Italy and Spain, two countries with extensive and diverse examples of twentieth-century coastal fortifications. The choice was guided not only by their historical and geographical relevance but also by direct fieldwork conducted by the authors, including on-site inspections, archival study, and interviews with local stakeholders. The final selection focused on fortified sites located within natural parks, where multiple well-preserved structures coexist in a coherent spatial system. These contexts offer ideal conditions for testing integrated valorization strategies: they ensure public accessibility, ecological protection, and thematic continuity. Parks, by their nature, encourage slow exploration, educational programs, and open-air cultural activities—making them privileged laboratories for rethinking military heritage as a living and multifaceted territorial resource.

Figure 12: The Bunker Mule by Bill Woodrow (web photo by Klaus Funke), Denmark (1985); Bunker 599 (web photo by Rietveld Landscape), (2010); and the Tirpitz Museum, by BIG (2017) (photo: https://www.idealwork.es/proyectos/museo-tirpitz/).

### 4.1 Application of the method to the case studies

The four case studies selected for this research exemplify the proposed multidimensional and diachronic territorial methodology. They include two sites in Spain—the Military Park of Cabo de Santa Pola and the historical-environmental area of Clot de Galvany in Elche—and two in Sardinia, Italy: The Archaeological and Naturalistic Memory Park of Poggio dei Pini in Capoterra, and the fortified zones within the Molentargius Natural Park in Cagliari. Each site offers a distinct configuration in terms of territorial scale, governance, and reuse strategies, providing a valuable framework for comparing how twentieth-century military heritage is reinterpreted and integrated into contemporary park environments. A key visual component of this section is Figure 13, which presents a cartographic comparison for each site. On the left, aerial imagery and orthophotos—produced through systematic field surveys and GIS mapping—document the distribution of wartime infrastructure such as bunkers and defensive nodes. On the right, official maps and interpretive graphics—issued by local authorities, civic associations, or displayed on-site—illustrate the spatial narratives through which these elements are framed, included, or neglected. This juxtaposition highlights discrepancies between the material reality of the heritage and its institutional representation. It also clarifies how each park conceptualizes the relationship between military remnants and other landscape components—such as ecological systems, pedestrian networks, and urban edges. As a preliminary analytical tool, Figure 13 provides both a spatial and semiotic entry point for evaluating the degree of visibility, coherence, and integration of military heritage across diverse contexts.

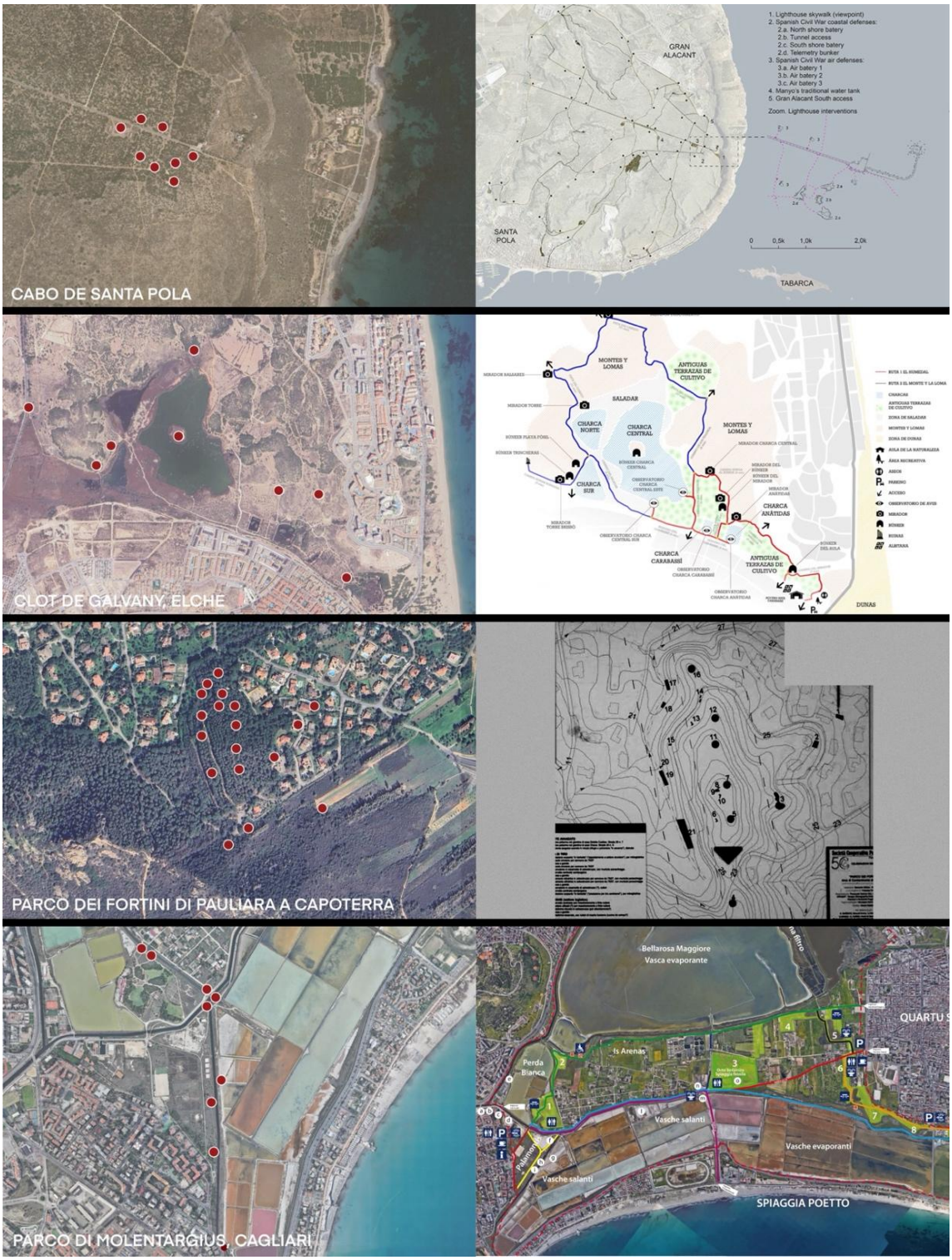


Figure 13: Left: GIS images highlighting the spatial layout of military structures (elaborations by Giancarlo Sanna). Right: Institutional maps issued by public authorities, from top to bottom: 1) https://pro-tectonica-s3.s3.eu-west-1.amazonaws.com/santapola_1553246671.pdf, 2) https://clotdegalvany.es and 3) Cooperativa Poggio dei Pini e ASSFORT, 4) https://www.parcomolentargius.it/

The following discussion builds upon this synthesis, examining how each site approaches the recovery, reuse, and activation of military structures—not merely as vestiges of the past, but as dynamic components within ecological, experiential, and educational narratives that shape the identity of the park. In this sense, the comparative figure serves as a heuristic device, revealing both the potential and the shortcomings of current valorisation practices. From the elevated ridge of Cabo de Santa Pola to the wetlands of Clot de Galvany, from the wooded inland slopes of Poggio dei Pini to the saline plains of Molentargius, these sites embody distinct topographies and degrees of integration of military remains into public memory and landscape design.

While this overview offers a cross-sectional reading of territorial and representational dynamics, the following subsections present a detailed site-by-site analysis. Here, the proposed evaluation method is applied to assess not only the conservation status and legibility of the military components, but also the strengths, limitations, and contradictions of the reuse strategies adopted. This structured comparison aims to identify recurring patterns, critical issues, and emerging opportunities for more coherent approaches to integrating military heritage into the landscape.

### 4.1.1 Battery of "Cabo de Santa Pola" (Alicante, Spain)

Cabo de Santa Pola is a prominent coastal promontory rising more than 100 metres above sea level and offering wide views of the Mediterranean and the island of Nueva Tabarca. During the Spanish Civil War, the site hosted a major military outpost known as Detachment No. 4 of the Levantine Coast (Figure 14), composed of several heavy and medium-calibre batteries, a command bunker, tunnels, ammunition depots, and troop barracks. These structures were strategically positioned to defend the port of Alicante, then the last stronghold of the Republican government. Although the interior of the batteries remains unused, the exterior restoration has improved their material legibility, integrating them into a broader system of interpretive trails linking natural, historical, and recreational elements. A notable drawback is the substantial alteration of the telemetric bunker, which departs from the otherwise conservative approach adopted for the rest of the structures. Of particular importance is the visual and spatial connection between the military outpost, the Santa Pola lighthouse, and its panoramic viewpoint, which links the site to wider cultural and tourist circuits.

Despite some limitations—such as the absence of QR codes, night lighting, and guided services, as well as signage degraded by weather conditions—the case of Santa Pola exemplifies a balanced, phased, and landscape-sensitive valorisation approach (Real and Baile, 2018). By integrating the memory of conflict into a dynamic and interconnected environment, it illustrates key principles for the sustainable reuse of twentieth-century military heritage. This case demonstrates key features of adaptive reuse, such as landscape-sensitive integration, phased interventions, and spatial interconnection with broader cultural circuits. Its main challenges relate to the lack of updated interpretive tools and interior reuse.

Figure 14: From left to right, battery post, bunker for telemetric device, mirador for the coastal landscape in the Cabo de Santa Pola, in Spain (photos by G. Sanna, 2025-author)

### 4.1.2 Clot de Galvany Natural Park (Elche, Spain)

Located between El Altet and Los Balsares in the municipality of Elche, Clot de Galvany is a protected area covering 366 hectares of coastal dunes, wetlands, and fossil outcrops. In addition to its high ecological value, the site contains a Spanish Civil War (1936–1939) defensive complex of eight bunkers (Figure 15), placed along the hillsides and oriented toward the Mediterranean to counter amphibious threats and land-based advances. A central command structure on an island within the lagoon reflects the site's strategic layout and military logic. Unlike other locations where defensive structures remain peripheral or neglected, Clot de Galvany offers a notable case of integration. The restoration interventions respected the authenticity of materials through the use of local stone, while the adaptive reuse of interiors was limited to non-invasive functions: some structures were sealed to prevent damage, while others were repurposed as birdwatching observatories. Elevated platforms or watchtowers facilitate access without endangering fragile ecosystems, and the fortifications are actively included in the park's website content and interpretive totems—although descriptive and individual identification panels are missing. While advanced digital communication tools are lacking, the site maintains a high level of interpretive coherence, physical accessibility, and

ecological compatibility. Here, military heritage is not a residual layer but a constitutive element of the visitor's spatial and narrative experience. Clot de Galvany thus emerges as one of the most comprehensive and balanced examples within the comparative framework. It demonstrates how a multifunctional valorisation strategy—combining historical depth with environmental education—can activate the memory of conflict without compromising landscape integrity. This case illustrates a coherent model of adaptive reuse in which minimal interventions balance ecological integrity with heritage valorisation. The main challenges lie in the absence of digital tools and internal interpretation.

Figure 15: From left to right: small casemate connected to an underground tunnel, double casemate bunker, and wooden mirador for the landscape in Clot de Galvany, in Spain (photos by G. Sanna-author, 2025).

#### 4.1.3 "Archaeological and Naturalist Memory Park" of Poggio dei Pini, Mount Pauliara (Capoterra, Italy)

Nestled in the forested hills southwest of Cagliari, the Memory Park of Poggio dei Pini in Capoterra encompasses the former military node of stronghold No. "Messina", part of a broader Second World War defensive system (Figure 16). The complex originally included more than thirty structures—bunkers, artillery positions, trenches, and shelters—scattered and camouflaged within the natural landscape. Today, the site presents a low-impact, community-driven heritage reuse model. No formal restoration has been undertaken, but a coherent interpretive framework has emerged through initiatives led by local volunteers. Unpaved trails, rope demarcations, and thematic signage panels guide visitors through the terrain, encouraging a direct archaeological engagement with the site's spatial logic. Despite the absence of advanced tools—such as digital platforms, lighting, or QR codes—the park hosts regular guided tours, maintenance activities, and educational initiatives. The strength of the project lies in its grassroots governance and the synergy between environmental integrity and historical narration.

Poggio dei Pini thus represents a cost-effective and socially integrated approach to military heritage valorisation. While infrastructural limitations persist, the site exemplifies how conflict landscapes can be reintegrated into contemporary collective memory through local management and minimal intervention. The site highlights the success of grassroots adaptive reuse, characterized by interpretive clarity, environmental integration, and local engagement. However, it still faces limitations in terms of infrastructure and accessibility.

Figure 16: Left and middle, bunkers built as observatories and (right) a path in the Archaeological and Natural Park of Memory in Poggio dei Pini, Capoterra, in Sardinia, Italy (by the Authors).

#### 4.1.4 Molentargius Regional Park (Cagliari, Italy)

Located between the municipalities of Cagliari, Quartu Sant'Elena, Quartucciu, and Selargius, the Molentargius-Saline Regional Park covers approximately 1,600 hectares of former salt pans and wetlands. Recognized under the Ramsar Convention since 1977, it is today one of the most important bird habitats in the Mediterranean, especially for flamingos (Phoenicopterus roseus). The park is managed primarily with an ecological conservation approach, supported by a developed visitor infrastructure focused on environmental education. Despite its historical layering—which includes early industrial salt-processing infrastructure—Molentargius also contains at least six defensive outposts composed of twelve surviving bunkers built during the Second World War (Figure 17). However, these military remnants are physically degraded, marginal to the park's narrative, and disconnected from its main circulation paths. Only one bunker is accompanied by basic interpretive signage, while the others are unmarked, neglected, and occasionally used as informal dumping sites.

Although local associations have sporadically organized events to raise awareness of these elements, no comprehensive strategy of reuse, restoration, or communication has been implemented. Military heritage remains in a state of passive invisibility, excluded from the park's institutional agenda, which focuses mainly on environmental and industrial themes. This case exemplifies the consequences of systemic omission: despite its highly visible and accessible context—and despite the latent potential for integration—war heritage remains unacknowledged.

Figure 17: From left to right, stronghold No. 15, a double casemate bunker belonging to the Stronghold No. 16, and two bunkers belonging to the stronghold in Sardinia, Italy (photos by G. Sanna-author, 2025).

## 5. Data-Driven Comparative Analysis of Valorisation Strategies

The comparative tables (Tables 1-2) highlight the diverse strategies, challenges, and degrees of integration observed in the four case studies. Santa Pola and Clot de Galvany exemplify structured, phased approaches supported by institutional frameworks and landscape-sensitive interventions; Poggio dei Pini stands out as a grassroots initiative driven by community engagement and minimal alteration; Molentargius, by contrast, illustrates the effects of institutional neglect, where valuable military remnants remain disconnected from the site's narrative and infrastructure. The analysis confirms that successful valorisation results from the synergy of multiple factors—physical accessibility, interpretive infrastructure, environmental compatibility, and community participation—rather than from any single element.

Table 1. Operational Indicators for the Assessment of Reuse Potential: This table presents the observable indicators used to assess the physical, spatial, and interpretive features of the fortified sites.

| Indicators | Santa Pola | Clot de Galvany | Poggio dei Pini | Molentar-gius |
|---|---|---|---|---|
| **1) Accessibility (physical and cognitive)** | - | | | |
| - Pedestrian paths | ✓ | ✓ | ✓ | ✓ |
| - Cycling infrastructure | ✓ | ✓ | ✓ | ✗ |
| - Rest areas | ✓ | ✓ | ✗ | ✗ |
| - Scenic viewpoints | ✓ | ✓ | ✓ | ✗ |

| | | | | |
|---|---|---|---|---|
| - Access and parking | ✓ | ✓ | ✓ | ✓ |
| - Informative panels on the war heritage | ✓ | ✓ | ✓ | ✗ |
| - Informative signage | ✓ | ✓ | ✓ | ✗ |
| **2) Restoration, Recovery, and Reuse** | | | | |
| - Restoration/conservation interventions | ✓ | ✓ | ✓ | ✗ |
| - Guided tours and services /reuse through activation | ✗ | ✓ | ✓ | ✓ |
| **3) Night-time Valorization (lighting and events)** | | | | |
| - Lighting or evening events | ✗ | ✗ | ✗ | ✗ |
| **4) Digital Tools and Signages** | | | | |
| - Interactive panels | ✗ | ✗ | ✗ | ✗ |
| - QR codes / digital media | ✗ | ✗ | ✗ | ✗ |
| - Online presence (websites, content) | ✓ | ✓ | ✓ | ✓ |
| **5) Integration into Cultural and Tourist Networks** | ✓ | ✓ | ✓ | ✗ |
| **6) Community Involvement and Participation** | | | | |
| - Presence of local associations or volunteer networks | ✗ | ✓ | ✓ | ✗ |
| - Participation in maintenance, promotion, and programming | ✗ | ✓ | ✓ | ✗ |
| **7) Educational and Interpretive Effectiveness** | | | | |
| - Didactic (Re-signification) tools | ✓ | ✓ | ✓ | ✗ |

Table 2: Thematic Evaluation of Adaptive Reuse Strategies: This matrix synthesizes the qualitative assessment of reuse strategies across eight thematic criteria.

| Criteria | Santa Pola | Clot de Galvany | Poggio dei Pini | Molentar-gius |
|---|---|---|---|---|
| **1) Accessibility (physical and cognitive):** | Good | Good | Good | Poor |
| **2) Preservation of Landscape Values:** | Good | Excellent | Excellent | Good |
| **3) Restoration, Recovery, and Reuse:** | Good | Good | Good | Absent |
| **4) Night-time Valorization (lighting and events):** | Absent | Absent | Absent | Absent |
| **5) Communication Tools (signage and digital media):** | Good | Good | Good | Poor |
| **6) Integration into Cultural and Tourist Networks:** | Good | Good | Good | Poor |
| **7) Community Involvement and Participation:** | Poor | Good | Excellent | Poor |
| **8) Educational and Interpretive Effectiveness:** | Good | Good | Excellent | Absent |

Several converging trends emerge. First, the effectiveness of physical and cognitive accessibility, verified through field inspections of entrances, trails, and signage, is evident at Santa Pola, Clot de Galvany, and Poggio dei Pini, all equipped with adequate infrastructure to support meaningful visitor engagement. Second, the preservation of landscape values, assessed by comparing historical cartography, photographic documentation, and present-day surveys, characterises all four parks. Both Clot de Galvany and Poggio dei Pini achieve a particularly coherent synthesis of environmental continuity and historical legibility, enabling memory and nature to reinforce one another. As illustrated in Figure 18, at Clot de Galvany, a restored bunker has been integrated into the visitor experience through interpretive totems and a wooden observation tower, offering shade and panoramic views that connect military remains with the surrounding landscape. By contrast, at Molentargius, a comparable bunker remains isolated and degraded, excluded from visitor routes and lacking interpretive tools, which limits both accessibility and narrative integration. A common limitation concerns night-time activation, confirmed during fieldwork by the lack of lighting infrastructure. This absence, however, is partly justified by ecological concerns, as artificial illumination in natural settings may disturb fauna and is only marginally relevant to visitor experience. Marked asymmetries also appear in

interpretive communication tools, recorded during site visits and supported by user feedback. Santa Pola, Clot de Galvany, and Poggio dei Pini employ signage, maps, and occasionally digital media, while Molentargius lacks such devices, undermining cognitive engagement and marginalising its military heritage. The analysis of community participation, based on the monitoring of local initiatives and stakeholder interviews, reveals sharp contrasts. Poggio dei Pini exemplifies a bottom-up model of heritage care and storytelling, where grassroots associations compensate for limited institutional investment and generate a strong, locally rooted narrative. Santa Pola and Molentargius, by contrast, show weaker community involvement. Differences also emerge in integration into broader cultural and tourist networks, verified by cross-checking planning documents, regional guides, and online platforms. Santa Pola and Clot de Galvany are well incorporated into cultural programming and visitor circuits, whereas Molentargius remains peripheral, reducing its visibility and ability to attract structured investment (Figure 18). Finally, educational and interpretive effectiveness, assessed through thematic routes and qualitative visitor feedback, aligns with these trends. Poggio dei Pini offers thematic itineraries and educational tools that activate the site's historical layers; Clot de Galvany and Santa Pola also provide strong educational experiences, likely supported by institutional planning. Molentargius again lacks such programming.

Figure 18: Comparative views of two double pillbox bunkers: Clot de Galvany in Spain (above) and Molentargius in Italy (below). (photos by G. Sanna, 2025-author).

## 5. Conclusions

The comparative analysis confirms that natural parks offer privileged conditions for the revitalisation of military heritage, as they allow for the intersection of environmental, historical, and perceptual dimensions, which can generate significant and lasting enhancement strategies. However, the long-term effectiveness of these efforts depends on three interdependent conditions: the capacity of institutions to promote integrated and systemic approaches; the availability of clear and attractive interpretive tools; and the presence of active community participation as a driver of reuse and reinterpretation.

The military architecture of the Mediterranean coast now stands at the crossroads between ruin and reinvention. These fortifications, often marginalised and fragmented, have the potential not only to be preserved, but also to be reimagined: not as static memorials, but as dynamic interfaces between history, territory, and cultural tourism. What this comparative analysis reveals is that valorisation requires a multidimensional framework in which physical accessibility, interpretative clarity, environmental compatibility, restoration of architectural heritage, and citizen

participation operate in synergy. Despite their prototypical nature—repeating similar typologies and functions in different places—the cultural impact of these structures is not determined by their material consistency, but by the way they are understood, contextualised, and given meaning.

Ultimately, these military structures challenge us to think both historically and spatially. They demand a vision of heritage that is neither nostalgic nor reductive, but critical, situated, and generative. As Walter Benjamin reminded us, 'there is no document of civilisation that is not at the same time a document of barbarism' (Benjamin in Mate, 2009, p. 130). Engaging with these vestiges means navigating that tension and translating it, through thoughtful design and shared memory, into a cultural resource that fosters reflection, a sense of belonging, and environmental awareness. These are not just ruins to be protected, but platforms to be activated: palimpsests of conflict that, if reinterpreted wisely, can become agents of collective meaning.

**Ackowledgment**

The abstract of this paper was presented at the Conservation of Architectural Heritage (CAH) Conference –8th Edition, which was held on the 17th - 19th of September 2024.

**Funding declaration.**

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors/individuals."

**Ethics approval.**

Not applicable.

**Conflict of interest.**

The author(s) declare that there is no competing interest.

**References**

Atanasio Guisado, A. (2017). Arquitectura defensiva del siglo XX en el Campo de Gibraltar. Implantación territorial, análisis tipológico y valor patrimonial de los búnkeres [20th-century defensive architecture in Campo de Gibraltar]. Territorial implementation, typological analysis, and heritage value of the bunkers [Doctoral dissertation, University of Seville]. IDUS. https://idus.us.es/xmlui/handle/11441/71055

Avrami, E., Mason, R., & de la Torre, M. (Eds.). (2000). Values and heritage conservation. Getty Conservation Institute.

Bassanelli, M., & Postiglione, G. (Eds.). (2011). The Atlantikwall as a military archaeological landscape. L'atlantikwall come paesaggio di archeologia militare. Lettera Ventidue.

Bevan, R. (2006). The destruction of memory: Architecture at war. Reaktion Books.

Cabezas Sánchez, A. (2013). La defensa de la costa a Catalunya durant la Guerra Civil, 1936-1939 [The defense of the coast in Catalonia during the Civil War, 1936-1939] [Doctoral dissertation, University of Barcelona]. Tesisenred. https://www.tesisenred.net/handle/10803/129446

Caniglia, M. R. (2023). Le casematte in Calabria. Architetture di un sistema difensivo del Novecento [The casemates in Calabria: Architecture of a twentieth-century defensive system]. In M. Bevilacqua & D. Ulivieri (Eds.), Defensive architecture of the Mediterranean (Vol. XIII, pp. 457–467). Pisa University Press. https://doi.org/10.4995/Fortmed2024.2024.17907

Carro, G., & Grioni, D. (2001). L'arco di contenimento di Quartu Sant'Elena. Fortificazioni della seconda guerra mondiale in Sardegna [The Quartu Sant'Elena containment arch.] World War II fortifications in Sardinia. Bollettino Geografico della Sardegna, 2, 1–51.

Cocroft, W., & Schofield, J. (Eds.). (2007). A fearsome heritage: Diverse legacies of the Cold War. Left Coast Press.

Diller, E., & Scofidio, R. (2011). Tourism and war - Turismo e guerra. In M. Bassanelli & G. Postiglione (Eds.), The Atlantikwall as a military archaeological landscape. L'atlantikwall come paesaggio di archeologia militare (pp. 38–50). Lettera Ventidue.

Dolf-Bonekämper, G. (2008). Sites of memory and sites of discord: Historic monuments as a medium for discussing conflict in Europe. In G. Fairclough, R. Harrison, J. H. Jameson Jr., & J. Schofield (Eds.), The heritage reader (pp. 134–138). Routledge.

Drugman, F. (2003). Idea per un progetto di museo lungo il Trebbia [Ideas for a museum project along the Trebbia]. Tip.Le.Co.

Fiorino, D. R., & Pintus, M. (Eds.). (2015). Verso un Atlante dei sistemi difensivi della Sardegna [Towards an atlas of Sardinia's defensive systems]. Giannini Editore.

Fiorino, D. R. (Ed.). (2018). Military landscapes: Scenari per il futuro del patrimonio militare [Military landscapes: Scenarios for the future of military heritage]. Skira.

Forty, A. (2012). Concrete and culture: A material history. Reaktion Books.

García i Mas, A., & Ruiz Requena, R. (2000). L'arquitectura del medi rural de Santa Pola. I Jornades del Patrimoni Cultural de Santa Pola [The architecture of the rural environment of Santa Pola. I Cultural Heritage Days of Santa Pola. Asociació Cultural l'Antina, Fundación CAM and Ayuntamiento de Santa Pola. https://degraf.ua.es/es/publicaciones/andres-martinez-medina/2000/016/libro-l-arquitectura-del-medi-rural-de-santa-pola.html

Genio Militare. (1943). Opere di fortificazione e strade militari del Settore Militare di Cagliari-Selargius-Elmas [Fortification works and military roads of the Cagliari-Selargius-Elmas Military Sector]. Archivio dell'Ufficio Storico dello Stato Maggiore dell'Esercito (AUSSME).

Gil Hernández, E. R., & Galdón Casanoves, E. (2007). El patrimonio inmaterial [Intangible heritage] (Vol. 17). In Various Authors, La Guerra Civil en la Comunidad Valenciana [The Civil War in the Valencian Community]. Prensa Valenciana.

Gil-Piqueras, T., Rodríguez-Navarro, P., Cabrera Revuelta, E., & Gandía Álvarez, E. (2022). Preliminary studies of the coastal defenses of Cullera's cape built during the Spanish Civil War: From historical study to formal analysis. Heritage, 5(4), 3032–3048. https://doi.org/10.3390/heritage5040157

Graham, B., Ashworth, G. J., & Tunbridge, J. E. (2016). A geography of heritage: Power, culture and economy. Routledge.

Grioni, D., & Carro, G. (2014). Fortini di Sardegna, 1940-1943. Storia di un patrimonio da salvaguardare e valorizzare[Forts of Sardinia, 1940-1943. The story of a heritage to be safeguarded and enhanced]. Edizioni Grafica del Parteolla.

Huyssen, A. (2003). Present pasts: Urban palimpsests and the politics of memory. Stanford University Press.

ICOMOS/ICOFORT. (2021). Guidelines on fortifications and military heritage. https://www.icofort.org/_files/ugd/57e5c5_ac4934abb83c47229061509712f8cc1c.pdf

IPCE (Instituto del Patrimonio Cultural Español). (2024, May 28–30). Fortificación y paisaje. La reformulación del concepto de 'Entorno de Protección' [Fortification and landscape webinar]. The reformulation of the concept of 'Buffer Zone'. https://ipce.cultura.gob.es/eventos-y-actividades/2024-formacion/online-2024/2024-05-28-fortificacion-y-paisaje.html

Lowenthal, D. (1985). The past is a foreign country. Cambridge University Press.

Mariotti, C., Ugolini, A., & Zampini, A. (2018). I bunker tedeschi a difesa della Linea Galla Placidia. Conservare un patrimonio dimenticato [German bunkers defending the Galla Placidia Line.] Preserving a forgotten heritage. ArcHistoR, 9, 148–193. https://doi.org/10.14633/AHR067

Martínez-Medina, A. (Ed.). (2016). Arquitecturas para la defensa de la costa Mediterránea, 1936-1939 [Architecture for the defense of the Mediterranean coast, 1936-1939]. University of Alicante. http://hdl.handle.net/10045/81287

Mate, R. (2009). Medianoche en la historia. Comentarios a las tesis de Walter Benjamin "Sobre el concepto de Historia" [Midnight in history: Commentaries on Walter Benjamin's theses "On the concept of history"]. Trotta. (Original work published 2006)

Pirinu, A., Argiolas, R., & Paba, N. (2021). Digital tools for the knowledge and enhancement of WWII heritage. The case study of Bosa on the west coast of Sardinia (Italy). International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, XLVI-M-1-2021, 547–554. https://doi.org/10.5194/isprs-archives-XLVI-M-1-2021-547-2021

Postiglione, G. (2005). The Atlantic Wall Linear Museum. DPA-Politecnico di Milano.

Postiglione, G. (2008). El Muro Atlántico: el búnker y/o como la arquitectura moderna [The Atlantic Wall: the bunker and/or modern architecture]. En S. Landrove (Ed.), ¿Renovarse o morir? Experiencias, apuestas y paradojas de la intervención en la arquitectura del Movimiento Moderno VI Congreso DoCoMoMo [Renew or die?] Experiences, challenges, and paradoxes of intervention in the architecture of the Modern Movement. 6th DoCoMoMo Congress (pp. 63–68). Fundación DoCoMoMo-Ibérico.

Rassu, M. (2013). Cantine, caverne, bunkers: La protezione antiaerea a Cagliari durante la Seconda Guerra Mondiale [Cellars, caves, bunkers: Anti-aircraft defense in Cagliari during the Second World War]. Edizioni A.R.S.O.M.

Real Baeza, P. D., & Baile Jiménez, A. (2018). Proyecto Atolón. Carril bici. Tectónica. https://pro-tectonica-s3.s3.eu-west-1.amazonaws.com/santapola_1553246671.pdf

Riegl, A. (2008). El culto moderno a los monumentos. Caracteres y origen [The modern cult of monuments.] Characteristics and origins]. Machado Libros. (Original work published 1903)

Rolf, R. (1985). Het Duitse fortificatie-ontwerp 1935–1945 [The German fortification design 1935–1945]. Beettsterwaag.

Rolf, R. (1988). Atlantic Wall typologies. Prak Publishing.

Rolf, R. (1998). Der Atlantikwall. Die Bauten der deutschen Küstenbefestigungen 1940-1945 [The Atlantic Wall: The construction of German coastal fortifications 1940-1945]. Verlag.

Rolf, R. (2014). Atlantikwall, batteries, and bunkers. Prak Publishing.

Sanna, A. (1999). La Maddalena 1943. La Piazzaforte di latta [La Maddalena 1943]. The tin fortress. Studio Grafico Editoriale Maiore.

Stefa, E., Mydyti, G., & Muçaj, N. A. (2012). Concrete mushrooms. Persing Albania's 750.000 abandoned bunkers. dpr-barcelona.

Sullivan, L. H. (1957). Charlas con un arquitecto [Talks with an architect]. Infinito. (Original work published 1901)

TICCIH (The International Committee for the Conservation of the Industrial Heritage). (2003). Nizhny Tagil Charter on Industrial Heritage. https://ticcih.org/wp-content/uploads/2013/04/NTagilCharter.pdf

Virilio, P. (2012). Bunker archeology. Princeton Architectural Press. (Original work published 1975)